Journal Homepage: -www.journalijar.com
INTERNATIONAL JOURNAL OF ADVANCED RESEARCH (IJAR)
Article DOI:10.21474/IJAR01/9863
DOI URL: http://dx.doi.org/10.21474/IJAR01/9863
ISSN NO. 2320-5407

RESEARCH ARTICLE

MOONLIGHT AND VISUAL CORTEX.

Vidyapati Jha, Bineet Gupta and Yogesh Pal.

Manuscript Info

Manuscript History
Received: 08 August 2019
Final Accepted: 10 September 2019
Published: October 2019

Key words:-
brain, visual cortex, sleep disoreder,, REM sleep, related terminologies etc.

Abstract

In this research paper we derived a hypothesis whether lunatic night impact our Cortex or not. Brain percept the amount of light through visual cortex and we know from famous theory that is known as featured detection theory that say brightness of lihght effect the visual cortex and overall brain. The rod and cone of Visual cortex managed the brightnes perception and also it takes some time to adjust the brain. Lunatic night have small amount of darkness and lack of vitamin A. so it effect our visual cortex due to brain darkness adaptation. Here, we have shown the impact of lunatic night on Visual Cortex.

Introduction:-

People have theorized for thousands of years that the Moon has all kinds of impacts on our brain. It affects fertility, crime rates, dog attacks, and increases blood loss during surgery. Some of the crazies related to brain will occur at fullmoonnight.So what causes and impact of this full moon night. What makes us sprout metaphorical canines and race around in a fugue state hungry for manflesh when the moon is full? Are we experiencing tidal forces from the Moon on our internal organ? Is it a result of us evolving lockstep with the lunar cycle? Perhaps the light coming from the Moon affects our visual cortex and other cortex also in a way to stimulate the animalistic parts of the brain? It has been with us for so long as a belief, there must be something to it. Is it a myth or not. Tidal effects on behaviour are happening or not. We experience two high and two low tides every day, and it has something with the phase of the Moon. **[1]**

In fact, our body experiences more gravity from our chair than it does from the Moon. the motion of blood somehow reactive, a full elevator should everyone would pass out with all the blood rushing to their extremities pulled by gravity.

The Moon is closer when it's full, and its tug on our "materia" and "humors" is stronger. Unfortunately for this theory, our Moon travels an elliptical orbit. The Moon can be full and close – supermoon. Or it can be full but farther away – minimoon. In 1985, a team of scientists did a meta study, looking at 37 separate research papers that attempted to study the Moon's impact on all aspects of humanity. They found papers that demonstrated a correlation, and then promptly found the mistakes in the research. They found absolutely no evidence. We don't get into more car accidents. Hospital rooms aren't more crowded. Werewolves aren't apparently a thing. We do notice the coincidences, when something strange occurs and there happens to be a full Moon. But we don't notice all the times when there wasn't a full Moon. But passing of time, now several study has been goes on.**[12]**

In this research paper whether fullmoon has impact or not on visual cortex, sleep schedules of brain and other parts of brain also.

Corresponding Author:-VidyapatiJha.

So, where did this idea come from? Historians suspect it's possible that the brightness of a full moon disturbed people's sleep schedules.

I'm partial to the idea that in history, the full Moon was a high time for people to be active at night, favoring work or travel by the light of the full moon. So, perhaps there were more accidents.

Statement of the Problem

For centuries legend has held that full moons make people go crazy. Full moons have been linked in popular culture with a rise in suicides and even epileptic seizures, but there's little to no scientific evidence backing these ideas up. However, the moon is a powerful body, its gravity tugging on our oceans to control tides, and its light thought to impact ancient animal behaviors, including the start of one of the largest sex events on Earth (the spawning of corals)**[2].**

It is observed that a number of people become schizophrenic in lunatic night and get well on some fullmoon night also. It has been said beforehand that gravity effects the motion of blood(endocrine system) and brain handles its own way**.[2]**

In this paper we have studied the impact of fullmoon light on our brain

Proposed hypothesis:-

Since brightness of light effect the our retinal system of brain. Our brain percept the amount of brightness through it visual cortex.visual cortex response time which senses the light is also splitted(split mind as in schizophrenia). Visual cortex differentiates the light that have been percepted.Hebel and wiesel already suggested a theory that is called "Featured Detection Theory" which suggest that certain cells in the cortex are maximally sensitive to certain feature of stimuli.

Here the visual cortex decoding of response time(i.e; regeneration of photopigment) by rods cell which is not generated in appropriate way i.e; it is mismatched.

There are several factor involved in how we perceive brightness. The first one is adaptation. When brain adapt to a darker environment such as a dark movie theatre brain experience dark adaptation. When you first walk into theatre, you have problem seeing but as your eyes become accustomed to the dark, you are soon able to see better- you have adapted.part of the reason for dark adaptation is that light reaching the photoreceptors before you entered the theater bleached the photopigment in the rods. The rods have only one photopigments,a photochemical called rhodospin.

