



Received: 15 May, 2023  
Accepted: 31 May, 2023  
Published: 01 June, 2023

\*Corresponding author: Michel Bourin, Neurobiology of Anxiety and Depression, University of Nantes, 98, rue Joseph Blanchart, 44100 Nantes, France, E-mail: [michel.bourin@univ-nantes.fr](mailto:michel.bourin@univ-nantes.fr)

**Keywords:** Bipolar disorder; Insomnia; Mania; Sleep disorders

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## Short Communication

# Sleep and bipolar disorder

Michel Bourin\*

Neurobiology of Anxiety and Depression, University of Nantes, 98, rue Joseph Blanchart, 44100 Nantes, France

## Abstract

A growing international scientific literature demonstrates the existence of sleep abnormalities and sleep/wake (or circadian) rhythms in bipolar disorder. These abnormalities exist during the acute phases of the disease, with the classic presentation of insomnia or hypersomnia during depressive episodes and a reduced need for sleep without feeling tired during manic episodes. But these disturbances can also appear or persist during phases of mood stability. However, it has now been clearly demonstrated that these disturbances can precipitate a new depressive or manic episode.

## Introduction

Bipolar Disorder (BD), which is a frequent and severe disease, presents a set of sleep and circadian rhythm abnormalities both during the acute phases of the disease (mood episodes) and also during the remission phases. (Called euthymic).

Sleep is a state in which we spend about a third of our lives. It is part of the vital functions of the body such as respiration, digestion, and immunity. Sleep is a spontaneous and reversible behavior, characterized by recurring periods [1]:

- decrease in motor activity.
- increase in sensory response thresholds.
- facilitating memorization.
- discontinuity of mental activity.

At the level of the brain, during deep slow sleep. It is the moment when one is deeply asleep, the breathing and the heart have a regular rhythm and the body does not move. This is a phase when it is difficult to wake up and the brain becomes more and more insensitive to external stimuli (noise, light,

etc.) Activity slows down more and more as sleep deepens and the sleeper passes from stage 1 to slow-wave sleep stage 3. At the level of the rest of the organism, it is the same with a progressive decrease of the main basic functions of the organism. Indeed, the pulse and breathing slow down, and the blood pressure, muscle tone, and body temperature drop. Polysomnography is the medical examination that monitors sleep and its evolution throughout the night.

REM sleep is a state in which the sleeper is difficult to wake up, his muscle tone is abolished, while his brain is as active as in stage 1. REM sleep is also recognized by the presence of bursts of eye movements, called rapid eye movements. The Anglo-Saxons also call REM sleep rapid eye movement sleep (REM or Rapid Eye Movement). Slow-wave sleep is also called non-REM sleep as opposed to REM sleep called REM sleep [2].

## Results

Anxiety, stress, and bipolar disorder are responsible for more than half of insomnia cases. In the anxious, it is most often difficult to fall asleep, because the person has trouble relaxing, with many thoughts and concerns that arise at bedtime [3]. In the case of stress, the predominant difficulties affect the second half of the night with the impression of



drowsiness from 4 or 5 am. Depression is mainly manifested by early awakenings in the middle and late night.

Insomnia is often the first sign of depression. In the case of Bipolar Disorder (BD), a reduced need for sleep is a classic symptom of mania. During episodes of depression, insomnia or hypersomnia are common. Even in the period between episodes, sleep is disturbed; up to 70% of patients with bipolar disorder experience insomnia, which may be associated with a risk of relapse, due to nocturnal ruminations. Hypersomnia is experienced by about 25% of type I bipolar during the inter-episode period and 40-80% during depressive episodes [4].

Sleep disturbances are characteristic of the entire bipolar spectrum. In fact, total sleep time is the shortest in bipolar unspecified disorder, i.e., cyclothymic, compared to bipolar I and bipolar II disorder, but all three subtypes are equally impaired, that is, i.e., the variability of the total sleep time over a week. In bipolar patients, this variability is about 3 hours [5]. The circadian rhythm is defined by the alternation between the day before; that is to say, the period of the nycthemeron during which one is awake or asleep.

During the inter-episodes of bipolar disorder, the quality of sleep is lower and more variable and there is a variability in the time to fall asleep which seems to be linked to an aggravation of the evolution of the disease. Compared to the inter episodes phase, sleep disturbances intensify just before an episode, worsen during an episode and are not always resolved by medication [6].

### Sleep disturbances contribute to affective dysregulation in bipolar disorder

- Sleep disturbances are a prodrome of relapse;
- Short sleepers (less than 6 hours per night) show more symptoms of mania, depression, anxiety, and irritability. Their quality-of-life scores are worse than those of patients with longer sleep [7].

