

Mini Review

Importance of Sleep in Affective Spectrum Disorders

Alvaro Antonio Jerez Magaña*

International Center for Affective Disorders and Addictive Behavior, Guatemala, Guatemala

Abstract

The sleep is an active physiological process essential to preserve the physical and emotional well-being of the individual. People affected by diseases of the affective spectrum usually show significant variations in sleep patterns that negatively impact the evolutionary course of the disease. Adequate sleep control is important to preserve euthymia in this group of patients. In addition, modifications in the requirements of dreams can serve to prevent or avoid a crisis.

Normally we all have different sleep needs, there is an specific amount of sleep hours for everyone; this need usually varies from person to person, according to genetic factors and the age of each one, among many other factors. There are some people who need more sleep, and others who need less sleep. However, regular sleep is essential to maintain mental stability.

Despite the variations in our individual differences, we all need a regular sleep pattern, which allows the brain to recover from everyday demands, cleanse of emotions and restart the day to day. It's in function of this daily pattern that we must assume our sleep needs. The problem of people with affective disorders is that, in them, the sleep pattern is very irregular.

Sleep disturbances are a common feature in affective spectrum disorders, particularly circadian sleep / wake rhythm disturbances [1-4], which persist throughout life in affected people, and can be exacerbated during periods of crisis [5,6], and they are also present in an important way during the intercritical periods.

The quality and quantity of sleep is so important that it's alterations and those of circadian patterns are related to the pathogenesis of bipolar disease where they can act as precipitating factors or precede the onset of affective crises [4,7-12]. Moreover, it has been found that in people at risk of developing bipolar disease less regularity is observed in daily activities, with greater variability in the duration of sleep; which has served to consider it an important predictor of the beginning of an affective episode [6]. On the other hand, the immune function as well as the synthesis and liberation of monoamines are also under circadian control [12] and, they are functionally compromised in people affected by bipolar disease; the factors mentioned have contributed to the conceptualization of bipolar disease as a circadian disorder [13,14].

In clinical practice it is common to see patients who are members of families whose characteristic is to sleep little or sleep a lot, which affects their level of daily activity; In fact, chronotypes of morningness and eveningness have been related to bipolar spectrum disorders [6]. Moreover, the eveningness chronotype is related not only to bipolarity but to more severe forms of the disease [15]. Meanwhile, in the clinic, the most frequent complaint about the quality of sleep is usually conciliation insomnia.

The alterations referring to the need for sleep and its quality during affective crisis have been highlighted by several authors: during the depressive episodes are frequent somnolence and daytime hypersomnia, while in mania or hypomania the decrease in the need for sleep is a hallmark [16], in fact it has been observed that many sleep disturbances are part of the affective prodrome and worsen during the episodes [8].

Kanady et al, in an interesting study, they found that patients affected by affective spectrum disorders experience sleep-related problems during most of their lives, not only during crisis, but also during crisis-free periods, demonstrating the importance of different disorders of sleep in these patients; in this way, the difficulty to fall asleep is more frequent in the intercritical periods, the daytime hypersomnia predominates during the depressive episodes, the decrease in the need to sleep is more frequent in mania, while the sleep phase delayed in mixed episodes and the

***Corresponding Author:** Alvaro Antonio Jerez Magaña, International Center for Affective Disorders and Addictive Behavior, Guatemala, Guatemala, E-mail: ajerezm@gmail.com

Sub Date: April 2nd, 2018, **Acc Date:** April 19th, 2018, **Pub Date:** April 20th, 2018.

Citation: Alvaro Antonio Jerez Magaña (2018) Importance of Sleep in Affective Spectrum Disorders. BAOJ Biotech 4: 030.

Copyright: © 2018 Alvaro Antonio Jerez Magaña. This is an open access article distributed under the terms of the Creative Commons Attribution License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original author and source are credited.

irregular sleep pattern predominates in mixed episodes and in mania [17].

On the other hand, it has been experimentally demonstrated that sleep deprivation and insomnia are related to an increase in emotional reactivity and activation of the amygdale when presenting emotional stimuli, and that, during sleep, REM sleep periods are particularly important for the emotional processing and the reorganization of specific emotions [18].

An interesting study published in February 2016, analyzed the autography data of members of 26 pedigrees of patients from the central valley of Costa Rica and Colombia including 136 euthymic type I bipolar patients and 422 unaffected family members of bipolar disease and detected 116 quantitative phenotypes of dream and activity, grouped them into 6 different domains; Most phenotypes showed significant heritability and 18% of the phenotypes were significantly associated with type I bipolar disease: average of the time of onset of sleep and average duration of sleep [19].

