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# Message: from the President of BioNatural Healing College (BNHC)



Greetings!

First and foremost, I am extremely thankful to Almighty God for granting me this opportunity to present the BioNatural Healing College (BNHC), BNHC E-Magazine to our dear readers. Also, I would like to thank you all, especially the dear readers who send us their valuable feedback and support. The information in this magazine is solely for educational purposes.

We hope this BNHC- E-Magazine will be useful to you based on the contribution and dedication of many other respected researchers and colleagues around the globe. Thanking and wishing you all have the best health and prosperous life.

Best regards,

Dr. Nadir Sidiqi Ph.D.



# BioNatural Healing College

**BioNatural Healing College** Hope you and your loved ones are staying healthy and safe during this pandemic (COVID-19). What we need to do especially during this uncertain time as follows:

1. Vaccination, Sanitation and Isolation from Social Interaction.
2. Positive Attitude will Increase the Power of Mind and Immune System.
3. Healthy Diet and Drink Plenty of Water (Honey with green tea, vitamin D<sub>3</sub>, vitamin C), Get Enough Sleep.
4. Exercise (any type of physical activity for 30 minutes daily).
5. A Lot of Prayer to Almighty God (be patient, calm).

**May Almighty God bless, guide us all (Humanity) and grant us the ability to find a cure for the elimination of COVID-19.**

# Obstructive Sleep Apnea: A Path to Healing of Other Maladies

By Ali Ghafoor B.S and Shafi Sidiqi B.S.

## Is Sleep A Silent Pandemic?

How well do you sleep at night? Do you wake up with a headache or feel sleepy throughout the day? Your symptoms resemble sleep apnea and other sleep conditions that have been well documented throughout history. Sleep is one of the most important activities for a human being's overall well-being and health. So, it's no surprise that sleep-related conditions have been consistent themes in many historical works, including classics by William Shakespeare. As a playwright, Shakespeare depicted some of his characters with a range of sleep disorders that in turn, changed their personalities and influenced their behavior (Furman et al., 1997). The best example is seen in Othello Act III where Iago declares:

*“Not poppy, nor mandragora,  
Nor all the drowsy syrups of the world  
Shall ever medicine thee to that sweet sleep  
Which thou owedst yesterday”* (Dimsdale, 2009).

Here, Shakespeare applies Iago's use of sleep as a 'torture strategy' to emphasize that no concoction can help someone recover from the sleep they lost. The incident highlights that even Shakespeare understood the restorative qualities of sleep so much so that he fashioned his characters around the theme.

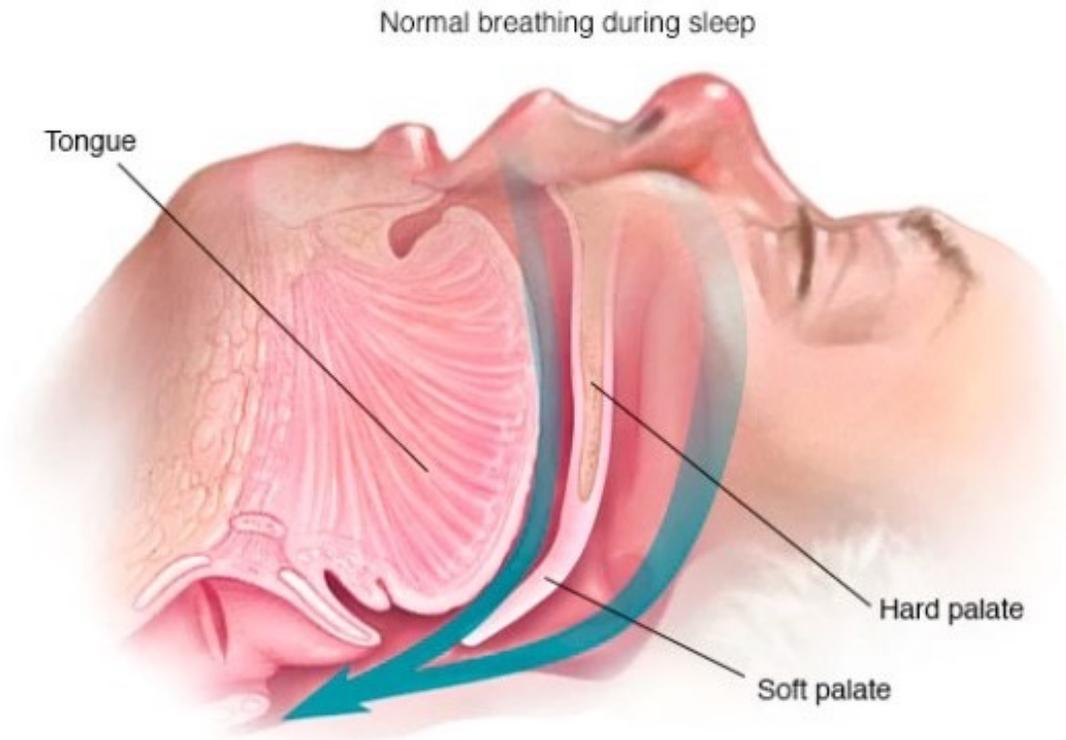
But, while English literature can be a great source of data on sleep disorders, it has also made appearances in religious texts such as the Holy Qur'an. Indeed, the Creator of creations Almighty God has mentioned the vital importance of sleep for all His living creatures, particularly noble human beings. *“And it is He Who has made the night for as clothing and sleep (a means for) rest and has made the day a resurrection (for renewal of life and activity)”* (Qur'an, 24:47).

