

The affects of seasonal affective disorders

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Introduction The seasonal affective disorder refers to a kind of depression that is witnessed at regular intervals with an increasing frequency of recurrence towards the winter. The disorder has various symptoms and the manifestation of these signs may vary among individuals depending on the geographical location that one inhabits. These symptoms are common during the darkest months of the year. It has been noted that a decrease in temperature and sunlight experienced at the beginning of winter often have a serious negative effect on the victims of seasonal affective disorder. Many cases of seasonal affective disorders are witnessed among individuals living far away from the equator. The most common signs of seasonal affective disorder include low mood and lack of interest in anything.

Being passive, an increase in weight, and an urge to sleep more are some of the other symptoms that can be witnessed. The disorder is believed to be caused by lack of sufficient light that is received during the fall and winter. Various investigations have revealed that indeed the intensity of light has some effects on the functioning of the nervous system. The mechanism through which light contributes to the chemical physiological processes is still under investigation. However, it has been observed that low level of vitamin D in the mammalian blood is often associated with cases of seasonal affective disorders.

It was pointed out that ' prolonged duration of nocturnal melatonin increase has been implicated in the pathogenesis off seasonal affective disorders in winter depression' (Isman, Toyran, & Gundogan 2010, p1). In their article Exposure to continuous darkness leads to atypical symptoms of Seasonal affective disorder in rats, Isman, Toyran, and Gundogan (2010) investigated

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the behavioral and physiological effects that prolonged exposure to darkness had on the mammalian bodily system (p2). They carried out the experiment using male rats with an aim of transferring the analogy to seasonal affective disorders in man. The experiment consisted of twelve male Wistar-Albino rats. As a control experiment (LD), six of the rats were subjected to normal access to light for twelve hours a day. The other six were subjected to constant darkness (DD) for ten consecutive days.

The results of the experiment would be read from the behavioral and physiological parameters obtained from the two categories of the male rats. Two sets of data were obtained before the experiment and during or after the experiment. The behavioral parameters included forced swim test (FST), open field test, and sucrose preference. The physiological measurements included body weight, food intake, and the blood sugar level. Findings on research conducted The research showed some significant difference on behavioral and physiological characteristics between the differently treated groups of male rats.

Statistical procedures were applied to investigate the significance of difference in parameters like food intake, body weight and the blood glucose level. A statistical tool referred to as probability value (or P-value) was used with a value of $p > 0.05$ being considered significant. Using this approach, it was observed that there was higher intake of food by the rats in constant darkness than their counterparts in the control experiment. It was also observed that the rats in the DD group had higher affinity for sucrose and gained more weight compared to the LD group.

Besides, it was also evident that locomotor activity was higher in the DD group than in the LD group (Isman, Toyran, & Gundogan 2010, p6). On the other hand, it was observed that the blood sugar level was lower in the DD group than in the LD group. Signs of behavioral depression were more evident in the DD group than in the LD group. The rats here had prolonged immobility with short climbing and swimming behaviors. Other researches conducted by Jacobsen et al and (1987) and Kegel et al (2009) showed some kind of relationship between exposure to light and the occurrence of moods and emotional changes typical of a seasonal affective disorder.

Ethical dilemmas The research that was conducted in this study involved the use of rats and an examination of the behavioral and physiological consequences of subjecting the two different groups of rats to different light conditions. The experimental design that was adopted was that approved by the Faculty of Medicine, Baskent University. The rats in the experimental and control groups were each placed into a polycarbonate cage. Each rat was provided with ' standard lab chow and tap water ad libitum and maintained in an air-conditioned room' (Isman, Toyran, & Gundogan 2010, p2). The first group of rats that was used as the control experiment was not subject to any emotional or physical risk. They were subjected to an equal duration of twelve hours for light and dark regimen.

Their counterparts in the control experiment were however subjected to an emotional and physical risk during the experimental period. They were subjected to constant darkness for this period except during nutrition, and other care services when they were exposed to some dim light. Implications for further study In concluding their research, Isman, Toyran, and Gundogan <https://assignbuster.com/the-affects-of-seasonal-affective-disorders/>

pointed out that even though the results of their experiment using male rats gave an insight of association of duration of light to the occurrences of seasonal affective disorders, it was not obvious to translate this scenario witnessed by nocturnal animals to human seasonal affective disorders. The nocturnal animals may have different kind of sensitivity to constant darkness compared to man. These results may not be efficient owing to the 'interaction between the psycho-physiological roots of SAD and the circadian system' (Isman, Toyran, & Gundogan 2010, p6).

Further investigation needs to be carried out to examine the effect of duration as well as the intensity of light on the human circadian system. There is also a need to carry out further research based on both sexes and across the ages. Most of the researches that had been carried out indicate that SAD symptoms are common as from the age of twenty or thirty years onwards. About four fifths of the reported cases are women indicated that women are more vulnerable to the disorder (Jacobsen et al 1987, p1). An investigation in relation to the sexes needs to be carried out.

Intellectual relation From the concepts that were learned in Emotions and Moods covered in chapter 4, it was observed that the researchers have reached a conclusion that the weather has no affect on emotioons. However, the findings of this research show that there seems to be an association between the duration of exposure to adequate light and the occurrence of symptoms of seasonal affective disorder. The fact that this was experimented and found to be true using rats can be a founding principle for carrying out an investigation and translating the same occurrences in man. The usual therapeutic practices that involves searching for a means of

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treatment often starts with an experimentation on smaller animals with similar morphology and physiology to man. This analogy of seasonal photoperiodism witnessed in animals was also used by Jacobsen et al (1087) for a patient with seasonal emotional changes (p1).

They established that exposure to the natural or artificial bright light reduced the depression that was seen in the patient. This has been the basis for developing various antibiotics, based on the antibody-antigen reactions that were observed in these animal specimens. Alaska is the largest state in the United States. It is located to the Northwest far end of this continent making it the farthest from the equator. Most of Alaska is extremely cold during the winter only receive a short duration of light per day.

It is nearly at the same latitude with cold countries like Greenland. Much of the SAD cases reported in Alaska can be attributed to the extreme weather during the fall and winter. A study that was conducted in Greenland by Kegel et al (2009) showed that there were more cases of SAD in the regions north of the polar cycle (p4). They also cited previous works that had also related depression in patients with exposure to sunlight. Summary and conclusion Isman, Toyran, and Gundogan conducted the research using 12 male rats to investigate the difference in physiological and behavioral effects that subjecting them to different light conditions could have. Dividing the rats into two groups of six each, they obtained the initial data pertaining to the physiological and behavioral parameters.

A comparative set of data was later obtained during and at the end of the experiment depending on which aspect was being considered. The results

showed that physiological aspects like increase body weight, food intake, and sucrose preference were higher in the group subjected to constant darkness, as compared to their counterparts in the control group. The sugar level in blood was recorded to be lower in the experimental group than the control group. It was also observed that depression-like behaviors were more evident in the experimental group than the control group. This article sheds light on the need to investigate further the effect that weather has on the moods and emotions of individuals. It supports the findings by other researchers like Jacobsen et al that there are relationships between the weather changes and physiological as well as the behavioral characteristics of man and other animals.

The behaviors that were witnessed among the male rats in the experimental group are the atypical symptoms evident in victims of seasonally affective disorders. It is important to understand that even this study still does not explain the mechanism through which light can be used to correct the SAD symptoms. How phototherapy has been successfully applied in managing depression can provide a good foundation for these investigations (Jacobsen et al 1987, p3).