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A possible link between circadian rhythm disorders and mood disorders

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Circadian rhythm disorders are problems with your circadian rhythm, the "internal body clock" that keeps your biological processes in step. This cycle lasts about 24 hours. The term circadian comes from Latin words that mean “around the day.” Patterns of brain waves, hormone production, cell regrowth, and other activities are linked to this cycle. Your circadian rhythm plays a key role in things like when you sleep and when you wake. Your normal circadian clock is set by the cycle of light and dark over 24 hours. People with circadian rhythm disorders may have problems: Falling asleep, Staying asleep, Waking up too early and not being able to go back to sleep, Getting sleep but not feeling refreshed by it. Things that can cause circadian rhythm disorders include Shift work, Pregnancy, Time zone changes, Medications, Changes in routine, such as staying up late or sleeping in, Medical problems including Alzheimer's or Parkinson's disease, Mental health problems, Menopause. Various Circadian Rhythm Disorders include Jet lag, or rapid time zone change syndrome: This involves symptoms like too much sleepiness and a lack of daytime alertness in people who travel across time zones. It gets worse with each time zone crossed, especially when traveling toward the east. Shift work sleep disorder: This sleep disorder affects people who frequently rotate shifts or work at night. A conflict between someone’s circadian rhythm and the time of their shift can mean they get up to 4 hours less sleep than the average person. Delayed sleep phase syndrome (DSPS): This is a disorder of sleep timing. People with DSPS tend to fall asleep very late at night and have a hard time waking up in time for work, school, or social activities. It’s especially common in teens and young adults. Advanced sleep phase syndrome (ASPS): This is a disorder in which a person goes to sleep earlier and wakes earlier than they wanted. For example, they might fall asleep between 6 and 9 p.m. and wake up between 1 and 5 a.m. Non-24-hour sleep-wake disorder: This disorder often affects people who are blind because the circadian clock is set by the light-dark cycle. With this condition, that cycle is disturbed. It can cause a serious lack of sleep time and quality at night and sleepiness during daylight hours. Irregular sleep-wake rhythm disorder: With this disorder, people’s circadian rhythms are jumbled. They may sleep in a series of naps over 24 hours. Seasonal affective disorder and all the circadian rhythm disorders are related to a discrepancy between the duration of the solar day and the circadian cycle. The circadian cycle of humans and other mammals is close to one hour longer than the 24 hours period from sunrise to sunrise. Interestingly, birds show a circadian cycle of less than 24 hours and close to 23 hours. Terrestrial invertebrates, the insects provide the key to understanding this discrepancy. The earliest identifiably mammalian fossils are from the Permian era strata. Insect orders that first appeared in the Permian era include the Hemiptera (bugs), Orthoptera (crickets and grasshoppers), Coleoptera (beetles) and the Neuroptera (lacewings). All of whose modern survivors show a circadian cycle longer than 24 hours in at least some stage of the life cycle. The insects whose ancestors first appeared in Mesozoic strata with the birds include Hymenoptera (bees, wasps and ants) and Lepidoptera (butterflies and moths). Their modern survivors, like the birds, demonstrate a circadian rhythm shorter than 24 hours. It is proposed here that the duration of these animal classes circadian day may reflect the duration of the solar day at the time of their origin. There is now evidence for three large meteorite impacts on Pangea near the end of the Permian era, one in Wilkes Land of Antarctica, one near the Falkland Islands, and one just west of Australia. The eastward movement of the Australian, African, and Eurasian continent/plate and the southeastward movement of the Antarctic continents/plates suggest that those meteorites were moving eastwards and struck the planet obliquely. Having done so, they might have imparted momentum to the planet’s rotation and so accelerated it. This may mean that circadian rhythm disorders are the consequence of a change in the duration of the solar day due to a disaster and that daytime lethargy and depression may have had adaptive value to the mammals who survived that disaster. If this is true, it adds context to our treatment of these disorders with bright light and melatonin.

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