The majority of reported alterations are classified within the group of circadian sleep / wake rhythm disorders. The circadian clock located in the suprachiasmatic nucleus of the hypothalamus governs the cyclic processes common to all species of living beings and determines a series of physiological, metabolic and behavioral processes that regulate innumerable vital processes known as “biological rhythms” [20]. This biological clock receives the light impulses, which reach the retina, directly through the retinohypothalamic tract and is under genetic control [21]; it is resynchronized day by day by various zeitgebers (presence or absence of light, changes in environmental temperature, etc); and sends its signals through the brain promoting the release of melatonin and a number of neuropeptides and hormones [20].

Independently of its role in the precipitation of affective crises, sleep can also be used to prevent or prevent a crisis [22, 23], increasing or decreasing the sleep time according to the type of crisis we are anticipating, thus, in the face of the possibility of depression, the patient can be instructed to reduce the amount of sleep to less than 7 hours, while in the face of the possibility of mania, the number of hours of sleep can be increased to more than 9 hours.

To obtain optimal sleep, the current sleep time must correspond in time with the circadian rhythm and the predisposition to wake up. The circadian rhythm is not 24 hours strict, can range between 23.5 and 25 hours, but is synchronized day by day by external factors such as the presence or absence of sunlight, temperature and other zeitgebers. Changes in the amount of sleep can be modified in addition to the presence of bipolar illness, due to a series of factors such as the age of the person, pregnancy, medical illnesses, addictions, pain, consumption of stimulant drinks, etc.,

In general terms, in bipolar persons and their unaffected relatives it is very frequent to find an irregular sleep pattern, with variable amounts in the effective sleep time, fragmented sleep, prolonged sleep latencies,

with conciliation and maintenance insomnia, and hypersomnia diurnal in depression, the increase or decrease of sleep time, insomnia of conciliation and maintenance and daytime hypersomnia are frequent, as are awakenings at dawn. On the other hand, in mania and hypomania, insomnia of conciliation is frequent with a decrease in the need for sleep.

In addition to being a determining factor in the conservation of euthymia or the loss of stability of the mood, sleep and its alterations have important repercussions on the general health of the individual: There are reports of gastrointestinal and cardiac disorders, increased work accidents, traffic accidents, divorces, consumption of substances related to these disorders [24]; it has been shown that sleep dysfunction and altered circadian rhythm result in up regulation of inflammatory cytokines becoming a potential trigger of inflammation at the brain level [25,26] and inflammatory diseases such as inflammatory bowel disease [27-29] and impaired immune function [29,30]; the existence of a circadian pattern has been established both in the intensity of symptoms and in mortality due to a large number of acute and chronic medical conditions [31]; the existence of a relationship between the sleep / wake cycle and the aging process of the brain has been pointed out [32,33], cognitive dysfunction [32,34]; the less stable and fragmentary sleep rhythms are associated with a 20% increase in the risk of mortality from any cause [35], anxiety [36-38], cancer [39], type 2 diabetes [40], depression [36,38,41], obesity [39,40], insulin resistance (40), metabolic syndrome [34,40], symptoms of attention deficit hyperactivity disorder [38], neurodegenerative disorders [34,39].

Undoubtedly, the activity that with greater sensitivity denotes the stability of a person affected by an affective disease is the activity and sleep pattern. The adequate quality and quantity of sleep are crucial to avoid a crisis. But ... How much does each one have to sleep? There is no specific number of hours of sleep, the needs are individual and very variable, but it is suggested that a bipolar person should not sleep less than 7 or more than 9 hours a day.

To have an adequate quality of sleep it is important to always take into account the measures of sleep hygiene, these are general measures and include:

The Environment

The environment where one sleeps must be clean and welcoming, that invites to rest and sleep, the room must have a pleasant smell, unpleasant odors make it difficult to fall asleep (ideally, the room should be painted with a suitable color that relaxes and invites rest and sleep, in general it is accepted that neutral colors and pastel shades are better), the lighting should also be ideal to be able to sleep, while darker the room is easier to fall asleep; low-intensity yellow light is always preferable to white light, ventilation must be appropriate, so that fresh air penetrates the room. The amount and intensity of noise that enters the room should not be

excessive to make it easier to fall asleep, it is very difficult to have an appropriate sleep if the room faces a road with a lot of night traffic, or if the environment is too noisy, etc

The bed should be comfortable, mattresses very damaged or deformed by use make it difficult to fall asleep. The bedding should be clean and smelling nice. The pillow should have the proper height and consistency. Very hard, or very soft, very high or very compact pillows also prevent you from getting to sleep.