### Shorter sleep duration is associated with increased mania and depression severity

- Experimentally induced sleep deprivation is associated with the onset of hypomania or mania;
- Sleep has a mood-regulating function and sleep deprivation involves the loss of descending inhibitory control, usually exerted by the prefrontal cortex over the amygdala; circuits involved in emotion regulation and sleep;
- Sleep disturbances are a pathway leading to affective instability and relapse via neural circuits such as serotonin, acetylcholine, norepinephrine, and dopamine.

All of these data highlight the complexity of the multiple sleep disorders characteristic of bipolar disorder (insomnia, hypersomnia, delayed sleep phase, irregular sleep schedule, reduced need for sleep) and the importance of treatment for improving sleep as a way of improving mood [8].

### Sleep disorders contribute to inter-episode functional impairment

Even with good adherence to medications, a high proportion of patients with bipolar disorder remain symptomatic in the inter-episode period. Clinically significant insomnia is one of the most common residual symptoms. Sleeping less than 6 hours per night is associated with greater symptom severity and greater impairment compared to sleeping 6 hours - 8 hours as seen previously. Insomnia itself has a significant psychosocial, professional, health and economic impact [6].

### Discussion

The pharmacological treatment of bipolar disorder is inseparable from the treatment of sleep disturbances. However, it is rarely wise to prescribe hypnotics to a bipolar patient. Indeed, these drugs lead to addiction, leading to an increase in the dosage, and leads to total ineffectiveness of these drugs [9]. On the other hand, there is scientific justification to propose melatonin as an adjunctive treatment to mood stabilizers in the treatment of sleep disorders in BD and thus to possibly prevent relapses when administered during phases of remission [10]. There is a need to treat insomnia, sleep delay latencies, and sleep abnormalities in BD, which are prodromal markers of an emergent mood episode and possible targets to prevent future relapses. Finally, melatonin is well tolerated and has little addictive potential, unlike hypnotics. A small risk, however, is the possibility of inducing a manic episode.

The treatment of bipolar sleep disorders by cognitive-behavioral therapy has been implemented. Evidence documenting the effectiveness of CBT for patients with chronic insomnia (i.e., patients with non-bipolar insomnia) has been summarized in several quantitative and systematic reviews of the literature. These sleep improvements are well maintained for up to two years after stopping treatment. Evidence is accumulating to suggest that insomnia that occurs concurrently with various psychiatric disorders may be improved with CBT [10]. However, in an emergency, a zolpidem-type hypnotic can be prescribed for a short period (less than a week). Sleep is most of the time a "barometer" for the bipolar patient and his doctor. Its variations are a good indicator of the mood level.

### Conclusion

It is often for periods of several weeks that bipolar suffers from regular insomnia. This insomniac state can prove to be very disabling on a daily basis for the patient. We also note that a manic crisis or a depressive state is very often triggered by a lack of sleep in bipolar people [11].

Drowsiness and a non-assiduous rhythm (fixed times) of getting up / going to bed can also be harmful and promote the onset of an insomniac state in bipolar people. Some patients are willing to take hypnotics to regain restful sleep.

When the bipolar is depressed, he may still be tired, but without being able to sleep properly, because all the symptoms of the depressive phase, such as sadness and various negative thoughts, obsess him and "haunt" his mind... find themselves



"alone" in the face of their demons and their troubles, the level of stress, anxiety, is then at its maximum and, sometimes, the bipolar can feel the need to cry thinking about their (unpredictable) future...

During the mania or hypomanic stage, the bipolar does not really feel the need to rest, his rhythm of life is totally out of step with the rest of the world, and he is hyperactive, but it is in this manic state that he accumulates sleep problems and delays; without realizing it [12]. Obviously, this idea of not needing sleep is totally false and distorted by his state of excitement, he would need to sleep more than 3 hours.

According to some research, when the bipolar sufferer enters a stage of insomnia, this announces the coming of a manic phase. If the rest time of a bipolar patient is less than about 8 hours of sleep per night, then his behavior and his mood will also be affected and changed. This is why we like to think and say that a disorder of sleep like insomnia is a primary symptom of bipolarity [13].

Hyper emotivity, very sensitive to the slightest criticism, the patient's mood will be irritable and will remain alert to the slightest event concerning him. His judgment will be very disturbed by his lack of sleep, he will not be able to make serious decisions, he will always have this state of fatigue, the more he will fight and the more he will be tired, even in a slight depressive, fragile state [14].

Finally, the most attractive hypothesis that best explains bipolar disorder is the dopaminergic hypothesis. Low cerebral dopamine concentrations in depression, and high in mania or hypomania, would explain not only the variations in mood but also those in sleep [15].

