BI-ANNUAL NEWSLETTER
INDIAN SOCIETY FOR CHRONOBIOLOGY

Issue: January 2023

Samay

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Office bearers

INSIDE...

For July 2023 issue, send your entries to

Dr. Aakansha Sharma
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From President's Desk

Dear Colleagues

I greet you and your family during the holiday season and sincerely wish you the best of health, joy, happiness and incremental progress during the new year 2023.

I also hope that the year 2022 has been as good as possible under the prevailing circumstances.

During the past months, we have gotten back very close to our normal schedules. But, the news in very recent weeks coming from several parts of the world probably warns us against any complacency; we need to continue with all the protective measures that are required to keep us safe. I am sure that with collective effort and wisdom, we shall quickly get back to the normal life. And, hopefully, the experience of all these months will have a long-term impact on our lifestyle and, in particular, the timing our daily activity schedules.

I have some good news to share since the last 'Samay' went out in July 2022. We have been successful in re-initiating the capacity building program in Chronobiology. In collaboration with the Indian Society of Chronomedicine, the Indian Society for Chronobiology (InSC) organized a school in Chronobiology and Chronomedicine from 8th to 15th of January 2023 at King George Medical University, Lucknow. Subsequently, the InSC has scheduled its Biennial meeting and National Symposium in Aizawl, Mizoram during March 2-4, 2023. I am also pleased to announce that the first InSC School in Chronobiology will be held during May 20-28 in Shillong, Meghalaya; the formal announcement will reach you later this month.

I look forward to hearing from you about activities that you are current involved in, or you are planning to do in the next six months. The InSC will support you in all possible ways in conducting an activity that comes under its mandate.

Very best wishes to all of you.

Vinod Kumar
President, InSC

Editor's note

Happy New Year 2023

The editorial board of "SAMAY - The biannual newsletter of Indian Society for Chronobiology" wishes all its readers a very happy new year. We hope that this year brings best health and new opportunities for all of us and our endeavors culminate into favorable outcomes.

We are delighted to bring you this issue where we have included articles related to the role of Chronobiology for maintaining healthy habits and well being; a note of awareness on Obstructive sleep apnea and on depression; how a day off can help improve the health; and the effects of technology on the human lifestyle. We have also included a special coverage on the First Indian School in Chronobiology and Chronomedicine- 2023.

It is a happy moment for all of us to mention that our members are staying focused to drive the organization to new heights, much of which are reflected in events organized and upcoming events planned by the Indian Society for Chronobiology.

The editorial board in indebted to all the authors who contributed to the present issue and helped us fulfill the deadline. We extend our thanks for the prompt replies of the contributors to our requests.

Finally, do not forget to drop us a line (at inscdu@gmail.com) with your suggestions on topics you'd like to see us cover or things that you like or do not like about what we are doing. We look forward for your feedbacks and suggestions.

Dr. Bhanu P. Singh
(Editor in chief)

Dr. Namram Singh

Dr. Aakansha Sharma

Healthy sleep habits and mental well-being in modern lifestyle

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Upcoming research has shown looked into the relationship between cell phone use and well-being from a mental or social perspective. Technological addiction in present day refers to the phenomena of pre-occupation or addiction to computers, video games, internet access, or even excessive smartphone use. Today's leading causes of this addiction include rapidly evolving media, the internet, and smartphones. Several studies have demonstrated the connection between smartphone addiction and poor mental health, stressed relationships, and daily stress (for example, see Kwon et al, 2013).

An adequate amount of sleep is associated with good sleep hygiene, which is then related to total sleep quality. Poor sleep habits are a result of a lack of awareness about healthy sleep hygiene. Today's smartphones offer quick access to information, social connectivity, and business apps and are comparable to a standard computer. Minors are very receptive to new media, including smartphones and other technological devices (Suen et al, 2010).

