



KNOW Homoeopathy Journal

Bi-Annual, Indexed, Double Blind, Peer-Reviewed, Research Scholarly Online Journal in Field of Homoeopathy

KNOW Homoeopathy Journal Vol-2 & Issue-1, 15 March 2022, Published at <https://www.knowhomoeopathyjournal.com/2022/03/volume-2-issue-1.html>, Pages: 45 to 63, Title: : To Study The Physiological Activity Of The Circadian Rhythm And The Role Of Electronic Devices In Causing Physical And Psychological Issues, Authored By: Dr Rita Sangtani (M.D. HOM, Ph.D. Guide, Professor & HOD-Physiology, Dr. D.Y. Patil Homoeopathic Medical College & Research Centre, Pune, India) & Co-Authored By: Dr Sneha Pawar (M.D. HOM, Assistant Professor-Surgery, Dr. D.Y. Patil Homoeopathic Medical College & Research Centre, Pune, India)

Title: To Study The Physiological Activity Of The Circadian Rhythm And The Role Of Electronic Devices In Causing Physical And Psychological Issues

Authored By:- Dr Rita Sangtani¹ & Co-Authored By:- Dr Sneha Pawar²

¹M.D.HOM, Ph.D. GUIDE, PROFESSOR AND HOD IN PHYSIOLOGY, DR D.Y. PATIL HOMEOPATHIC MEDICAL COLLEGE AND RESEARCH CENTRE, DR D.Y. PATIL VIDYAPEETH, PIMPRI, PUNE-18, MAHARASHTRA, INDIA

²ASSISTANT PROFESSOR IN SURGERY, DR D.Y. PATIL HOMEOPATHIC MEDICAL COLLEGE AND RESEARCH CENTRE, DR D.Y. PATIL VIDYAPEETH, PIMPRI, PUNE-18, MAHARASHTRA, INDIA

ABSTRACT

Every human body has its own clock, which is made up of nerve cells and causes physical, mental, and behavioral changes that impact sleep patterns as well as its 24-hour cycle of operation. This is known as the circadian rhythm, also known as the biological clock, and it is dependent on the rise and fall of the sun as well as the day-night cycle. The master clock is made up of a component of the suprachiasmatic nucleus and a structure that lives within a region called



ADVANCED SCIENCE INDEX



CiteFactor
Academic Scientific Journals



INTERNATIONAL
STANDARD
SERIAL
NUMBER
INDIA



INTERNATIONAL INSTITUTE OF ORGANIZED RESEARCH (I2OR)

A REGISTERED MSME WITH MINISTRY OF MSME, GOVERNMENT OF INDIA (UDYAM-PB-20-0002405)



Directory
of Research
Journals
Indexing



Academic
Resource
Index
ResearchBib



TOGETHER WE REACH THE GOAL

ROOT INDEXING
JOURNAL ABSTRACTING AND INDEXING SERVICE



KNOW Homoeopathy Journal

Bi-Annual, IDouble Blind, Peer-Reviewed, Research Scholarly Online Journal in Field of Homoeopathy

the hypothalamus. It has the ability to manage the circadian rhythm. Various components inside the body, DNA, gender, and external circumstances all have a role. The suprachiasmatic nucleus is very responsive to environmental changes. These are natural processes that are influenced by external stimuli such as light and dark signals and are controlled by the body's internal clock. Biological clocks are formed of unique protein molecules that interact with cells throughout the body, present in every tissue and organ, conveying signals to the whole body, and are important for the functioning of life and behavior coordination. Every organ and tissue operates according to biological rhythms, which keep the bodily processes running on a 24-hour cycle, guaranteeing that the biological processes continue to function on a regular basis. Humans have a special connection with the clock, and scientists have been trying to figure out what causes the clock to tick at the correct time after identifying the genes involved. This short article aims to study the rhythm of time that controls the bodily functions and how it gets affected by excess use of electronic devices nowadays. The word circadian comes from the Latin phrase circa (around) diem (a day), which literally means "around the day." It is found in all living things and aids in the functioning of the body's functions during a 24-hour period by synchronizing the mental and physical systems of the body and is linked to a master clock in the brain.