The focus of sleep in varying texts in history highlights its value and this article focus on the science of sleep disorders, particularly, obstructive sleep apnea.

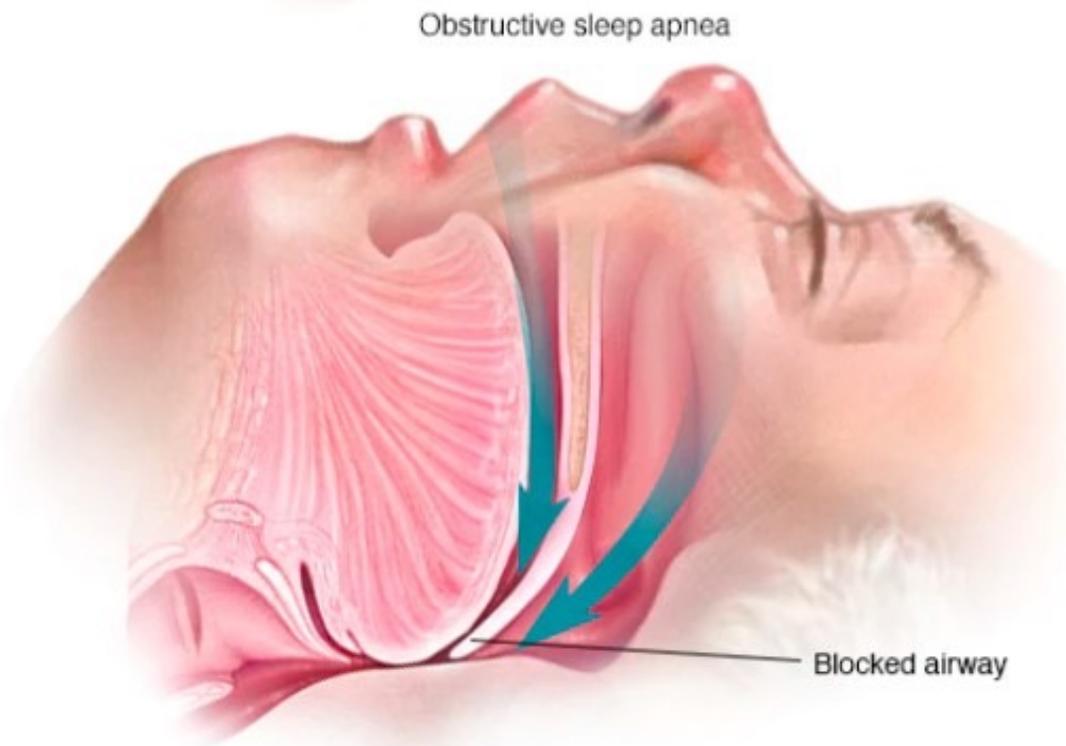
**Obstructive Sleep Apnea:** Obstructive Sleep Apnea (OSA) is a sleep disorder that is commonly characterized by the repetitive collapse of the pharyngeal passageway during sleep, forcing recurrent awakenings to reconcile upper airway patency (Mukherjee et al., 2015). It is a common disorder that affects 17% of women and 34% of men in the United States and has similar pervasiveness in other countries (Gottlieb & Punjabi, 2020). These statistics are worrying, especially considering that sleep disruption creates other significant health problems.

**How Does Obstructive Sleep Apnea Occur?** To understand why OSA is an obstruction to sleep duration and quality, it's valuable to examine how exactly it occurs. OSA is caused by muscle relaxation in the throat, an involuntary process that obstructs normal airflow. This happens during rapid eye movement (REM) sleep and can lead to complete obstruction of air pathways, causing the sleeper to stop breathing. With the obstructions emerging repeatedly during the entire sleep period, individuals can experience reduced sleep quality, and gradually, other health outcomes emerge as elaborated in subsequent sections (Gottlieb & Punjabi, 2020).

