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Sleep apnea syndrome and psychiatric syndromes and complications or comorbidities?

Issack BIYONG [1, 2, 3, *], Florin Antoine Orha [2], Emilia Anna Sforza [4] and Guido Bondolfi [5]

[1] *Institute of Psychotraumatology and Mediation, Grand 'Rue 1A, 2000, Neuchâtel, Switzerland.*
[2] *Department of Adult Psychiatry, Centre Neuchâtelois de Psychiatrie (CNP), Part-time Hospitalization Unit (UHTP), for the treatment of anxiety disorders depression and addictions. Perreux site, Boudry/NE, Switzerland.*
[3] *PSI: Psy-Scan Institute, Outpatient Consultation for Children, Adolescents and Adults, Neuchâtel, Switzerland.*
[4] *Sleep laboratory Department of Psychiatry. Belle-Idée Hospital, University Hospital of Geneva (HUG), Switzerland.*
[5] *Department of Psychiatry, Liaison and Crisis Psychiatry Service University Hospital of Geneva (HCUG), Switzerland.*

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Abstract

Introduction: This study investigated the relationship between sleep disorders and psychiatric disorders. Several studies have shown that there is a correlation between these two types of disorders, but it is important to better understand this relationship to help diagnose and treat patients with these disorders.

Method: We reviewed several studies conducted by leading universities on the relationship between sleep disorders and psychiatric disorders. We also examined the effects of certain medications on these disorders.

Results: The studies showed that there is a correlation between sleep apnea and anxiety and depressive disorders. In addition, sleep deprivation has been associated with an increased risk of developing mood disorders such as depression and anxiety, as well as psychotic disorders such as schizophrenia. However, some medications, such as Quetiapine, have been effective in treating patients with psychotic disorders.

Discussion: The results of this study highlight the importance of considering sleep disorders in the diagnosis and treatment of psychiatric disorders. It is essential to monitor metabolic parameters when using antipsychotic medications such as quetiapine. Management of sleep disorders may also be an effective way to prevent or treat associated psychiatric disorders.

Conclusion: In sum, this study highlights the importance of considering sleep disorders in the diagnosis and treatment of psychiatric disorders, and underscores the effectiveness of treatments such as Quetiapine, Fluvoxamine and CPAP in managing these disorders. Considering the quality of sleep can thus contribute to significantly improve the quality of life of patients.

Keywords: Sleep Apnea; Psychiatric Disorders; Sleep Deprivation; Depression; Anxiety; Mood Disorders; Psychotic Disorders.

1. Introduction

Sleep apnea syndrome (SAS) is a respiratory disorder characterized by repeated pauses in breathing during sleep. This syndrome can lead to significant disturbances in sleep quality, daytime vigilance, and overall health. Recent

* Corresponding author: Issack BIYONG

epidemiological and clinical studies have shown an association between SAS and psychiatric disorders such as depression, anxiety and mood disorders [1, 2].

Psychiatric disorders and SAS are often comorbid, i.e. they coexist in the same patient. Studies have shown that patients with SAS have an increased risk of developing psychiatric disorders, and conversely, patients with psychiatric disorders have an increased risk of developing SAS [2, 3]. This association has been reported in several epidemiological and clinical studies.

However, the mechanisms underlying this association are not clearly elucidated. Several hypotheses have been put forward, including intermittent hypoxia, hypercapnia, activation of the sympathetic nervous system and decreased stress regulation. These factors may lead to changes in emotional regulation, cognition, and behavior, which may contribute to the occurrence of psychiatric disorders [4].

Therefore, this study aims to explore the links between SAS and psychiatric disorders, as well as associated complications or comorbidities. Using clinical data from a case study and epidemiological data from the scientific literature, this study aims to identify the risk factors and mechanisms underlying these associations, as well as to assess the implications for the management of patients with SAS. In sum, this study aims to shed light on the links between these two disorders and thus improve treatment options for patients with SAS.