Getting a proper amount of sleep is as important as getting a proper amount of food (Ferrara and Gennaro, 2001). According to some reports, even a slight drop in sleep duration can result in symptoms like headache, confusion, daytime drowsiness, weight loss or gain, fatigue, and weight gain. Lack of sleep also has an impact on the body's systems, including the central nervous system, which results in fatigue, impaired focus, and difficulty learning new things. All of this harms the individual's mental and emotional well-being. Lack of sleep can lead to circadian phase misalignment, which can lead to lower performance and alertness, longer reaction times, and a higher likelihood of performance slip-ups.

It was investigated and discovered that lack of sleep had an impact on medical students' academic performance and health (Nag et al, 2021). Multiple negative impacts on a person's behavior and mental health can result from smartphone addiction. It can result in accidents, pain in the wrists and neck, behavioral issues, and depression. Additionally, this addiction can impair performance at work or school, lessen social connections, lead to carelessness in personal activities, and constitute a significant environmental factor impairing sleep quality. Good sleep hygiene has been linked to improved physical, cognitive, and psychological health in adults, adolescents, and children. Since it's already established that poor sleep quality raises the risk of both physical and mental illnesses, adequate sleep is a vital component of student life (Nowreen and Ahad, 2018).

In conclusion, it is very important for people of all ages to get enough sleep. Achieving appropriate sleep hygiene is important for both physical and mental wellness and can have an impact on one's overall quality of life. By implementing effective sleep hygiene guidelines, one's sleep quality will also improve. We must also discuss methods for achieving sound sleep. By making a few little lifestyle adjustments, we can protect ourselves from a wide range of negative health effects. These small changes can be like avoiding the usage of electronic devices before bedtime, and avoiding calorie-rich food before bedtime as high-calorie intake will hinder sleep. Tea, coffee, alcohol, and energy drinks should not be consumed right before bed because they contain stimulants that will reduce the quality of your night sleep. To get a decent night's sleep, one should also reduce their late-night outdoor activities.

The most crucial habit that might alter sleep quality in a short amount of time is activity level, namely physical activity. The more physically active we are during the day, the better our nighttime sleep will be. The symptoms of stress, anxiety, sadness, decreased cognition, low self-esteem, and other conditions can be avoided if we can maintain these routines. These symptoms are associated with several serious health issues, including heart conditions, weight gain, and hormone changes. Thus, we must adopt good habits to avoid such symptoms and conditions for leading a better and healthy life.

