

Biological rhythms and its disorders

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OPINION

Biological rhythms are the natural cycle of chemical or function changes in our bodies. It's like a master clock within your head that keeps track of all the other clocks in your body. The clock is found in the brain, just above the nerves that cross the eyes. It is made up of thousands of nerve cells that work together to keep your body's processes and activities in sync.

There are four biological rhythms to be aware of:

- Circadian rhythms: A 24-hour cycle that encompasses neurobiological rhythms such as sleep
- Diurnal rhythms: A circadian rhythm that is timed to the day and night
- Ultradian rhythms: Biological rhythms that have a shorter duration and a greater frequency than circadian rhythms
- Infradian rhythms: Biological rhythms lasting longer than 24 hours, such as the menstrual cycle

During night shift employment, some of the world's most catastrophic human blunders have occurred. The Chernobyl tragedy and the Three Mile Island accident are two examples. Furthermore, the majority of single-driver incidents occur in the early hours of the morning. Our bodies are designed to sleep at night, both in terms of the brain and the body. This is why, unlike nocturnal animals, we lack adaptations like as night vision and heightened senses of smell and hearing. Biological rhythm abnormalities are treated in a variety of ways, depending on the underlying cause. Jet lag, for example, is usually very brief and does not require medical attention. Lifestyle adjustments may be beneficial in cases of shift work disorder or mood issues. More serious symptoms, such as weariness, diminished mental sharpness, or depression, should be discussed with your doctor. Your doctor will be able to prescribe the best treatment for you as well as make lifestyle recommendations. A light box can benefit persons with Seasonal Affective Disorder (SAD). These light boxes can cause the release of feel-good hormones by simulating daylight. These substances help the body stay awake. Your doctor may prescribe medication if lifestyle changes and proper sleep hygiene do not help. Modafinil is prescribed for persons who have trouble staying awake during the day. As an alternative, your doctor may prescribe sleep medications. Sleep drugs, on the other hand, should only be used for a brief period of time. Sleeping medications can lead to addiction as well as sleep driving.

To combat changes in biological rhythms, you can take the following steps at home:

- Avoid using sleep-inducing substances just before bedtime. Caffeine, alcohol, and nicotine are examples of these substances
- Drink cold beverages such as iced tea or water
- Try to stick to a regular sleep routine as much as possible

- Go for a vigorous walk outside during the day
- Take a short "power" snooze of 10 to 15 minutes
- During the day, turn on additional lights in your home

Biological rhythms are cyclical variations in physiological and behavioural activities that include the daily sleep and wake cycle, hormone metabolism, feeding patterns, and social engagement, as well as the ultra-radian and seasonal rhythms. Disturbances in biological cycles caused by lifestyle predispose people to a variety of mental illnesses, including unipolar and bipolar disorders. Bipolar Disorders are a prevalent, disabling mental disorder that causes significant morbidity and mortality, as well as an elevated risk of suicide in those who suffer from it. The patient must have severe oscillations between high and low emotions, which are referred to as hypomanic and depressed episodes, respectively, to be diagnosed with Bipolar Disorder. Based on the duration and intensity of the episodes of high and low moods, it can be divided into Bipolar Disorder type I, Bipolar Disorder type II, and subthreshold Bipolar Disorder subtypes. While type I and type II Bipolar Disorder have the same biological underpinnings, they are characterised by the presence of a mania or hypomania episode, according to the Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition (DSM-IV). Total lifetime (and 12-month) prevalence estimates for Bipolar Disorder type I, Bipolar Disorder type II, and subthreshold Bipolar Disorder subtypes are 2.4% (1.5%). The lifetime prevalence of bipolar spectrum disorders was estimated to be 1.02% in a research involving 67373 people with Bipolar Disorder from 44 countries done between 1980 and 2012. The cause is unknown however it could be due to a hereditary predisposition or social and psychological factors. Biological rhythm disruption has been linked to the beginning, progression, prognosis, and relapse of Bipolar Disorder in several investigations. Evidence suggests that Bipolar Disorder may be caused in part by a failure of the biological rhythm system, tying the disease to an irregular internal clock. The disruption of biological rhythms is a key clinical characteristic of bipolar disorder that contributes to the beginning of the illness. Biological rhythm problems have long been associated with mood disorders, according to psychiatrists. The current surge in circadian biology has revealed the molecular foundation of 24-hour rhythmicity, as well as the significance of zeitgebers (synchronisers). The first successful chrono-biological treatment in psychiatry was based on the regulation of animal behaviour by seasonal changes in day length, which led to the use of light as the first successful chrono-biological treatment. Many additional conditions, such as sleep-wake cycle disruptions in Alzheimer's dementia, bulimia, premenstrual disorder, and depression during pregnancy, have shown tremendous potential with light treatment. Melatonin, a pineal hormone with direct sleep-promoting properties, is also a zeitgeber for the human circadian rhythm. Chronobiology has produced both effective non-pharmaceutical treatments for mood disorders (such as sleep deprivation or light therapy) and novel drug development methodologies (e.g. agomelatine).

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