2. Case study

Mr. Castro (fictitious name to protect his anonymity), 38 years old, was admitted for the first time to the Centre de Neuchâtelois de Psychiatrie (CNP) Site de Préfargier in January 2003. During his second hospitalization in October 2003 at the CNP, but this time at the Perreux site, he presented with anxiety and depressive episodes, obsessive-compulsive disorders and visual hallucinations. These psychiatric disorders persisted, with more intense symptomatology despite appropriate pharmacological treatment that failed to improve his condition.After this second hospitalization, the patient was relatively stabilized and was admitted for outpatient psychiatric and psychotherapeutic treatment for one year. However, at the beginning of December 2004, exacerbated anxiety states associated with depression, obsessive-compulsive disorders, insomnia with nocturnal agitation and visual hallucinations reappeared. After one month of outpatient treatment without improvement despite appropriate pharmacological treatment, a third voluntary hospitalization was requested in March 2004.In addition to the above-mentioned disorders, the patient presents with smoking of 20 cigarettes per day, alcohol abuse in the past, allergic manifestations (rhinitis and asthma), gastritis, hypercholesterolemia, and a surgical procedure on the nasal septum. He also reported daytime sleepiness for the past five years, associated with nodding off under monotonous conditions, hypnagogic hallucinations, and possible cataplexy episodes. However, no sleep paralysis has been observed. He also showed symptoms such as decreased libido and memory, motor manifestations and cognitive impairment.In sum, this study aims to shed light on the relationship between these disorders and thus improve treatment options for SAS patients with psychiatric comorbidities. The identification of risk factors and mechanisms underlying these associations will allow the development of more effective and adapted treatment strategies to improve the quality of life of patients.

3. Method

3.1. Assessment of the patient's health status

A psychiatric evaluation was performed to support diagnoses related to the various psychiatric syndromes in the patient, such as obsessive-compulsive disorder, depression, and anxiety. The patient's general health was also assessed to identify associated comorbidities and complications.

3.2. Observation with and without CPAP

The patient was observed with and without CPAP (Continuing Positive Air Pressure) following two polysomnographic assessments before and after sleep apnea treatment. The two observations were compared to assess the effect of treatment on the patient's mental health.

3.3. Psychometric assessment

Quantitative and qualitative psychometrics were used to assess the intensity of different psychiatric syndromes in the patient on psychotropic medication, with and without CPAP. The different scales used for this assessment include:

- Hamilton Anxiety Scale (HAS), French version (13 items)
- Beck Depression Inventory (BDI), French version (21 items)
- Hamilton Depression Scale (HDS), French version (17 items)
- Yale Brown Obsessive Compulsive Disorder Questionnaire (Y-BTOC), French version, " Obsessive Compulsive Scale (Y-BOCS)
- Epworth Sleepiness Scale (ESS) (20 items/24)
- Sheehan Handicap Scale (HHS)

3.4. Polysomnographic workup

A polysomnographic workup was performed in the sleep laboratory before and after sleep apnea treatment to assess the effect of treatment on the patient's sleep quality.

3.5. Clinical Global Impression

The Clinical Global Impression (CGI), French version (Impression Clinique Globale - ICG), was used to assess the patient's overall health status before, during and after treatment.

Details of the different scales and protocols used to assess patient health status are described in the References section.

4. Treatment plan

4.1. Polysomnographic and psychometric workup before and under CPAP

An electrocardiogram performed at the beginning of the patient's stay at our institution showed a tracing in the normal range. The joint investigation of a suspected sleep apnea syndrome was confirmed. A polysomnography performed at the sleep laboratory of the University Hospital of Geneva (HUG) revealed the presence of a respiratory pathology during sleep characterized by apneas, hypopneas and episodes of flow limitation which induce an important fragmentation of nocturnal sleep [5]. The patient benefited from CPAP therapy, which resulted in a significant improvement in sleep quality and, consequently, a favorable evolution of his depressive and anxious symptomatology.

4.2. Pharmacological treatment during integrated psychiatric and psychotherapeutic treatment (IPPT)

4.2.1. Pharmacological treatment

Pharmacological treatment, including:

- Fluvoxamine100mg, 1 tablet in the morning and at bedtime
- Buspirone 10mg, 2 tablets in the morning, noon and at bedtime
- Quetiapine100mg, 3tablets at bedtime, was already at the maximum therapeutic dose for the patient's psychiatric disorders such as depression [6].