Sleep deprivation may lead to obesity in young population

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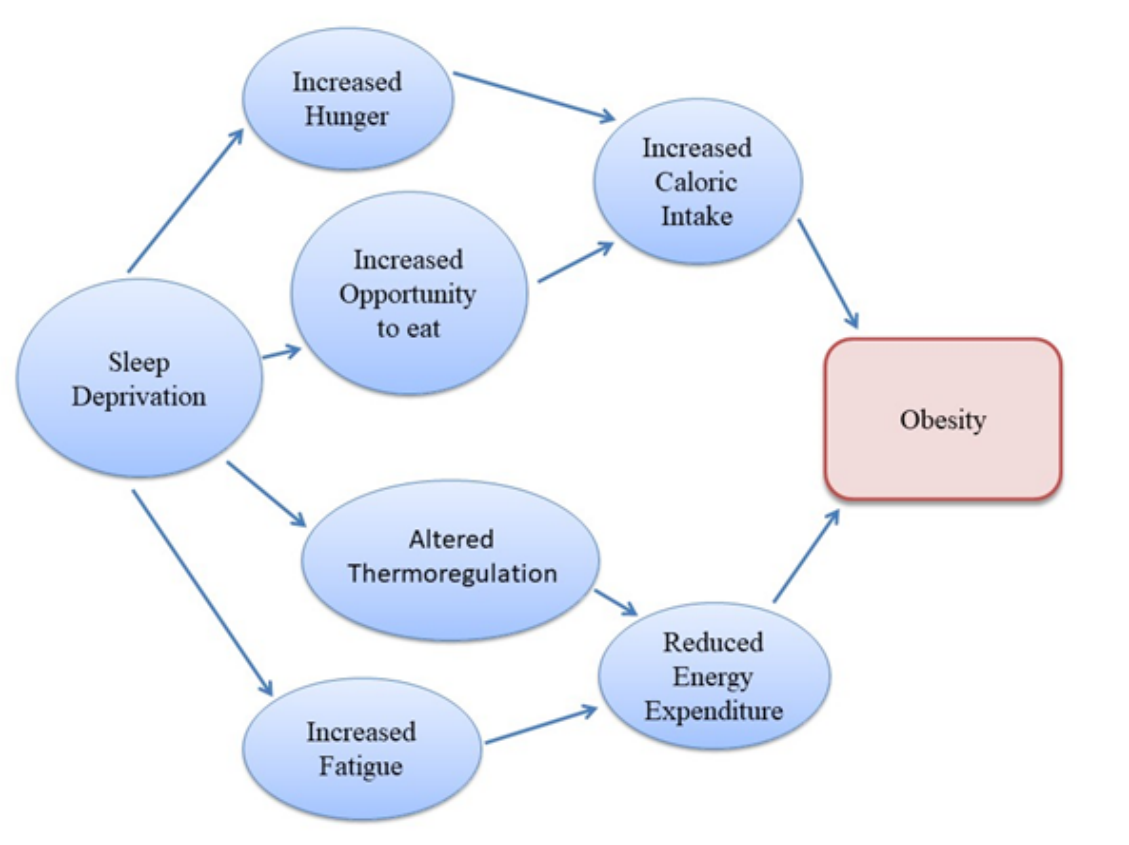
Lifestyle changes over the last few decades have resulted in irregularities in sleep and meal timings. Sleep, feeding pattern and feeding habits are closely associated with each other. This article uncovers the connections between obesity and sleep, putting out what is known about the relationships between sleep characteristics and obesity factors in young people. Sleep duration is less than optimal in teenagers and decreases with age. This is harmful to overall health and is linked to obesity in children, adolescents, and young adults. Evidence suggests that poor sleep quality and altered circadian timing characterized by a preferred later sleep onset, known as “adolescent chronotype", contributes to shortened sleep duration and obesity. The mismatch between calories burnt and calories consumed leads to obesity. With changing food habits in recent decades, energy-dense meals that are heavy in fat and free sugars have become more popular. According to the World Health Organization (WHO), over 4 million people die each year as a result of being overweight or obese in 2017 according to the global burden of disease. Rates of overweight and obesity continue to grow in adults and children. From 1975 to 2016, the prevalence of overweight or obese children and adolescents aged 5–19 years increased more than four-fold from 4% to 18% globally. Poor sleep and late sleep promote the tendency to eat more junk food or eat at odd times, such as snacking late at night, leading to weight gain and other health problems. Junk food, unhealthy eating habits and odd eating times cause sleep disturbances. This inter-relationship of sleep and food preferences is important as it can have important treatment implications for health disorders arising due to these modifiable behavioral factors. Circadian alignment, improvements in sleep timing, and healthy eating habits have positive effects on other health behaviors as well and recommend raise more attention and awareness towards improving feeding habits and conducting more studies to assess all predisposing factors in the growing population.



Awareness of Obstructive sleep apnea (OSA): need of the hour

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Obstructive Sleep Apnea (OSA) is a common sleep related breathing disorder in which the breathing is ceased or reduced for some seconds during sleep. This happens because the airway gets narrowed, causing problem in free passage of air while sleeping. OSA in medical terms is defined as the condition of having sleep Apnea/Hypopnea Index (AHI) greater than 5. The symptoms of OSA include loud snoring and/or having fragmented sleep along with excessive day time sleepiness or lack of concentration. There are two types of sleep: Rapid eye movement (REM) sleep and non-REM sleep; later one has three different stages i.e., N1, N2, N3. Each stage is linked with different brain wave and neuronal activity. Our sleep cycle comprises of REM and non-REM stages, approximately of 90-100 minutes, repeating several times in night.