## References

- Joiner WJ. The Neurobiological Basis of Sleep and Sleep Disorders. Physiology (Bethesda). 2018 Sep 1;33(5):317-327. doi: 10.1152/physiol.00013.2018. PMID: 30109824; PMCID: PMC6230548.
- St Louis EK, Boeve BF. REM Sleep Behavior Disorder: Diagnosis, Clinical Implications, and Future Directions. Mayo Clin Proc. 2017 Nov;92(11):1723-1736. doi: 10.1016/j.mayocp.2017.09.007. Epub 2017 Nov 1. PMID: 29101940; PMCID: PMC6095693.
- Porwal A, Yadav YC, Pathak K, Yadav R. An Update on Assessment, Therapeutic Management, and Patents on Insomnia. Biomed Res Int. 2021 Oct 18;2021:6068952. doi: 10.1155/2021/6068952. PMID: 34708126; PMCID: PMC8545506.
- Harvey AG, Kaplan KA, Soehner AM. Interventions for Sleep Disturbance in Bipolar Disorder. Sleep Med Clin. 2015 Mar;10(1):101-5. doi: 10.1016/j.jsmc.2014.11.005. PMID: 25750600; PMCID: PMC4347516.
- Gold AK, Sylvia LG. The role of sleep in bipolar disorder. Nat Sci Sleep. 2016 Jun 29;8:207-14. doi: 10.2147/NSS.S85754. PMID: 27418862; PMCID: PMC4935164.
- Shamsaei F, Yadollahifar S, Sadeghi A. Relationship between sleep quality and quality of life in patients with bipolar disorder. Sleep Sci. 2020 Jan-Mar;13(1):65-69. Spanish. doi: 10.5935/1984-0063.20190135. PMID: 32670494; PMCID: PMC7347367.
- Roloff T, Haussleiter I, Meister K, Juckel G. Sleep disturbances in the context of neurohormonal dysregulation in patients with bipolar disorder. Int J Bipolar Disord. 2022 Mar 1;10(1):6. doi: 10.1186/s40345-022-00254-8. PMID: 35229223; PMCID: PMC8885957.
- Keskin N, Tamam L, Ozpoyraz N. Assessment of sleep quality in bipolar euthymic patients. Compr Psychiatry. 2018 Jan;80:116-125. doi: 10.1016/j.comppsych.2017.09.012. Epub 2017 Sep 30. PMID: 29091777.
- Creado S, Plante DT. An Update on the Use of Sedative-Hypnotic Medications in Psychiatric Disorders. Curr Psychiatry Rep. 2016 Sep;18(9):78. doi: 10.1007/s11920-016-0717-y. PMID: 27417512; PMCID: PMC4980146.
- Luik AI, van der Zweerde T, van Straten A, Lancee J. Digital Delivery of Cognitive Behavioral Therapy for Insomnia. Curr Psychiatry Rep. 2019 Jun 4;21(7):50. doi: 10.1007/s11920-019-1041-0. PMID: 31161406; PMCID: PMC6546653.
- Baldessarini RJ, Vázquez GH, Tondo L. Bipolar depression: a major unsolved challenge. Int J Bipolar Disord. 2020 Jan 6;8(1):1. doi: 10.1186/s40345-019-0160-1. PMID: 31903509; PMCID: PMC6943098.
- Harvey AG, Talbot LS, Gershon A. Sleep Disturbance in Bipolar Disorder Across the Lifespan. Clin Psychol (New York). 2009 Jun;16(2):256-277. doi: 10.1111/j.1468-2850.2009.01164.x. PMID: 22493520; PMCID: PMC3321357.
- Boland EM, Alloy LB. Sleep disturbance and cognitive deficits in bipolar disorder: toward an integrated examination of disorder maintenance and functional impairment. Clin Psychol Rev. 2013 Feb;33(1):33-44. doi: 10.1016/j.cpr.2012.10.001. Epub 2012 Oct 8. PMID: 23123569; PMCID: PMC3534911.
- Salfi F, Lauriola M, Tempesta D, Calanna P, Socci V, De Gennaro L, Ferrara M. Effects of Total and Partial Sleep Deprivation on Reflection Impulsivity and Risk-Taking in Deliberative Decision-Making. Nat Sci Sleep. 2020 May 27;12:309-324. doi: 10.2147/NSS.S250586. PMID: 32547280; PMCID: PMC7261660.
- Berk M, Dodd S, Kauer-Sant'anna M, Malhi GS, Bourin M, Kapczinski F, Norman T. Dopamine dysregulation syndrome: implications for a dopamine hypothesis of bipolar disorder. Acta Psychiatr Scand Suppl. 2007;(434):41-9. doi: 10.1111/j.1600-0447.2007.01058.x. PMID: 17688462.

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