We also initiated treatment for his sleep apnea following a polysomnography workup by the Geneva University Hospital (HUG) sleep laboratory [5]. The patient was discharged from his third hospitalization in May 2004 and continued his outpatient follow-up at the Centre Psychotraumatologie et Médiation (CMP) in Neuchâtel with his psychiatrist, with the mentioned pharmacotherapy, continuous positive airway pressure (CPAP) therapy, cognitive-behavioral therapy (CBT) and hygienic and dietary measures until November 2004. He was then transferred to his family doctor, as he did not want to continue to be considered a psychiatric patient for professional reasons, according to his own statements [6].

4.3. Continuous positive air pressure (CPAP) treatment

The patient was fitted with a ResMed S8 auto CPAP device (ResMed Corp., San Diego, CA) set to 9 cm water pressure in automatic mode with a maximum pressure of 13 cm water. Sleep parameters and room air quality were monitored continuously throughout the night. Incremental CPAP pressure adjustments were made on two consecutive nights of polysomnography [5].

5. Result

5.1. Polysomnographic assessment:

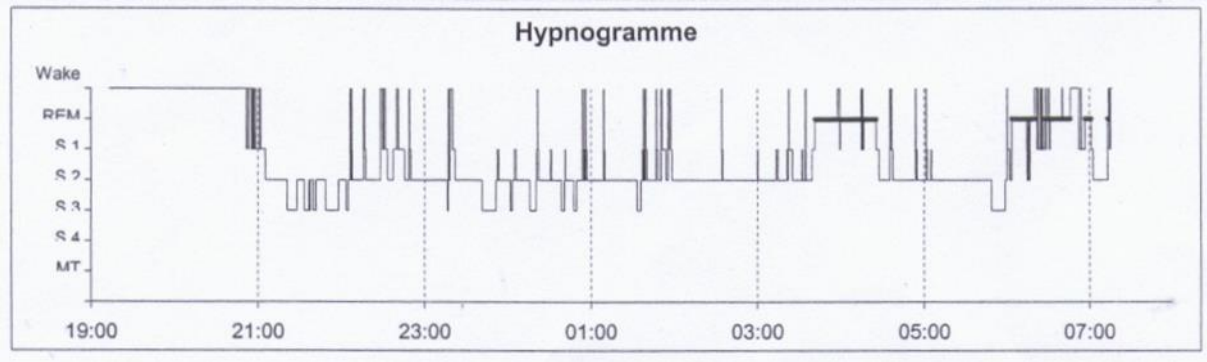


Figure 1 Without CPAP

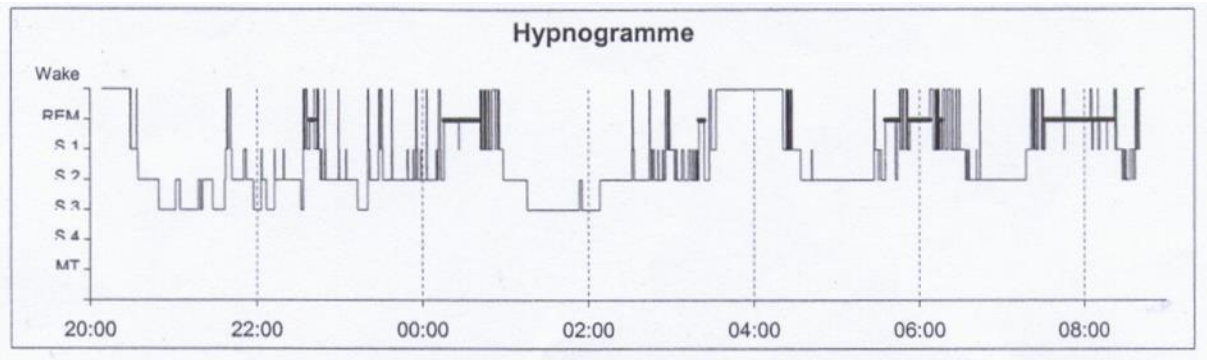


Figure 2 With CPAP

A polysomnographic assessment during two consecutive nights, the second under CPAP, and a multiple sleep latency test to assess the degree of daytime sleepiness and rule out narcolepsy were performed.