Rhodospin is made up of a vitamin A derivative, called retinal and a protein called opsin. When a molecule of rhodospin absorbs a photon of light, the pigment begins to decomposes(as lunatic night also have darkness) or split into retinene and opsin(it is called bleaching) after bleching it takes time for the pigment to regenerate as rhodospins begin to regenerate, you begin to see better. So moonlight effect somehow our visual cortex because of the absence of vitamin A.

Moon light also appear as blusih particularly at fullmoon. This is called Purkinje effect. Although moonlight is not actually tinted blue and moonlight is often reffered to as silvery but it has no inherent silver quality. However, the impact of blue-enriched polychromatic light on human sleep architecture and sleep electroencephalographic activity remains fairly unknown. A study which shows the sleep deprivation among 3 people out of 30 people at non REM sleep stage.

In this study scientist investigated sleep structure and sleep EEG characteristics of 30 healthy young participants (16 men, 14 women; age range 20–31 years) following 2 h of evening light exposure to polychromatic light at 6500 K, 2500 K and 3000 K(colour temperature) Sleep structure across the first three non-rapid eye movement– rapid eye movement sleep cycles did not differ significantly with respect to the light conditions. All-night non-rapid eye movement sleep EEG power density indicated that exposure to light at 6500 K resulted in a tendency for less frontal non-rapid eye movement EEG power density, compared to light at 2500 K and 3000 K. The dynamics of non-rapid eye movement electroencephalographic slow wave activity (2.0–4.0 Hz), a functional index of homeostatic sleep pressure, were such that slow wave activity was reduced significantly during the first sleep cycle after light at 6500 K compared to light at 2500 K and 3000 K, particularly in the frontal derivation. Our data suggest that

exposure to blue-enriched polychromatic light at relatively low room light levels impacts upon homeostatic sleep regulation, as indexed by reduction in frontal slow wave activity during the first non-rapid eye movement episode.[13]

As we know the colour temperature of moonlight is not equal to sunlight. However moon only reflect sunlight. It has not their own light. So it is interestingly hypothesized that moonlight effect our non rapid eye movement sleep(slow wave activity during non REM Sleep) and may also causes sleep disorder as any types of sleep disorder causes schizophrenia, sleep apnea etc.

Result:-

In this paper, we have showed that how fullmoon light impact on our neuronal system. However the working principle of impact on visual cortex due to lunatic night is fairly unknown.

Lunatic night also effect the sleep cycle, Specially for non REM sleep. In this research paper we concluded with the gathered data that lunatic night effect the slow wave activity of first sleep cycle. Although the previously gathered data analysis is concentrated on Sleep cycle at different colour temperature and it conclude that the light effect sleep at different colour temperature so it can be hypothesized that lunatic night which has totally different colour temperature must effect non-REM sleep also.

Reference:-

1. JeannaBryner, Live Science Managing EditorJamesRotton of Florida International University and Ivan Kelly of the University of SaskatchewanBiederman I. Ju G.
2. Surface versus edge-based determinants of visual recognition.Cognit. Psychol. 1988; 20: 38-64
3. T Ro, A Farnè, E Chang - Experimental Brain Research, 2003 – Springer
4. Further analysis of the temporal lobe syndrome utilizing frontotemporal ablationsKH Pribram, M Bagshaw - Journal of Comparative Neurology, 1953 - Wiley Online LibraryVisual illusions and neurobiologyDM Eagleman - Nature Reviews Neuroscience, 2001 - nature.com
5. Excitotoxic lesions of the pedunculopontine tegmental nucleus in rats impair performance on a test of sustained attentionR Kozak, EM Bowman, MP Latimer, CL Rostron… - Experimental brain …, 2005 – Springer
6. Retinal and visual cortex distance from transcranial magnetic stimulation of the vertex affects phosphene perceptionK Webster, T Ro - Experimental brain research, 2017 – Springer
7. The role of color in high-level visionAuthor links open overlay panelJamesTanaka[a]DanielWeiskopf[a]PepperWilliams[b]
8. Ostergaard A. Davidoff J.Some effects of color on naming and recognition of objects.J. Exp. Psychol. Learn. Mem. Cognit. 1985; 11: 579-587
9. Humphrey G. etal.The role of surface information in object recognition: studies of visual form agnosic and normal subjects.Perception. 1994; 23: 1457-1481
10. Wurm L. etal.Color improves object recognition in normal and low vision.J. Exp. Psychol. Hum. Percept. Perform. 1993; 19: 899-911
11. Change detection in urban areas by direct comparison of multi-view and multi-temporal ALS dataM Hebel, M Arens, U Stilla - ISPRS Conference on Photogrammetric …, 2011 – Springer
12. Lunacy and the Full Moon "Does a full moon really trigger strange behavior?By Hal Arkowitz, Scott O. Lilienfeld on February 1, 2009
13. Acute exposure to evening blue-enriched light impacts on human sleepSarah L. Chellappa, Roland Steiner, Peter Oelhafen, Dieter Lang, Thomas Götz, Julia Krebs Christian Cajochen.