Diet

Avoid very abundant meals or difficult digestion at night, dinner should be rather light, stimulants should also be avoided after five in the afternoon (coffee, tea, cola drinks); alcoholic beverages, although they initially induce sleep, produce fragmentary and superficial sleep, which is why they should be avoided (in addition, in people affected by bipolar illness, the consumption of alcohol may favor the onset of a crisis).

Activity

Intense exercise at night or very late, is associated with difficulty falling asleep, it is preferable to do it in the morning.

The dream is a reflex conditioned and to facilitate the conditioning, you should avoid using the bed to read, talk on the phone or watch TV. The bed only serves three things: sex, illness or sleep; that is, if you are not sick, or sleeping or having sex, there is nothing to do in bed, it is better to get up.

For the reasons described previously, during the treatment of patients with bipolar disease it is important to keep a proper sleep register (sleep logs) in order to detect anomalies in sleep patterns; in addition, it is necessary to favor that the patient has an adequate quality and quantity of sleep (controlling sleep hygiene measures and using drugs to induce sleep when these are indicated).

References

- Judd LL, Akiskal HS, Schettler PJ, Coryell W, Endicott J, et al. (2003) A prospective investigation of the natural history of the long-term symptomatic status of bipolar II disorder. *Arch Gen Psychiatry* 60(3): 261-269.
- MacQueen GM, Marriot M, Begin H, Robb J, Joffe RT, et al. (2003) Subsyndromal symptoms assessed in longitudinal, prospective follow-up of a cohort of patients with bipolar disorder. *Bipolar Disord* 5(5): 349-355.
- Wulff K, Gatti S, Wettstein JG, Foster RG (2010) Sleep and circadian rhythm disruption in psychiatric and neurodegenerative disease. *Nat Rev Neurosci* 11(8): 589-599.
- Moreira J, Geoffroy PA (2016) Lithium and bipolar disorder: Impacts from molecular to behavioural circadian rhythms. *Chronobiol Int* 33(4): 351-373.
- Wu JC, Bunney WE (1990) The biological basis of an antidepressant response to sleep deprivation and relapse: review and hypothesis. *Am J Psychiatry* 147(1): 14-21.
- Milhiet V, Etain B, Boudebesse C, Bellivier F (2011) Circadian biomarkers, circadian genes and bipolar disorders. *J Physiol Paris* 105(4-6): 183-189.
- Leibenluft E, Albert PS, Rosenthal NE, Wehr TA (1996) Relationship between sleep and mood in patients with rapid-cycling bipolar disorder. *Psychiatry Res* 63(2-3): 161-168.
- Jackson A, Cavanagh J, Scott J (2003) A systematic review of manic and depressive prodromes. *J Affect Disord* 74(3): 209-217.
- Harvey AG (2011) Sleep and circadian functioning: critical mechanisms in the mood disorders. *Annu Rev Clin Psychol* 7: 297-319.
- McCarthy MJ, Welsh DK (2012) Cellular circadian clocks in mood disorders. *J Biol Rhythms* 27(5): 339-352.
- McClung CA (2013) How might circadian rhythms control mood? Let me count the ways... *Biol Psychiatry* 74(4): 242-249.
- Schnell A, Albrecht U, Sandrelli F (2014) Rhythm and mood: relationships between the circadian clock and mood behavior. *Behav Neurosci* 128(3): 326-343.
- Soreca I (2014) Circadian rhythms and sleep in bipolar disorder: implications for pathophysiology and treatment. *Curr Opin Psychiatry* 27(6): 467-471.
- Abreu T, Bragança M (2015) The bipolarity of light and dark: a review on bipolar disorder and circadian cycles. *J Affect Disord* 185: 219-229.
- Wood J, Birmaher B, Axelson D, Ehmman M, Kalas C, et al. (2009) Replicable differences in preferred circadian phase between bipolar disorder patients and control individuals. *Psychiatry Res* 166(2-3): 201-209.
- American Psychiatric Association (2013) *Diagnostic and Statistical Manual of Mental Disorders*. 5th Ed, Washington DC.
- Kanady JC, Soehner AM, Harvey AG (2015) A retrospective examination of sleep disturbance across the course of bipolar disorder. *J Sleep Disord Ther* 4(2): pii:1000193.
- Altena E, Micoulaud-Franchi JA, Geoffroy PA, Sanz-Arigita E, Bioulac C, et al. (2016) The bidirectional relation between emotional