KEYWORDS

Circadian rhythm, Master clock, Electronic devices, Sleep disturbances, Melatonin.



KNOW Homoeopathy Journal

Bi-Annual, IDouble Blind, Peer-Reviewed, Research Scholarly Online Journal in Field of Homoeopathy

INTRODUCTION



German zoologists Hans Kalmus and Erwin Bunning were the first to discover the presence of a circadian rhythm.

When French astronomer Jean Jacques d Ottous de Mairan planted the mimosa plant in a dark chamber in 1729, he made the first scientific study of the circadian rhythm by observing how the plant continued to unfurl its leaves in the morning and shut them in the evening.

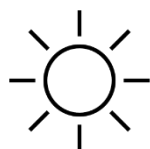
The circadian rhythm regulates many of the body's most important functions, including sleep-wake cycles, hormone secretion, eating habits, heart rate, blood pressure, body temperature, urine production, and metabolism. It is characterized by a time rhythm that responds to changes in chemical components and their pathways, allowing the body to maintain homeostasis in time with the rotation of the earth. With the aid of circadian rhythm, living creatures may adjust to cellular processes, physiological functions, and behaviors. When you first wake up in the morning, light enters your eyes and travels to your brain, where it influences gene activity while also lowering the creation of melatonin, a hormone that aids sleep. Melatonin synthesis increases when the sun sets later in the evening, peaks at night, and aids sleep. Circadian rhythms have an impact on mental health, including the risk of psychiatric illnesses such as depression and bipolar



KNOW Homoeopathy Journal

Bi-Annual, IDouble Blind, Peer-Reviewed, Research Scholarly Online Journal in Field of Homoeopathy

disorder, as well as neurodegenerative diseases such as dementia and sleeping issues. They also have an impact on the immune system and DNA repair processes, which help to prevent cancer.



DISCUSSION

The suprachiasmatic nucleus regulates the generation of melatonin, a hormone that regulates sleep patterns by receiving information about incoming light from the optic nerves and passing it to the brain. The SCN directs the brain to generate more melatonin when there is less light, making the individual sleepy. Because the body experiences various changes as it ages, it is best to work with the natural body clock and biology rather than against it. The SCN is light-sensitive and controls the body's internal clocks. The sleep-wake cycle is the most crucial of the circadian rhythms, since it aligns sleep and wakefulness with day and night in order to restore the body and produce a stable condition. The pineal gland, often known as the body's biological clock, is an endocrine gland that generates melatonin, a hormone that governs biological rhythms such as sleep and waking cycles. All living things have evolved to this cycle, in which melatonin output is proportional to the quantity of light a person is exposed to, and the pineal gland's biology is kept in sync. SLEEP IS THE MOST IMPORTANT THING IN OUR LIVES; it enhances our physical and mental well-being, and it aids in stress management, energy production, problem solving, and recovery from disease. During the various phases of sleep, distinct changes occur in the brain and body. Neurotransmitters are substances that assist nerves interact with one other and govern the sleep and waking cycle based on the neurons they connect with. Serotonin and



KNOW Homoeopathy Journal

Bi-Annual, IDouble Blind, Peer-Reviewed, Research Scholarly Online Journal in Field of Homoeopathy

norepinephrine are neurotransmitters produced by neurons in the brainstem, which keep the brain functioning.

SLEEP STAGES

Sleep cycle undergoes different stages

1. Non rapid eye movement sleep

A. In this stage sleep is light lasts for 5-10 minutes where muscular activity slows down including the eye movements, eyes are closed and the person starts to sleep.

B. Here there is a period of contraction and relaxation of the muscles, there's no movement of eyes, heart slows down and body temperature decreases. Brain waves become slow. Lasts for about 60 minutes.

C. This a stage of deep sleep, brain waves become very slow and it is difficult to wake someone up in this stage, there is no eye movement and muscle activity. Normal time is 40 minutes.

2. Rapid eye movement sleep

In this stage activity of brain increases where a person gets dreams and unable to move arms and legs, breathing is fast, increased heart rate and blood pressure and rapid eye movements. It lasts for 60 minutes.

