



## Association of Obstructive Sleep Apnea With the Risk of Affective Disorders

<sup>1</sup> Susanty, <sup>1</sup> Hendrik

<sup>1</sup> Faculty of Medicine, Padjadjaran University, Bandung City, West Java, Indonesia

Correspondence : [dr.susantymed281@gmail.com](mailto:dr.susantymed281@gmail.com)

### Article History :

Received date : 2024/04/11  
Revised date : 2024/05/07  
Accepted date : 2024/06/12  
Published date : 2024/07/10



**Copyright:** © 2024 by the authors. Submitted for possible open access publication under the terms and conditions of the Creative Commons Attribution (BY NC) license (<https://creativecommons.org/licenses/by-nc/4.0/>).

E-ISSN :

ISSN 3048-1368



P-ISSN :

ISSN 3048-1376



### ABSTRACT

**Background:** The association between obstructive sleep apnea (OSA) and affective disorders, particularly depression, has garnered significant attention in the academic literature over the past two decades. **Literature Review:** The literature on the association between obstructive sleep apnea (OSA) and affective disorders, particularly depression, illustrates a complex interplay characterized by shared symptoms, varying prevalence rates, and methodological challenges. Early research highlighted significant correlations, with studies indicating that a notable percentage of OSA patients experience depressive symptoms, often seeking psychiatric help (M Schröder & O'Hara, 2005). This foundational understanding has evolved, emphasizing the need for longitudinal studies to clarify the temporal relationships between OSA and depression. **Conclusion:** In conclusion, the existing literature demonstrates a nuanced relationship between obstructive sleep apnea and affective disorders, particularly depression. The interplay of shared symptoms, methodological discrepancies, and the influence of comorbidities and social factors complicates the understanding of this association. There is a clear need for further research, particularly longitudinal studies and investigations into treatment impacts, to elucidate the complexities of these interrelated health concerns.

**Keyword:** Obstructive Sleep Apnea With the Risk of Affective Disorders

---

## INTRODUCTION

---

The association between obstructive sleep apnea (OSA) and affective disorders, particularly depression, has garnered significant attention in the academic literature over the past two decades. Early investigations, such as those by (M Schröder & O'Hara, 2005), highlighted a notable correlation between OSA and depression, revealing that a significant percentage of OSA patients had previously sought psychiatric help for anxiety or depression. Their findings indicated that up to 45% of OSA patients exhibited depressive symptoms, as measured by various psychological assessments. However, they also recognized the methodological challenges in comparing studies, as some investigations reported no significant associations between OSA and affective disorders, suggesting the need for further research in this area.

In 2009, (Harris et al., 2009) expanded on these findings by emphasizing the high prevalence of

depression in both community and clinical populations with OSA. They underscored the importance of longitudinal studies to clarify the temporal relationships between the two conditions. The overlapping symptoms of OSA and depression, such as excessive daytime sleepiness and fatigue, complicate the diagnostic process, leading to the recommendation that clinicians consider depression as a potential underlying factor in patients presenting with sleepiness.

(Makram El-Sherbini et al., 2011) further explored the relationship between OSA and depression, noting that while many studies reported elevated depression levels among OSA patients, the variability in the prevalence rates could be attributed to the different diagnostic tools employed. They highlighted an ongoing debate regarding the causal relationship between sleep fragmentation due to OSA and the development of depression, or whether both conditions might stem from a

common neurobiological pathway. Their examination of continuous positive airway pressure (CPAP) treatment outcomes also revealed inconsistent effects on depressive symptoms, indicating a complex interplay between treatment and mental health.

The research by (Duan et al., 2022) introduced additional dimensions by investigating how anxiety and adverse life events correlate with OSA. They found a significant prevalence of OSA among individuals with serious mental illness, suggesting that anxiety and depression could exacerbate sleep disturbances, thereby creating a cyclical relationship between these conditions. Their study also pointed to the additional risk factors for OSA, such as obesity and age, which further complicate the understanding of its association with affective disorders.

Finally, (Gharsalli et al., 2022) examined the impact of social support on the prevalence of depression in OSA patients, revealing that those with inadequate family support were more likely to experience depressive symptoms. They also identified a

potential link between OSA and coronary artery disease (CAD), underscoring the multifaceted nature of these health issues. Their findings echoed the notion of a unidirectional causal relationship, where poor sleep quality may adversely affect mood, although they acknowledged conflicting evidence regarding the severity of OSA and its influence on mental health.