In OSA due to fragmented sleep and snoring, the person does not get enough sleep in N3 stage which is the stage of deep sleep. Disturbed sleep is associated with depression, lack of enthusiasm and day time sleepiness. According to Tregear et al., 2009 people suffering from OSA are at higher risk of vehicle accidents. OSA is also associated with increased blood pressure, heart diseases and diabetes. The risk factors increase in obese people; as fat gets deposited in their neck region leading to narrower airway. Old age individuals are more prone to OSA as their muscles in the back of throat loose strength and obstruct normal breathing in supine position. In fact, males are more susceptible to OSA since they have more chances of fat deposition in the upper body parts such as neck and trunk as compared to the lower body parts.

Several questionnaires are used to assess the risk of OSA, of which STOP-Bang and Berlin are frequently used along with ESS and PSQI by doctors to assess the sleep quality along with the risk of OSA. If questionnaire show high risk, then an overnight sleep test is done in laboratory or home known as polysomnography which is considered as gold standard test for OSA. Severe obstructive sleep apnea has been associated with a 1.9-times increased risk in all-cause mortality and 2.65-times increased risk of cardiovascular mortality (Ge et al., 2013). According to Benjafield et al., (2019) about 1 billion people around the world are affected by OSA and in some countries the prevalence is greater than 50 %. India is ranked 4 in the global survey of OSA.

An estimation by using STOP-Bang questionnaire was reported by Pattanaik et al., (2018) wherein in India the prevalence of OSA was 13.7 %, and surprisingly 21.7% lie in 50-59 years age group. According to a survey conducted by Sia et al., (2017) in Singapore, it was found that only 21.7% of general population is aware of OSA and only 11.5% know the health consequences of OSA.

Therefore, considering the risk factors of OSA it is the need of the hour to be aware of our Basal Metabolic Index and sleep wake cycle in order to lead a healthy life.

Requirement of a "Day-off" for Health

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It is interesting to note that in general the rest in animals is in their default setting and almost 1/3 of the day is given for rest. It is important to note that all the animals have activity and rest. But it is equally interesting to see that the component of rest is more as the default setting. And this cyclicity in activity rest and sleep-wake is dependent on the circadian and homeostatic drive, as per the two-process model of sleep. Urbanization and industrialization have made society 24*7 and some of the key positions as defending the department, and police personnel, are under the constant stress of not taking rest, and as per the law of summation the rest deficit keeps on adding leaving a physiological and psychological aberrant in society. Such demanding services are related to security (defense, police) and healthcare (doctor and hospital staff).

Long work hours disturb the circadian rhythm which negatively affects biological activities such as sleeping and feeding patterns, core body temperature rhythm, brain wave activity, hormone production, and other related activities in human beings (Bjorvatn and Pallesen, 2009; Hublin et al., 2010; Gumenyuk et al., 2012).

In the long term, day-to-day incomplete recovery creates a major risk for serious health impairment (Van Hooff et al., 2005). The negative effect of job stressors on the health and well-being of employees has been well established. These stressors may directly stimulate adverse physiological responses such as elevated levels of blood pressure, heart rate, catecholamines, and cortisol and also indirectly favors unhealthy lifestyles such as unhealthy diets, alcohol consumption, smoking, lack of exercise, and sleep disturbances.

Time off for recovery is critically important for the mental and physical fitness of workers. Recovery helps in the process of de-stressing psychologically as well as physiologically. The weekend or dayoff is usually seen as a window of recovery. Thus, there is a possibility that sleep before a day off is 'better' than sleep before a work day, presumably because the weekend is expected to produce less stress and effort. The negative impact of sleep loss and fatigue on neuro-behavioral performance is well documented. During the weekend, most of the workers did not face daily

work demands which help them to recover and rejuvenate. A day off is used as an opportunity to recover from the strain experienced at work. This recovery has a positive effect on the health and performance of the subject at the start of the week.