SOME FACTORS THAT AFFECT THE SLEEP CYCLE



KNOW Homoeopathy Journal

Bi-Annual, IDouble Blind, Peer-Reviewed, Research Scholarly Online Journal in Field of Homoeopathy

1. Medications
2. caffeine
3. Smoking
4. Alcohol
5. Very hot or cold temperatures.
6. Age
7. Disease condition.

FUNCTIONS OF SLEEP

Sleep is required for the overall wellbeing of an individual and it is needed for

1. Growth

Deep sleep help in growth of children and teenagers a growth hormone is released during this stage and the body increases the production of proteins which helps in growth of cell and repair of tissue.

2. Proper functioning of the nervous system



KNOW Homoeopathy Journal

Bi-Annual, IDouble Blind, Peer-Reviewed, Research Scholarly Online Journal in Field of Homoeopathy

If a person is deprived from sleep, it affects the memory, ability to think clearly, mood swings and hallucinations. With sleep the nerve cells repair themselves and strengthen the brain and ability to think.

3.Survival

Lack of sleep affects the immune system which has the ability to protect from infections.

4.Well-being

If a person does not get proper sleep it leads to various health conditions like obesity, diabetes and heart problems.

HOW BIOLOGICAL RHYTHMS WORK

Each type of biological rhythm has a time frame

Diurnal: Night and day

Control the functions like sleep, body temperature hormone changes which are affected by light.

Circadian :24 hours

Ultradian: Less than 24 Hours

Infradian /Circalunar: one month



KNOW Homoeopathy Journal

Bi-Annual, IDouble Blind, Peer-Reviewed, Research Scholarly Online Journal in Field of Homoeopathy

Circannual: one year.

WHAT IS THE ROLE OF CIRCADIAN RHYTHM IN BODY FUNCTIONS?

Biological Rhythm has a significant impact on an individual's health, and any deviation causes sleep disorders, as well as serious chronic health problems such as obesity, diabetes, high blood pressure, depression, cancer risk, and bipolar disorders, as these factors also influence the immune system, DNA repair processes, and cancer treatment. Poor attention, poor performance, poor coordination, headaches, and stomach issues are some of the other symptoms that might occur.

FACTORS AFFECTING THE CIRCADIAN RHYTHMS

- 1.Changes in genes or mutations will affect the biological clocks.
- 2.Jet lag or rapid time zone change syndrome.
- 3.Working in shifts frequently also cause changes in the light dark cycle.
- 4.Using electronic devices at night can confuse the biological clocks.
- 5.Medications.
- 6.Health conditions such as Alzheimer's or Parkinson's Disease.
- 7.Mental Health Disorders.

52 | Page © 2022 | KNOW Homoeopathy Journal | www.knowhomoeopathyjournal.com



ADVANCED SCIENCE INDEX



CiteFactor
Academic Scientific Journals



INTERNATIONAL
STANDARD
SERIAL
NUMBER
INDIA



INTERNATIONAL INSTITUTE OF ORGANIZED RESEARCH (I2OR)

A REGISTERED MSME WITH MINISTRY OF MSME, GOVERNMENT OF INDIA (UDYAM-PB-20-0002405)



Directory
of Research
Journals
Indexing



Academic
Resource
Index
ResearchBib



TOGETHER WE REACH THE GOAL

ROOTINDEXING
JOURNAL ABSTRACTING AND INDEXING SERVICE



KNOW Homoeopathy Journal

Bi-Annual, IDouble Blind, Peer-Reviewed, Research Scholarly Online Journal in Field of Homoeopathy

8. Brain damage especially in cases of head injury.

9. Lack of exposure to sunlight for a long time.

10. Poor sleeping habits.

11. Old age.

ROLE OF ELECTRONIC DEVICES IN CAUSING PHYSICAL AND PSYCHOLOGICAL DISTURBANCES



When a person sleeps next to electronics, technology affects the brain, stimulates the mind, and causes unwanted awakenings. It is linked to sleep anxiety, increased night waking, and increased total sleep disturbance, including short sleep duration, increased daytime sleepiness, and poor academic performance. Smartphones generate significant amounts of radiation, disrupting the biological clock and generating more nightmares when the circadian cycle is thrown off. Sleep is influenced by computers, tablets, cellphones, TVs, and gaming consoles. The blue light generated by the gadgets suppresses the synthesis of melatonin, a hormone that regulates the sleep-wake cycle, interrupting sleep. Excessive exposure to electronic screens reduces blinking rate and