On the first night, the recording lasted 679 minutes, of which 585 minutes were sleep. Falling asleep occurred 54 minutes after the lights were turned off. Intra-sleep awakening time is normal in duration and percentage. Sleep efficiency is weakly depressed at 86%. In total, two complete sleep cycles are observed.

During these, stages 1 and 2 are increased in duration and percentage, while deep sleep is reduced.

During the night under CPAP, a decrease in the percentage of light sleep and an increase in deep sleep to almost normal values were noted. As for REM (rapid eye movement) sleep, it was reduced in duration and percentage on both nights. Its latency is respectively 404 and 129 minutes. The fragmentation of nocturnal sleep is moderate. It is reflected in the number of stage changes at 183 and 253 respectively, and in the number of awakenings over 20 seconds at 43 and 70.

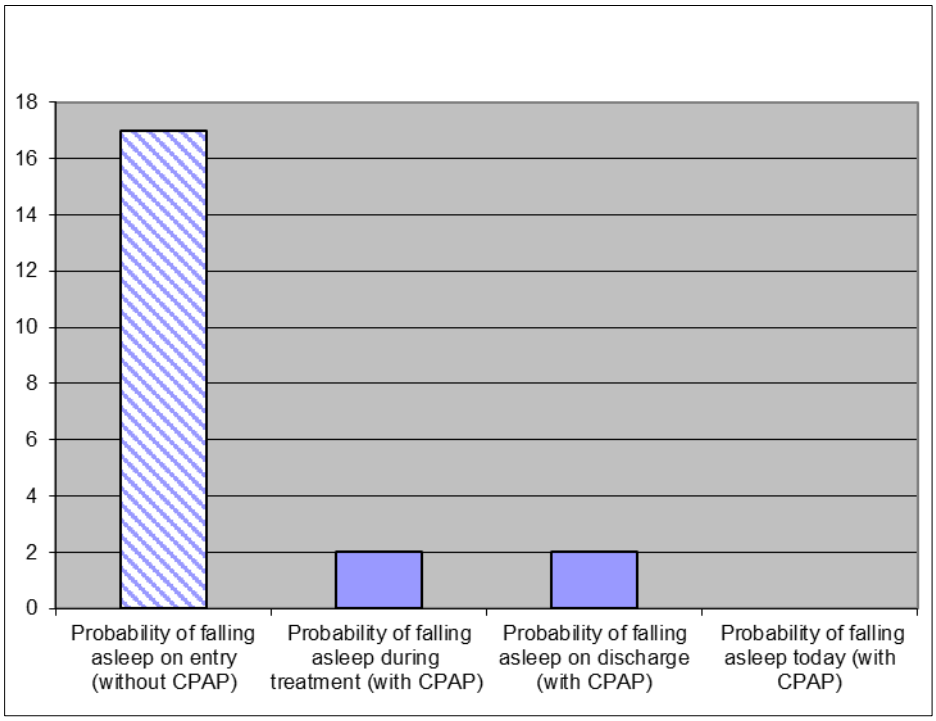
Also, during the first night, 22 apneas with obstructive prevalence, 170 hypopneas and 123 episodes of flow limitation were noted, for a total index of 32.3 events per hour of recording. The mean duration of apneas was 13.5 seconds, and of hypopneas 14.1 seconds. Hypoxemia associated with respiratory events was moderate with a minimum oxygen saturation of 84% for an awake saturation of 95%.

On the second night, under CPAP treatment, before the optimal pressure was reached, 3 apneas, 37 hypopneas and 29 episodes of flow limitation were noted, for a total index of 6.6 respiratory events per hour of recording. Hypoxemia associated with respiratory events was moderate with a minimum oxygen saturation of 86% for a baseline saturation of 94%. At the optimal pressure of 13 cm of water, ventilation is stable, regular, and free of apneas, hypopneas, and snoring with an oxygen saturation of 93%.