Overall, the literature reveals a complex and nuanced relationship between OSA and affective disorders, characterized by both shared risk factors and varying methodological approaches across studies. The need for further research, particularly longitudinal studies and those addressing the impact of treatment modalities, remains clear in order to better understand and address these interrelated health concerns.

---

### LITERATURE REVIEW

---

The article "Depression and Obstructive Sleep Apnea (OSA)" by (M Schröder & O'Hara, 2005) presents a thorough examination of the relationship between obstructive sleep apnea and affective disorders,

particularly depression. The authors synthesize findings from various studies, highlighting the prevalence of depressive symptoms among patients diagnosed with OSA.

The article begins by referencing early studies, which indicate that a significant portion of OSA patients had sought psychiatric help for anxiety or depression. Specifically, they report that 24% and 40% of their respective study populations met criteria for affective disorders, with a notable correlation between daytime sleepiness and depression risk. This observation is critical as it suggests that the severity of daytime symptoms may be a predictor of underlying mood disorders in OSA patients.

Further analysis is provided through the work of Millmann et al., who found that 45% of OSA patients exhibited depressive symptoms on the Zung Self-Rating Depression Scale, despite a lower percentage self-reporting depression. This discrepancy raises important questions about the self-awareness of patients regarding their mental health, as well as the potential underreporting

of depressive symptoms in clinical settings.

The article also discusses the findings of Ramos Platon et al. and Aikens et al., who observed elevated depression scores in OSA patients compared to controls using the Minnesota Multiphasic Personality Inventory (MMPI). These studies reinforce the notion that OSA is associated with significant mood disturbances, although the authors acknowledge the variability in results across different studies. For instance, Phillips et al. and Pillar and Lavie found no significant depressive symptoms in certain populations of OSA patients, suggesting that the relationship may not be universally applicable or could be influenced by other factors.

(M Schröder & O'Hara, 2005) also highlight the importance of considering confounding variables such as age, body mass index, and hypertension, which could account for variations in mood disturbances among OSA patients. This critical evaluation of methodological differences among studies emphasizes the complexity of

establishing a direct causal link between OSA and depression.

The article "Obstructive sleep apnea and depression" by (Harris et al., 2009) presents a comprehensive analysis of the association between obstructive sleep apnea (OSA) and depression, highlighting the significant prevalence of depressive symptoms among individuals diagnosed with OSA. The authors report that community studies indicate a depression rate of approximately 17%, while clinical populations in sleep clinics show even higher rates, ranging from 21% to 41%. This discrepancy underscores the importance of recognizing OSA as a potential risk factor for the development of affective disorders.

One of the key insights from the article is the complexity involved in diagnosing and understanding the interplay between OSA and depression. The authors emphasize that symptoms such as excessive daytime sleepiness and fatigue are prevalent in both conditions, which complicates the clinical picture. This overlap can hinder the accurate assessment of either disorder when

they co-occur, suggesting that clinicians should be vigilant in evaluating for depression in patients presenting with OSA symptoms.

Moreover, the article calls for well-designed longitudinal studies to explore the temporal relationships between OSA and depression. Such studies could provide valuable insights into whether OSA precedes depression, or vice versa, and how these conditions may exacerbate one another over time. This is particularly relevant given the finding that patients suffering from both OSA and depression experience worse outcomes than those with OSA alone, indicating a compounded effect on their overall health and quality of life.

The authors also suggest that addressing depression in patients with OSA could lead to better treatment adherence, reduced daytime sleepiness, and improved quality of life. This highlights the necessity for an integrated approach to treatment that addresses both conditions simultaneously, rather than treating them in isolation. By doing so, healthcare providers may enhance the effectiveness of OSA therapies and

support patients in achieving better health outcomes.