KNOW Homoeopathy Journal

Bi-Annual, IDouble Blind, Peer-Reviewed, Research Scholarly Online Journal in Field of Homoeopathy

digital strain, which can damage retinal cells and cause long-term vision problems, as well as lower levels of physical fitness, mental health issues, and social development issues, which can lead to obesity, particularly in developing children and teenagers. Binge viewing has been related to poor sleeping patterns, which may lead to insomnia, difficulties concentrating on crucial activities, feeling fatigued and drowsy, and retinal damage. Electronic gadgets such as phones, tablets, laptops, books, and televisions produce blue light with a short wavelength that disrupts the circadian rhythm and causes melatonin synthesis to be delayed in the evening. Many studies have shown that blue light and a lack of melatonin reduces time spent in slow wave and REM sleep stages, both of which are important for mental and physical health; otherwise, it affects memory and mood, leading to poor sleep and chronic daytime sleepiness, both of which have negative effects on health and quality of life. Eyes grow less sensitive to light as they age, and children are more impacted than adults, affecting academic performance and conduct.

The light from the electronic devices results in short amounts of sleep and delays the biologic processes resulting in many psychological and physical changes. The light emitted from phone screens shines directly in the eyes and suppresses the production of melatonin. So the changes that occur are:

- 1.It takes a longer time to fall asleep.
- 2.It confuses the brain by altering and delaying the circadian clock rhythm, influencing metabolism, mood, and desires for sweet or junk foods, as well as increasing the risk of diabetes and other disorders.
- 3.It causes melatonin secretion to be suppressed, which helps to safeguard the brain's health.
- 4.It reduces the amount of time spent in REM sleep.

54 | Page © 2022 | KNOW Homoeopathy Journal | www.knowhomoeopathyjournal.com

Indexed In



ADVANCED SCIENCE INDEX



CiteFactor
Academic Scientific Journals



INTERNATIONAL
STANDARD
SERIAL
NUMBER
INDIA



INTERNATIONAL INSTITUTE OF ORGANIZED RESEARCH (I2OR)

A REGISTERED MSME WITH MINISTRY OF MSME, GOVERNMENT OF INDIA (UDYAM-PB-20-0002405)



Directory
of Research
Journals
Indexing



ROOTINDEXING
JOURNAL ABSTRACTING AND INDEXING SERVICE

TOGETHER WE REACH THE GOAL



KNOW Homoeopathy Journal

Bi-Annual, IDouble Blind, Peer-Reviewed, Research Scholarly Online Journal in Field of Homoeopathy

The mind and body are both restored during this period of REM sleep.

5.It increases a person's alertness and keeps them up at night.

6.Inadequate sleep quantity and quality contribute to increased sleep anxiety, nocturnal awakening, and sleep disruption.

7.Physiological, emotional, and mental disorders increase.

8.Insufficiency in cardiorespiratory fitness.

9.Inattention.

10.Increased BMI and overweight children are linked to more time spent away from the television.

COMMON CIRCADIAN RHYTHM DISORDERS

1.Rapid time zone change syndrome

There's too much sleepiness and lack of daytime alertness which gets worse with each time zone that is crossed.

2.Shift work sleep disorder

This occurs in people who are working in rotating shifts or who work in the night and the sleep pattern gets interrupted resulting in insomnia or excessive sleepiness.



KNOW Homoeopathy Journal

Bi-Annual, IDouble Blind, Peer-Reviewed, Research Scholarly Online Journal in Field of Homoeopathy

3. Delayed sleep phase syndrome

Here people fall asleep very late at night and it becomes difficult to wake up in time for work, school, or social events.

4. Advanced sleep phase syndrome

Person sleeps early in the evening and wakes up early in morning.

5. Non-24-hour sleep wake disorder

This affects those people who are blind as the circadian clock is set by the light-dark cycle which is disturbed causing a serious lack of sleeping on time.