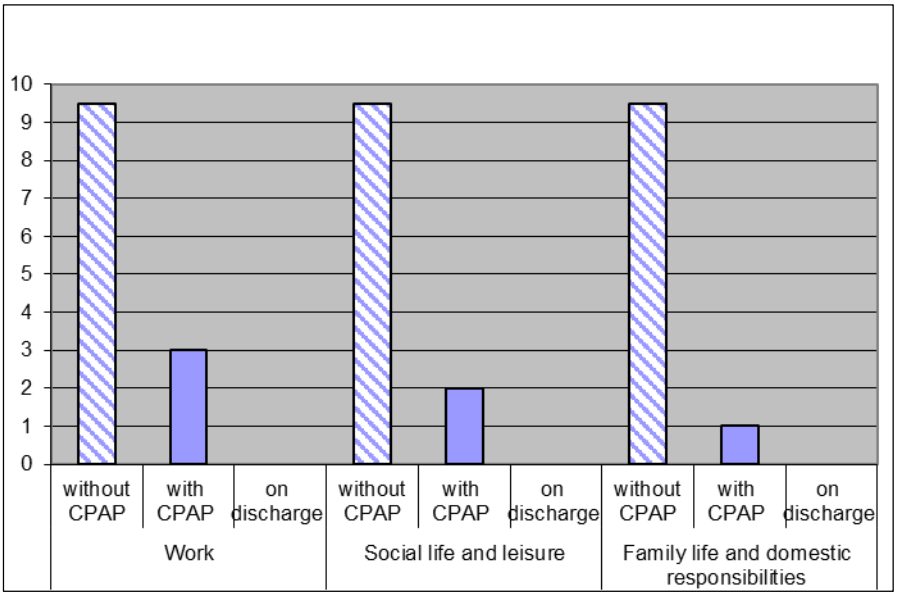
In addition, during the nights of recording, 14 and 0 periodic motor activations in the lower limbs were noted, respectively.

The polysomnographic recordings revealed the presence of a respiratory pathology during sleep, which is reflected by a significant fragmentation of nocturnal sleep. It should also be noted that the degree of daytime sleepiness appears less severe than the patient's subjective estimate; the contribution of medication cannot be completely ruled out in this respect.

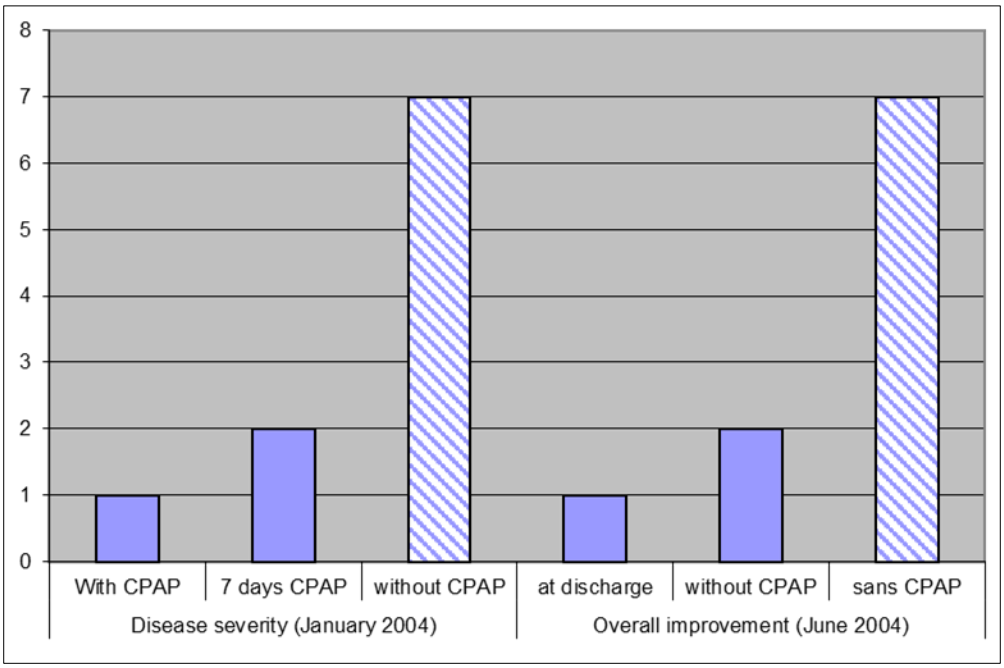
5.2. Psychometric tests before and during CPAP



Graph 1 Epworth sleepiness scale



Graph 2 Sheehan Disability Scale



Graph 3 Clinical Global Impression (CGI)

6. Discussion

6.1. Fluvoxamine: How effective is Fluvoxamine for OCD?

Fluvoxamine is a selective serotonin reuptake inhibitor (SSRI) that has been used to treat obsessive compulsive disorder (OCD). According to the results of several studies, Fluvoxamine has been shown to be effective in the treatment of OCD.