Despite this, there is very little known about the restorative value of weekends and their effect on job productivity (Eden, 2001). Thus, there is still a need to explore the role of the weekend on health and production value.

A guide to depression in India: It's Type, Symptoms, Statistics, Factors and Prevention

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Depression: The three most common emotional illnesses are anxiety, depression, and bipolar disorder. Only people who have experienced these affective diseases may fully comprehend the suffering caused by their symptoms, which are subjective feelings. The most common cause of disability worldwide, depression is thought to impact 350 million individuals. It impacts not only the depressed individuals but also their families. Many people choose to remain in denial even if there are treatments that are known to be helpful. Suicidal thoughts or attempts may result from severe depression that is not treated.

Types of depression: The most common contrast between depression in those who have or do not have a history of manic episodes is that there are many different types of depressions. The former falls under the category of unipolar depression and only contains serious depression. From mild to severe, it can range. The second form is known as bipolar mood disorders and combines both mania and depression (also known as manic-depressive illness). It is less frequent than serious depression. It is characterized by mood fluctuations that cycle between mania (getting high) and depression (feeling low). There are numerous additional major depression subtypes, some of which are as follows:

- Psychotic Depression: Psychosis may be noticed in conjunction with major depression. People with psychosis may experience hallucinations, hear "voices," or see things that others cannot perceive. They may also hold irrational beliefs or strong false convictions, such as being possessed by evil (delusions).
- Postpartum Depression: The postpartum depression affects almost 15% of women after childbirth. It quickly spreads to additional symptoms such as weeping bouts, low self-esteem, lethargy, and sleeplessness. Other symptoms often include melancholy or anxiety throughout the day that frequently gets worse at night. In India, it affects one in every five new moms.
- Seasonal Affective Disorder: Winter time depression that is caused by seasonal affective disorder typically appears when there is less natural sunlight. In most cases, the depression subsides in the spring and summer. It frequently manifests in temperate regions with symptoms such a hunger for carbohydrates, excessive drowsiness, and overeating.

Symptoms of depression:

- lacking motivation or enjoyment when doing tasks
- feeling despondent
- dealing with irregular sleep cycles
- bad eating practices
- low energy levels low self-esteem
- having difficulties focusing
- being restless,
- having suicidal thoughts
- inconsistent mood swings
- social exclusion

Statistics on depression: According to the World Health Organization, depression affects about 280 million people worldwide, or 3.8% of the population. It affects people of all ages. According to the World Bank, this means that in the following ten years, depression is predicted to be the ailment that burdens countries the most. All age

groups, including children and teenagers, are susceptible to depression, a prevalent mental illness. In children and adolescents, depression is frequently linked to substantial disability.
The prevalence of depressive and/or affective disorders ranges from 1.2% to 21% in studies conducted in clinics, from 3% to 68% in studies conducted in schools, and from 0.1% to 6.94% in studies conducted in the population. Only one incidence research from India has been published, and it put the incidence at 1.6%. A research states that there will be 56,675,969 cases of depression in India in 2022, with a prevalence rate of 4.50%.

Furthermore, one in seven youngsters in the age range of 15 to 24 years old reports feeling depressed or lacking in interest in activities, according to UNICEF statistics that cautioned that the epidemic could negatively affect children's and youth's mental health and well-being for years. The largest prevalence of depressive illnesses appears to be in Tamil Nadu, Kerala, Goa, Telangana, Andhra Pradesh, and Odisha, all of which are located in India. Given these rising numbers, it is critical to eradicate depression in our nation in order to improve the quality of life for everybody.

Factors contributing to depression: Age, sex, educational background, school type, academic performance, household size, birth rank, parental education, residency status, history of mental disorders in parents, and family structure are just a few of the variables that can cause depression. In this regard, poor mental and educational performance, a weakening of role play, an increase in parental paradox, and suicidal thoughts or attempts are the results of depression.