6. Irregular sleep -wake rhythm disorder

Here the person sleeps in a series of naps over 24 hours and the circadian rhythms gets jumbled

7. Jet Lag

Here the body's internal clock is disturbed from travelling long distance by air making it difficult to adjust and function in the new time zone making the person sleepy.

TREATMENTS

1. Reset the body clock with bright light treatment. To be more in tune with the earth's cycle of light and dark, the rhythm is reset by being near a strong light for a particular period each day.



KNOW Homoeopathy Journal

Bi-Annual, IDouble Blind, Peer-Reviewed, Research Scholarly Online Journal in Field of Homoeopathy

- 2.Change your night routine or sleeping environment to improve your sleep hygiene.
- 3.Chronotherapy, in which the bedtime is modified according to the amount of sleep time necessary.
- 4.Changes in lifestyle, such as scheduling naps, limiting exposure to light, and establishing a regular exercise program.
- 5.Medications including melatonin supplements and short-term sleeping aids may be utilized to keep the sleep-wake cycle on track.

HOW TO CONTROL THE BIOLOGICAL CLOCK AND MAINTAIN A HEALTHY CIRCADIAN RHYTHM

- 1.Go to bed early.
- 2.Get the required amount of sleep.
- 3.Keep a rigorous plan of sleeping and getting up at the same time every day.
- 4.Sleep for no more than 20-30 minutes at a time.
- 5.Caffeine consumption should be kept to a minimum.
- 6.The bedroom should be peaceful, dark, soothing, and the temperature should be suitable.
- 7.Avoid consuming a large amount of liquids before going to bed.



ADVANCED SCIENCE INDEX



INTERNATIONAL
STANDARD
SERIAL
NUMBER
INDIA



INTERNATIONAL INSTITUTE OF ORGANIZED RESEARCH (I2OR)

A REGISTERED MSME WITH MINISTRY OF MSME, GOVERNMENT OF INDIA (UDYAM-PB-20-0002405)



ROOTINDEXING
JOURNAL ABSTRACTING AND INDEXING SERVICE



KNOW Homoeopathy Journal

Bi-Annual, IDouble Blind, Peer-Reviewed, Research Scholarly Online Journal in Field of Homoeopathy

8. Relax by doing things like meditation or listening to gentle, soothing music.
9. Make it a habit to read before going to bed.
10. Go for a walk late at night to relax your mind.
11. Avoid using computers, tablets, cellphones, or television for many hours before night.
12. Before going to bed, take a warm bath.
13. Exercise increases sleep quality and decreases stress.
14. Sunlight exposure aids in the maintenance of the circadian rhythm.
15. Avoid late-night eating, as well as heavy, spicy, and fatty meals.

HOMOEOPATHIC REMEDIES USEFUL IN CASES OF DISORDERS OF SLEEP

In treating cases with homoeopathic medicines, physician observes skillfully the symptoms and characteristic feature of a disease which helps to select a specific remedy related to sleep disorders.

1. COFFEA: Person cannot close the eyes which maybe be due to abuse of drug or staying up late at night.
2. MAG CARB: Sleep disorder due to fear and abdominal problems.



ADVANCED SCIENCE INDEX



CiteFactor
Academic Scientific Journals



INTERNATIONAL
STANDARD
SERIAL
NUMBER
INDIA



INTERNATIONAL INSTITUTE OF ORGANIZED RESEARCH (I2OR)

A REGISTERED MSME WITH MINISTRY OF MSME, GOVERNMENT OF INDIA (UDYAM-PB-20-0002405)



Directory
of Research
Journals
Indexing



Academic
Resource
Index
ResearchBib



TOGETHER WE REACH THE GOAL

ROOTINDEXING
JOURNAL ABSTRACTING AND INDEXING SERVICE



KNOW Homoeopathy Journal

Bi-Annual, IDouble Blind, Peer-Reviewed, Research Scholarly Online Journal in Field of Homoeopathy

- 3.KALI PHOS: Sleep disturbed because of worrying and overthinking or over excited.
- 4.CAUSTICUM: Used for treating sleeplessness during night time, unable to rest in a fixed posture.
- 5.IGNATIA: Given in cases of light sleepers with dreams of one fixed subject, due to depression and sad thoughts.
- 6: ARNICA MONTANA: Patient cannot sleep because of over exertion of mind.
- 7.ARSENICUM ALBUM: Restless sleep with fear full dreams.
- 8.LACHESIS: Light sleep with tossing and turning and changing dreams.
- 9.VALERIANA OFFICINALIS: Sleepless with itching and muscular spasms from excitement.
- 10.COCCULUS INDICUS: Insomnia due to mental and physical exhaustion.