A study conducted by J.F Rosenbaum et al. in 1994 compared the effectiveness of Fluvoxamine to placebo in the treatment of OCD patients. The results showed a significant reduction in obsessive and compulsive symptoms in patients treated with Fluvoxamine [7].

Another study conducted by J.N. Griez et al. in 2001 compared the efficacy of Fluvoxamine with that of clomipramine in the treatment of patients with OCD. The results showed that Fluvoxamine was effective in reducing OCD symptoms [8].

More recently, a study published in 2022 compared the efficacy of Fluvoxamine to Sertraline in the treatment of OCD. The results showed that 60% of OCD patients showed an early response at week 4 with a mean dose of 102 mg/d. Both drugs showed a significant reduction in the Yale-Brown Obsessive-Compulsive Scale (YBOCS) score at week 12. However, Fluvoxamine performed significantly better than Sertraline ($P = 0.012$) [9].

These studies show that Fluvoxamine is effective in the treatment of obsessive-compulsive disorder.

Buspirone is one of many drugs used in the treatment of anxiety disorders. It is often prescribed in addition to an SSRI (selective serotonin reuptake inhibitor) or SNRI (selective norepinephrine reuptake inhibitor) antidepressant for greater relief [10].

Buspirone is a 5-HT1A receptor antagonist that works by increasing serotonin and dopamine levels in the brain. This helps reduce anxiety and obsessive symptoms [11].

There are several studies that have evaluated the effectiveness of Buspirone in the treatment of anxiety disorders. A 1985 study entitled "Buspirone in the treatment of generalized anxiety disorder" by J.F. Rosenbaum et al. compared the efficacy of Buspirone to placebo in the treatment of patients with generalized anxiety disorder. Patients were treated for 8 weeks and showed a significant reduction in anxiety symptoms. The authors concluded that Buspirone is effective in the treatment of generalized anxiety disorder [12].

Another 2018 study titled "Buspirone monotherapy for the treatment of obsessive-compulsive disorder: a randomized controlled trial" conducted by A.N. Rauch et al. compared the efficacy of Buspirone monotherapy to fluoxetine (an SSRI) in the treatment of patients with OCD. Patients were treated for 12 weeks and showed a significant reduction in symptoms. Patients were treated for 12 weeks and showed a significant reduction in obsessive-compulsive symptoms with both treatments. The authors concluded that Buspirone is effective as monotherapy for the treatment of OCD [13].

Quetiapine is an antipsychotic drug used to treat psychotic disorders such as schizophrenia and bipolar disorder. It belongs to a class of drugs called dopamine and serotonin receptor antagonists. [14]

A two-year naturalistic study conducted in Halifax; Canada evaluated the use of Quetiapine in the treatment of patients with first-episode psychosis. Results showed that Quetiapine was well tolerated and effective for this population. Patients also showed significant improvements in cognitive functioning, providing evidence of the potential long-term benefits of early and optimal treatment with this medication. [15]

It is important to note, however, that as with all antipsychotic medications, it is important to monitor metabolic parameters such as weight, cholesterol and blood sugar levels when using quetiapine. It is recommended to discuss with a physician to assess the benefits and risks of quetiapine use for a individual. [16]

In summary, the study conducted in Halifax, Canada showed that Quetiapine was well tolerated and effective in the treatment of patients with first-episode psychosis. The significant improvements in cognitive functioning also provided evidence of the potential longer-term benefits of early and optimal treatment with this agent. It is important to monitor metabolic parameters when using Quetiapine.

The introduction of a CPAP machine and the subsequent improvement in sleep quality should be monitored.

In summary, the Halifax, Canada study showed that Quetiapine was well tolerated and effective in treating patients with first-episode psychosis. The significant improvements in cognitive functioning also provided evidence of the potential longer-term benefits of early and optimal treatment with this agent. It is important to monitor metabolic parameters when using Quetiapine.