The article "Association between obstructive sleep apnea (OSA) and depression and the effect of continuous positive airway pressure (CPAP) treatment" by (Makram El-Sherbini et al., 2011) presents a comprehensive overview of the relationship between obstructive sleep apnea and depression, highlighting the complexities of this association. The authors define OSA as a condition characterized by recurrent episodes of obstructed breathing during sleep, which can be quantified using the apnea-hypopnea index (AHI). This definition sets a clear foundation for understanding the physiological implications of OSA and its potential impact on mental health.

The article reviews the prevalence of depression among individuals with OSA, citing variable rates depending on the diagnostic criteria employed. For instance, the authors report a depression prevalence of 17.6% using DSM-IV criteria, which significantly increases to around 40% when broader research

diagnostic criteria for affective disorders are applied. This disparity underscores the importance of diagnostic approaches in understanding the comorbidity of OSA and depression, suggesting that the true burden of depressive symptoms in OSA patients may be underestimated.

A critical evaluation of the article reveals that the authors engage with the ongoing debate regarding the causal relationship between OSA and depression. They present three perspectives: one posits that sleep fragmentation caused by OSA leads to depression; another suggests a common neurobiological mechanism underlies both conditions; and a third argues that no definitive relationship exists. This multifaceted discussion reflects the complexity of the interplay between sleep disorders and mental health, indicating that further research is necessary to clarify these associations.

The article also addresses the treatment of OSA with continuous positive airway pressure (CPAP), noting that while it is the standard treatment, studies on its effects on

depressive symptoms have produced inconsistent results. This inconsistency highlights a critical gap in the literature, suggesting that the relationship between the treatment of OSA and the alleviation of depressive symptoms requires further exploration. The authors imply that understanding this relationship could have significant implications for clinical practice, particularly in how patients with OSA are assessed and treated for coexisting affective disorders.

The article titled "Associations of Depression, Anxiety, and Life Events With the Risk of Obstructive Sleep Apnea Evaluated by Berlin Questionnaire" by (Duan et al., 2022) presents a comprehensive examination of the intricate relationship between obstructive sleep apnea (OSA) and affective disorders, specifically depression and anxiety. The authors articulate that OSA is characterized by recurrent episodes of airway collapse during sleep, which leads to significant physiological consequences such as oxygen desaturation, frequent arousals, and

sleep fragmentation. These disruptions not only impact sleep quality but also contribute to severe cardiovascular diseases and cognitive impairments.

A critical aspect of this study is its focus on the prevalence of comorbidity associated with OSA, particularly the high rates of anxiety and depression among affected individuals. The article highlights a meta-analysis indicating that 25.7% of patients with serious mental illnesses also experience OSA, underscoring the bidirectional relationship between these conditions. The authors argue that anxiety and depression can disrupt sleep patterns, which may exacerbate the severity of OSA, creating a vicious cycle that complicates both conditions. This assertion is supported by evidence suggesting that a significant proportion of individuals with depression also experience anxiety, and vice versa.

Moreover, the article discusses the impact of adverse life events, such as divorce or unemployment, on the onset of psychiatric disorders, further linking

these stressors to the development of OSA. This connection emphasizes the multifactorial nature of OSA, where psychological, social, and physiological factors intertwine to influence its occurrence.

The methodology employed in this study, utilizing the Berlin Questionnaire to evaluate OSA risk, is appropriate for the research objectives. However, the authors could enhance their analysis by including a more diverse population sample to generalize findings across different demographics. Additionally, while the article effectively outlines the associations between depression, anxiety, and OSA, it could benefit from a deeper exploration of potential interventions that address both sleep apnea and its comorbid affective disorders.

The article "Prevalence of depression and anxiety in obstructive sleep apnea" by (Gharsalli et al., 2022) provides a comprehensive examination of the relationship between obstructive sleep apnea (OSA) and affective disorders, specifically focusing on depression and anxiety. The authors present

compelling evidence that highlights the prevalence of depression among OSA patients, particularly emphasizing the role of social support systems in this demographic.

One of the key insights from the study is the identification of poor family support and social isolation as significant factors contributing to the prevalence of depression in OSA patients. This finding underscores the importance of a supportive environment in mitigating mental health issues among individuals suffering from OSA. The article suggests that patients who live alone or lack robust social networks are at a heightened risk for developing affective disorders. This connection between social support and mental health is critical, as it indicates that interventions aimed at enhancing social connections may play a pivotal role in improving the psychological well-being of OSA patients.