CONCLUSION

It seems that electronic devices are here to stay as more advances in the field take place in the field of science, we have to be careful of jumping to conclusions and blame for every problem or that all individuals are affected by exposure to electronic devices in the same manner. By taking some preventive measures the problems faced by everyone all over the world can be minimized by avoiding the electronic devices for some time and one should not ignore the power of the electronic devices which has changed the face of world. And the important thing to remember is that we should be in control and it's the quality of sleep that matters and the health is determined



KNOW Homoeopathy Journal

Bi-Annual, IDouble Blind, Peer-Reviewed, Research Scholarly Online Journal in Field of Homoeopathy

by the numbers of hours of sleep that is required by an individual and as the majority of studies have reported a link between use of electronic devices and altered sleep patterns.

REFERENCES

1. Guyton and Hall Physiology Latest Edition 2019.
2. Ganongs review of Medical Physiology 26th edition.
3. Essentials of Human Anatomy and Physiology 12th edition by Elaine Marieb.
4. Physiology by Linda Constanza Edition 7.
5. Human Physiology an Integrated Approach 7th Edition by Dee Silverthorn.
6. Essentials of Medical Physiology by Prema Sembulingam.
7. Ross and Wilson Anatomy and Physiology in Health and illness.
8. Comprehensive Textbook of Medical Physiology by G.K.Pal.
9. The Sleep Solution Why Your Sleep is Broken and How to Fix It by W Chris Winter.
10. The Sleep Science by William E. Joyce.
11. Sleep and Neurologic Disease by Mitchell G. Miglis.
12. Insomnia by Peter Cook.





KNOW Homoeopathy Journal

Bi-Annual, IDouble Blind, Peer-Reviewed, Research Scholarly Online Journal in Field of Homoeopathy

13. <https://www.doctorsformulas.com/en/category/newsposts/biological-clock-and-human-health>.
14. <https://www.chop.edu/news> and technology.
15. <https://www.klinikapp.com/blog/phone-is-harmful-before-bed-time>.
16. https://www.onhealth.com/content/1/body_sleep_cycle_brain
17. <https://www.sleepfoundation.org/how-sleep-works/stages-of-sleep>
18. <https://www.ninds.nih.gov/Disorders/Patient-Caregiver-Education/Understanding-Sleep>
19. <https://www.sleep.org/ways-technology-affects-sleep>.
20. <https://riseandshine.childrensnational.org/negative-effects-of-electronic-devices-at-bedtime/>
21. Patel, A. K., Reddy, V., & Araujo, J. F. (2020, April). Physiology, Sleep Stages. Stat Pearls Publishing. Retrieved from <https://www.ncbi.nlm.nih.gov/books/NBK526132/>
22. Division of Sleep Medicine at Harvard Medical School. (2007, December 18). Natural Patterns of Sleep. Retrieved July 28, 2020, from <http://healthysleep.med.harvard.edu/healthy/science/what/sleep-patterns-rem-nrem>
23. Schönauer, M., & Pöhlchen, D. (2018). Sleep spindles. Current biology : CB, 28(19), R1129–R1130. <https://doi.org/10.1016/j.cub.2018.07.035>
24. Cai, D. J., Mednick, S. A., Harrison, E. M., Kanady, J. C., & Mednick, S. C. (2009). REM, not incubation, improves creativity by priming associative networks. Proceedings of the National



KNOW Homoeopathy Journal

Bi-Annual, IDouble Blind, Peer-Reviewed, Research Scholarly Online Journal in Field of Homoeopathy

Academy of Sciences of the United States of America, 106(25), 10130–10134. <https://doi.org/10.1073/pnas.0900271106>