The introduction of a CPAP machine and the subsequent improvement in sleep quality resulted in a decrease in the primary symptomatology, namely the patient's anxieties, so that the patient was able to return home permanently and continued outpatient IPT follow-up at the CPM in Neuchâtel with his treating psychiatrist. A post-hospital outpatient follow-up with good catamnestic hindsight allowed us to follow his improvement in work, leisure activities and family domestic life activities, and the recovery of his erectile dysfunction (ED). [17]

There is a correlation between sleep disorders, such as sleep apnea, and psychiatric disorders such as anxiety and depression. According to studies [18][19], patients with sleep apnea have an increased risk of developing anxiety and depressive disorders.

A 2018 study from the University of Pennsylvania [18] found that patients with sleep apnea have an increased risk of developing anxiety disorders, such as generalized anxiety disorder and panic disorder. The authors also found that patients with sleep apnea have an increased risk of developing depressive disorders.

Another study conducted in 2016 by the University of Bologna [19] found that patients with sleep apnea had an increased risk of developing mood disorders such as depression and anxiety. The authors also found that patients with sleep apnea have an increased risk of developing mood disorders.

In summary, there is a correlation between sleep disorders, such as sleep apnea, and psychiatric disorders such as anxiety and depression. According to studies [18][19], patients with sleep apnea have an increased risk of developing anxiety and depressive disorders. It is therefore important to consider sleep disorders in the diagnosis and treatment of psychiatric disorders.

Sleep deprivation is a known risk factor for the development of psychiatric disorders, such as depression, anxiety, mood disorders and psychotic disorders [20]. A 2019 Harvard University study found that sleep deprivation is associated with an increased risk of developing mood disorders such as depression and anxiety [21]. The authors also found that sleep deprivation is linked to an increased risk of developing psychotic disorders, such as schizophrenia [21].

Another study conducted by Stanford University in 2018 found that sleep deprivation is associated with an increased risk of developing anxiety disorders, such as panic disorder and generalized anxiety disorder [22]. The authors also found that sleep deprivation is associated with an increased risk of developing mood disorders, such as depression [22].

In summary, sleep deprivation is associated with an increased risk of developing psychiatric disorders, such as depression, anxiety, mood disorders and psychotic disorders [20,21,22]. These findings highlight the importance of considering sleep quality in the diagnosis and treatment of psychiatric disorders.

7. Conclusion

After reviewing several studies on different aspects of psychiatric disorders, there are significant correlations between sleep disorders and psychiatric disorders such as depression, anxiety, mood disorders and psychotic disorders. The results of the studies highlight the importance of considering sleep disorders in the diagnosis and treatment of psychiatric disorders. Medications such as quetiapine have been evaluated in studies and found to be effective in treating patients with psychotic disorders. However, it is important to monitor metabolic parameters when using these antipsychotic medications.

In the case of sleep deprivation, studies have shown that it can increase the risk of developing psychiatric disorders such as depression, anxiety, mood disorders and psychotic disorders. Therefore, it is important to treat sleep deprivation and sleep debt secondary to SAS to prevent these disorders.

Overall, these findings underscore the importance of considering sleep disorders in the treatment of psychiatric disorders. Treatments that combine a comprehensive approach to mental health, including a focus on sleep, can lead to significant improvements in patients' quality of life.

Compliance with ethical standards

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We hope that the fruits of this collaboration will inspire other researchers and strengthen our collective understanding in the clinical studies of psychiatric disorders as they relate to sleep medicine.

Disclosure of conflict of interest

The authors also affirm that they have no conflicts of interest, financial or otherwise, that could influence the results or interpretation of the data presented in this article. The authors have full authority over the content of the article and have made all decisions regarding methodology, analyses, and conclusions without any external influence.

Statement on funding sources

All author collaborations and affiliations have been disclosed in the "Authors and Affiliations" section of the article. The authors are committed to maintaining the transparency and integrity of their research and are willing to provide additional information about funding sources and potential conflicts of interest upon request from readers or editors.

Statement of informed consent

Informed consent was obtained from all individual participants included in the study.

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