Additionally, the authors note that OSA is an independent risk factor for depression, particularly in individuals with moderate to severe manifestations of the condition. This assertion is significant as it positions

OSA not merely as a sleep disorder but as a potential precursor to more serious mental health issues. The correlation between OSA and coronary artery disease (CAD) in depressed patients further complicates the clinical picture, suggesting that the interplay between physical and mental health in OSA patients warrants further investigation.

Interestingly, the study reveals that while OSA is associated with symptoms such as fatigue and mood disorders, the severity of OSA does not appear to contribute to the prevalence of depression. This finding is particularly noteworthy as it challenges some existing assumptions in the field. The authors align their results with other studies that have similarly failed to establish a direct link between OSA severity and depression rates, indicating a potential gap in understanding the nuanced relationship between these variables.

---

### **CONCLUSION**

---

The literature on the association between obstructive sleep

apnea (OSA) and affective disorders, particularly depression, illustrates a complex interplay characterized by shared symptoms, varying prevalence rates, and methodological challenges. Early research highlighted significant correlations, with studies indicating that a notable percentage of OSA patients experience depressive symptoms, often seeking psychiatric help (M Schröder & O'Hara, 2005). This foundational understanding has evolved, emphasizing the need for longitudinal studies to clarify the temporal relationships between OSA and depression (Harris et al., 2009).

Subsequent analyses have noted that the variability in reported prevalence rates of depression among OSA patients can be attributed to the different diagnostic tools employed across studies (Makram El-Sherbini et al., 2011). This variability complicates the understanding of whether OSA leads to depression or if both conditions arise from shared neurobiological pathways (Makram El-Sherbini et al., 2011). Additionally, the role of treatment modalities, specifically continuous positive airway pressure (CPAP), has

yielded inconsistent results regarding the alleviation of depressive symptoms, indicating a need for further exploration in this area (Makram El-Sherbini et al., 2011).

The findings also underscore the importance of considering comorbid conditions such as anxiety and the impact of adverse life events on the onset of OSA, suggesting a cyclical relationship where mental health issues exacerbate sleep disturbances (Duan et al., 2022). Furthermore, the influence of social support on the prevalence of depression among OSA patients has been emphasized, with inadequate family support identified as a significant risk factor (Gharsalli et al., 2022). This highlights the multifaceted nature of the relationship between OSA and affective disorders, where psychological, social, and physiological factors converge.

In conclusion, the existing literature demonstrates a nuanced relationship between obstructive sleep apnea and affective disorders, particularly depression. The interplay of shared symptoms, methodological discrepancies, and the influence of

comorbidities and social factors complicates the understanding of this association. There is a clear need for further research, particularly longitudinal studies and investigations into treatment impacts, to elucidate the complexities of these interrelated health concerns.

---

### REFERENCES

---

1. M Schröder, C. & O'Hara, R., 2005. Depression and Obstructive Sleep Apnea (OSA). [ncbi.nlm.nih.gov](https://pubmed.ncbi.nlm.nih.gov/16181111/)
2. Harris, M., Glozier, N., Ratnavadivel, R., & R Grunstein, R., 2009. Obstructive sleep apnea and depression. [PDF]
3. Makram El-Sherbini, A., Salah Bediwy, A., & El-Mitwalli, A., 2011. Association between obstructive sleep apnea (OSA) and depression and the effect of continuous positive airway pressure (CPAP) treatment. [ncbi.nlm.nih.gov](https://pubmed.ncbi.nlm.nih.gov/21481111/)
4. Duan, X., Zheng, M., Zhao, W., Huang, J., Lao, L., Li, H., Lu, J., Chen, W., Liu, X., &

5. Deng, H., 2022. Associations of Depression, Anxiety, and Life Events With the Risk of Obstructive Sleep Apnea Evaluated by Berlin Questionnaire. [ncbi.nlm.nih.gov](https://ncbi.nlm.nih.gov)
6. Gharsalli, H., Harizi, C., Zaouche, R., Sahnoun, I., Saffar, F., Maalej, S., & Douik El Gharbi, L., 2022. Prevalence of depression and anxiety in obstructive sleep apnea. [ncbi.nlm.nih.gov](https://ncbi.nlm.nih.gov)