- reactivity and sleep: from disruption to recovery. *Behav Neurosci* 130(3):336-350.
19. Pagani L, St Clair PA, Twshiba TM, Service SK, Fears SC, et al (2016) Genetic contributions to circadian activity rhythm and sleep pattern phenotypes in pedigrees segregating for severe bipolar disorder. *Proc Natl Acad Sci U.S.A.* 113(6): E754-61.
 20. Martinez Cerrao JA (2016) Sleep neurophysiology. In AA Jerez Magana, JC Lara Giron (Eds). *Regional Guidelines for Sleep Disorders*. Humana Editores, Guatemala, 2016.
 21. Contreras Rojas J. (2016) Sleep genetics of sleep disorders. In AA Jerez Magaña, JC Lara Girón (Eds). *Regional Guidelines for Sleep Disorders*. Humana Editores, Guatemala, 2016.
 22. Harvey AG, Soehner AM, Kaplan KA, Hein K, Lee J, et al (2015) Treating insomnia improves mood state, sleep, and functioning in bipolar disorder: a pilot randomized controlled trial. *J Consul Clin Psychol* 83(3): 564-577.
 23. Harvey AG, Kaplan KA, Soehner AM (2015) Interventions for sleep disturbance in bipolar disorder. *Sleep Med Clin* 10(1): 101-105.
 24. Hales R, Yudofsky S, Talbott J, John A (2001) *DSM-IV Tratado de Psiquiatria*. The American Psychiatric Press (968-970).
 25. Simpson N, Dinges DF (2007) Sleep and inflammation. *Nutr Rev* 65(3): S244-252.
 26. Kincheski GC, Velentim IS, Clarke JR, Cozachenco D, Castelo-Branco MTL, et al. (2017) Chronic sleep restriction promotes brain inflammation and synapse loss, and potentiates memory impairment induced by amyloid- β oligomers in mice. *Brain Behav Immun* 64: 140-151.
 27. Lange T, Dimitrov S, Born J (2010) Effects of sleep and circadian rhythm on the human immune system. *Ann N. Y. Acad Sci* 1193: 48-59.
 28. Ali T, Orr WC (2014) Sleep disturbances and inflammatory bowel disease. *Inflamm Bowel Dis* 20(11): 1986-1995.
 29. Parekh PJ, Oldfield Iv EC, Challapallisri V, Ware JC, Johnson DA (2015) Sleep disorder and inflammatory disease activity: checken or the egg? *Am J Gastroenterol* 110(4): 484-488.
 30. Lasselin J, Rehman JU, Akerstedt T, Lekander M, Axelsson J (2015) Effect of long-term sleep restriction and subsequent recovery sleep on the diurnal rhythms of white blood cell subpopulations. *Brain Behav Immun* 47: 93-99.
 31. Smolensky MH, Portaluppi F, Manfredini R, Hermida RC, Tiseo R, et al. (2015) Diurnal and twenty-four hour patterning of human diseases: acute and chronic common and uncommon medical conditions. *Sleep Med Rev* 21: 12-22.
 32. Yaffe K, Falvey CM, Hoang T (2014) Connections between sleep and cognition in older adults. *Lancet Neurol* 13(10): 1017-1028.
 33. Nixon JP, Mavanji V, Butterick TA, Billington CJ, Kotz CM, et al. (2015) Sleep disorders, obesity, and aging: the role of orexin. *Ageing Res Rev* 20: 63-70.
 34. Vladenovic A, Lazar AS, Barker RA, Overeem S (2014) The clocks that time us –circadian rhythms in neurodegenerative disorders. *Nat Rev Neurol* 10(12): 683-693.
 35. Zuurbier LA, Luik AI, Hofman A, Franco OH, van Someren AL, et al. (2015) Fragmentation and stability of circadian activity rhythms pre-dict mortality: The Rotterdam Study. *Am J Epidemiol* 181(1): 54-63.
 36. Hansen MV (2014) Chronobiology, cognitive function and depressive symptoms in surgical patients. *Dan Med J* 61(9):B4914.
 37. Samaranayake CB, Arroll B, Fernando AT 3rd (2014) Sleep disorders, depression, anxiety and satisfaction with life among young adults: a survey of university students in Auckland, New Zealand. *N Z Med J* 127(1399): 13-22.
 38. Sivertsen B, Harvey AG, Pallesen S, Hysing M (2015) Mental health problems in adolescents with delayed sleep phase: results from a large population-based study in Norway. *J Sleep Res* 24(1): 11-18.
 39. Voigt RM, Forsyth CB, Green SJ, Mutlu E, Engen P, et al. (2014) Circadian disorganization alters intestinal microbiota. *PLoS One* 9(5):e97500.
 40. Koren D, O'Sullivan KL, Makhlesi B (2015) Metabolic and glyceemic sequelae of sleep disturbances in children and adults. *Curr Diab Rep* 15(1): 562.
 41. Machado RM, Koike MK (2014) Circadian rhythm, sleep pattern, and metabolic consequences: an overview on cardiovascular risk factors. *Horm Mol Biol Clin Investig* 18(1): 47-52.