25. Maquet P. (2000). Sleep on it!. Nature neuroscience, 3(12), 1235–1236. <https://doi.org/10.1038/81750>

26. Crosby, B., LeBourgeois, M. K., & Harsh, J. (2005). Racial differences in reported napping and nocturnal sleep in 2- to 8-year-old children. Pediatrics, 115(1 Suppl), 225–232. <https://pubmed.ncbi.nlm.nih.gov/15866856/>

27. <https://www.psychologytoday.com/us/blog/prescriptions-life/201804/6-ways-night-time-phone-use-destroys-your-sleep>.

28. Lepp A, Barkley JE, Sanders GJ, Rebold M, Gates P. The relationship between cell phone use, physical and sedentary activity, and cardiorespiratory fitness in a sample of US college students. Int J Behav Nutr Phys Act. 2013;10:79. 6. Smaldone A, Honig J

29. Cain N, Gradisar M. Electronic media use and sleep in school-aged children and adolescents: a review. Sleep Med. 2010;11:735-742.

30.. Munezawa T, Kaneita Y, Osaki Y, et al. The association between use of mobile phones after lights out and sleep disturbances among Japanese adolescents: a nationwide cross-sectional survey. Sleep. 2011;34:1013-1020.

31. Cajochen C, Frey S, Anders D, et al. Evening exposure to a light-emitting diodes (LED)-backlit computer screen affects circadian physiology and cognitive performance. J Appl Physiol (1985). 2011;110:1432-1438.

62 | Page © 2022 | KNOW Homoeopathy Journal | www.knowhomoeopathyjournal.com

Indexed In



ADVANCED SCIENCE INDEX



CiteFactor
Academic Scientific Journals



INTERNATIONAL
STANDARD
SERIAL
NUMBER
INDIA



INTERNATIONAL INSTITUTE OF ORGANIZED RESEARCH (I2OR)

A REGISTERED MSME WITH MINISTRY OF MSME, GOVERNMENT OF INDIA (UDYAM-PB-20-0002405)



ROOTINDEXING
JOURNAL ABSTRACTING AND INDEXING SERVICE

TOGETHER WE REACH THE GOAL



KNOW Homoeopathy Journal

Bi-Annual, IDouble Blind, Peer-Reviewed, Research Scholarly Online Journal in Field of Homoeopathy

32. Byars KC, Yolton K, Rausch J, Lanphear B, Beeb
33. Owens JA; Adolescent Sleep Working Group; Committee on Adolescence. Insufficient sleep in adolescents and young adults: an update on causes and consequences. *Pediatrics*. 2014;134:e921-e932.
- 34.. Beebe DW. Cognitive, behavioral, and functional consequences of inadequate sleep in children and adolescents. *Pediatr Clin North Am*. 2011; 58:649-665.
- 35.. Gregory AM, Sadeh A. Sleep, emotional, and behavioral difficulties in children and adolescents. *Sleep Med Rev*. 2012; 16:129-136.
- 36.. Sung V, Hiscock H, Sciberras E, Efron D. Sleep problems in children with attention-deficit/hyperactivity disorder: prevalence and the effect on the child and family. *Arch Pediatr Adolesc Med*. 2008;162:336-342.
37. Christakis DA, Zimmerman FJ, DiGiuseppe DL, McCarty CA. Early television exposure and subsequent attentional problems in children. *Pediatrics*. 2004;113:708-713.
38. Zheng F, Gao P, He M, et al. Association between mobile



ADVANCED SCIENCE INDEX



CiteFactor
Academic Scientific Journals



INTERNATIONAL
STANDARD
SERIAL
NUMBER
INDIA



INTERNATIONAL INSTITUTE OF ORGANIZED RESEARCH (I2OR)

A REGISTERED MSME WITH MINISTRY OF MSME, GOVERNMENT OF INDIA (UDYAM-PB-20-0002405)



Directory
of Research
Journals
Indexing



Academic
Resource
Index
ResearchBib



TOGETHER WE REACH THE GOAL

ROOTINDEXING
JOURNAL ABSTRACTING AND INDEXING SERVICE