Points to reduce depression:

- Learn effective stress management techniques to boost your self-esteem.
- Look after your physical, mental, and emotional well-being. This include obtaining sufficient rest, eating healthfully, and exercising frequently.
- When times are tough, reach out to family, friends, and other loved ones.
- Have routine physicals and visit your provider if anything doesn't feel right.
- If you believe you are depressed, seek the appropriate assistance. Waiting can make things worse.

Technological advancement and its impact on human lifestyle during Covid-19

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Social networking is a widespread and convenient way to stay connected and in today's world it is difficult to imagine a life without the presence of multi-purpose electronic devices at our service. But the endless use of these devices negatively influences people's mental health, creating continuous behaviour changes such as anxiety, sadness, sleep issues, and others. Smartphones are portable devices with real-time Internet access and direct communication capabilities. Lee et al., (2014) stated that addictions to behaviour, including smartphone addiction, are difficult to identify since they are linked to both bodily and social and psychological vari-

-ables. Excessive smartphone use might result in physical health issues such as impaired eyesight and wrist or neck pain. Smartphone addiction can result in maladaptive behavioral difficulties, decreased real-life social engagement, and relational problems, but during the period of COVID- 19 such a significant peak in the use of smartphones was measured. Covid-19 first appeared in Wuhan city (China) in late December 2019 and spread to nearly every other country within a few months. According to the World Health Organization, since the COVID-19 pandemic emerged, (and as of 18 June 2021, 09:01pm (GMT+5.30),

worldwide 177,108, 695 individuals have been infected and approximately 3,84,0223 individuals have died (World Health Organization 2021). COVID-19 did spread very rapidly in terms of contagiousness and has a relatively high mortality rate. Some precautions essentially aim to prevent individuals from coming together through means including spatial distancing, self-quarantining, and self-isolating. On 20 June 2021, 298,81,965 individuals had been reported as being infected with COVID-19 in India, and 38,6713 individuals lost their lives due to COVID-19 (Ministry of Health and Family Welfare, India, 2021). Need of a smartphone/laptop everywhere but some scientific studies provide us with a clear picture of how badly this smartphone addiction is harming our biological clock. Because of the COVID-19 epidemic, several nations have implemented a lockdown, which lowers sunlight exposure and modifies daily social patterns. Since these are the primary biological rhythm entrainers, the lockdown may have affected sleep and circadian rhythms and also resulted in the shifting of chronotype. Chronotype is the preferred sleep-wake schedule of an individual and is associated with the temporal patterning of psychological, behavioral, and biological variables, e.g., mental and physical activities, sleep times, waking times, usual meal times, mood, and alertness.

Chronotype reflects a somewhat stable personality trait when considering a classification through individuals' morning- and evening types. Being an intermediate type is the most common classification (60–70% of individuals). People differ in how much they are typically morning or evening types. Morning types (“larks”) rise early in the morning and go early to bed. Evening-types (“owls”) sleep until later, staying up until later hours. Chronotype also relates to personality traits. For instance, morning types are more conscientious and agreeable, have higher scores in persistence and self-directedness, are more satisfied with their lives compared to evening types. Negative emotions, such as boredom and loneliness, due to COVID-19 isolation may have substantially increased during COVID-19 and may be important psychological factors of depression. During the pandemic, the physical and psychological domains of the World Health Organization Quality of Life Questionnaire worsened but the environmental domain improved as compared with the study before the pandemic is measured.

Spotlight: Indian School in Chronobiology and Chronomedicine 2023

Time, Medicine & Human Health

SCHOOL IN CHRONOBIOLOGY AND CHRONOMEDICINE
Time, Medicine and Human Health
2023

January 8-15, 2023

An initiative

The Indian Society for Chronobiology and Indian Society of Chronomedicine came together to organize the First Indian School in Chronobiology and Chronomedicine from Jan 8-15, 2023. The theme for this School was "Time, Medicine and Human Health.
This event was organized at King George's Medical University, Lucknow and was marked by the gracious presence of several Internationally recognized faculties.

Group Photograph of Faculties, Mentors and Participants at Indian School in Chronobiology and Chronomedicine 2023

About the School

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The first School in Chronobiology and Chronomedicine- 2023 was a joint venture of Indian Society of Chronomedicine and Indian Society for Chronobiology. The purpose of this school was to bring together a few pioneers from the field to share their experiences, vision and the latest discoveries in the area of Chronobiology with the selected excellent students and faculties from India.

The application procedure was started in October 2022. The activity received an overwhelming response with applicants from all over the country. The applications were screened based on statements of purpose and recommendations and a total of 30 participants were selected for the School activity.

The school was joined by Prof. Vinod Kumar (University of Delhi, Delhi), Dr. Sheeba Vasu (Jawaharlal Nehru Center for Advanced Scientific Research, Bengaluru), Prof. Mewa Singh (University of Mysore, Mysore), Prof. Greg Murray (Swinburne University of Technology, Melbourne, Australia), Prof. Shantha W. Rajaratnam (Monash University, Clayton, Australia), Prof. Sean Drummond (Monash University, Clayton), Dr. Sridhar Vasudevan (University of Oxford, Oxford, UK), Dr. Sandipan Ray (IIT-Hyderabad, Telangana), and Prof. Narsingh Verma (King George's Medical University, Lucknow) as faculties and Prof. Sanjay Kumar Bhardwaj (CCS University, Meerut), Prof. Shalie Malik (University of Lucknow, Lucknow), Dr. Amit Kr. Trivedi (Mizoram University, Mizoram), Dr. Gaurav Majumdar (Central University of Allahabad, Prayagraj, UP), Dr. Shipra Bhardwaj (King George's Medical University, Lucknow) and Dr. Aakansha Sharma (University of Lucknow, Lucknow) as mentors.

We also had online lectures by Prof. Till Roenneberg (Ludwig-Maximilian University, Munich, Germany), Prof. Elizabeth Klermann (Massachusetts General Hospital and Harvard Medical School, Boston, USA), Prof. Eric Herzog (Washington University, St. Louis, USA), Prof. John B Hogenesch (Cincinnati Children's Hospital Medical Centre, Ohio, USA), and Prof. Garret FitzGerald (University of Pennsylvania, Philadelphia, USA).

The activity ran for seven days with lectures covering topic such as basics of Chronobiology, genetic basic of circadian clock, Chronobiology and mood disorders, Melatonin for treatment of circadian rhythms, new approaches to improve health safety and productivity for shift workers, Cognitive behavioral therapy for Insomnia, development of adenosine receptor modulators as a treatment of disorders of circadian entrainment and impacts of blood pressure variability on health. Prof. Mewa Singh gave a public lecture on "Emergence of new and novel foraging skills in monkeys".

The event was a great success and we received a positive feedback from all the participants.

Glimpses from the School

Upcoming Events

National Symposium on Chronobiology: Biological timing and health Challenges

March 2nd-4th, 2023
Department of Zoology, Mizoram University , Aizawl, Mizoram

For details, follow the link
https://chronobiologyindia.org

InSC School in Chronobiology

May 20-28, 2023
North Eastern Hill University, Shillong

Official announcement to be released soon on:
https://chronobiologyindia.org

13th Annual Center for Circadian Biology Symposium

April 11-13, 2023
UC San Diego

For details, follow the link
https://ccb.ucsd.edu/activities-and-events/ccb-symposium.html

Chronobiology Gordon Research Conference

Theme: Clocks Across the Phylogenetic Tree, from Single Cell to Humans

June 18 - 23, 2023
2 Andrews Road
Lewiston, ME, United States

For details, follow the link:
https://www.grc.org/chronobiology-conference/2023/

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