**The Pathophysiology of OSA** During sleep, muscle activity is lost, and to compensate for the loss of ventilation and airway patency, the individual is forced to awake. Fogel et al. (2004) explain the pathophysiology of OSA, revealing that during wakefulness, neuro-muscles increase the activity of the pharyngeal dilator muscles, a reflex that is lost during sleep onset. Thus, apnea occurs when there's a defect or collapse of the pharyngeal airway that's corrected once the individual awakes. Sadly, the cycle starts all over again once the individual goes to sleep.



***Figure 1: Image of Normal Breathing During Sleep (Mayo Clinic, 2021)***



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***Figure 2: Image of Difficult Breathing During Sleep with OSA (Mayo Clinic, 2021)***

## Risk Factors for OSA

OSA is a condition that can affect anyone but studies have revealed that some people are at higher risks for OSA than others (Al Lawati et al., 2009). Some conditions that can lead to the occurrence of OSA in a patient include:

- **Obesity:** Obesity is a major risk factor for OSA since when fat deposits around the neck, it increases pressure that might be intrusive to upper airway functions.
- **Gender:** OSA is more prevalent in men than women, at least twice likely to experience from the condition.
- **Ethnicity:** Races with higher BMIs (such as African Americans and Asians) are at higher risks of OSA.
- **Family history (genetics):** OSA risks are higher in families where more individuals have experienced from the condition propounding the significance of genetics in the development of this disorder.
- **Substance use:** The use of alcohol and smoking has also been found to aggravate the risks of OSA.

## Impact of OSA on Sleep Quality & Health

So, now that we know what OSA is and how it occurs, it's vital we take a look at its impacts. What would happen if OSA is left untreated?

If left untreated, OSA leads to some complications that may develop into comorbid conditions. Some known developments include renal disease, asthma, cancer, metabolic and cardiovascular and cerebrovascular diseases (Bonsignore et al., 2019). Furthermore, since OSA causes mild to chronic sleep disruptions, it directly reduces sleep quality, developments that predispose the individual to a range of other physiological problems. Studies confirm that sleep disruptions can lead to various problems, including weight issues, type 2 diabetes mellitus, hypertension, and cardiovascular disease (Medic et al., 2017).

A development that causes further worry is the frequency of OSA and the growing incidence of comorbidities associated with the condition. While the reported rates of OSA remain fairly stable over time, the degree to which it is linked with comorbid conditions continues to grow rapidly (Huang et al., 2008). However, the pattern of discoveries is likely the consequence of better diagnostic and reporting procedures that allow medical science better insight into the linkage between conditions. For example, until fairly recently, it was also not known that OSA contributes to depression and anxiety in adults (Osman et al., 2018). OSA creates mental consequences since those suffering from OSA tend to wake up frequently, they are unable to get enough rest or relaxation during the night. Individuals who don't experience long-term sleep suffer from challenges of memory processing and the burdened regulation of brain activity (Walker, 2009). Neurological studies have continuously shown that sleep is directly connected to cognition and emotion (Walker, 2009; Grove et al., 2020). Another dimension of the dangers of OSA is its close connections to chronic kidney disease (CKD); one of the most significant bidirectional comorbidity relationships. Abuyassin et al., (2015) reported that CKD and OSA are associated through pathological mechanisms, as both diseases increase the potential of the other emerging. CKD is a risk factor for OSA since it can lead to pharyngeal narrowing when there's fluid overload, alterations in chemoreflex responsiveness, and even lead to the build-up of uremic toxins (Abuyassin et al., 2015). On the other hand, OSA is a risk factor for CKD as it can accelerate the development of renal dysfunctions. Lin et al. (2016) find that patients with OSA, even with no hypertension or diabetes comorbidities, had higher risks of developing CKD within a period of 3 years. With both conditions rising in prevalence in the United States, researchers often recommend that doctors should conduct diagnostic tests for sleep apnea in patients with CKD (Lin et al., 2020).

## **OSA Diagnosis & Treatment**

### **OSA Diagnosis**

The prevalence of obstructive sleep apnea (OSA) has attracted significant attention from medical practitioners and in recent history, various approaches for diagnosis and treatment have emerged. Firstly, diagnosing OSA is difficult due to the absence of any visible symptoms. Lorenzi-Filho et al., (2017) explain that despite the florid representation of OSA, such as loud snoring, tiredness, and disrupted sleep, doctors and patients alike have low perceptions of the condition. Yet, since OSA presents a real and acute threat to the well-being of the patient, proper and timely diagnosis has become even more critical for both researchers and practitioners.

In most cases, the diagnosis will come from tests that when administered, score about 80% in test accuracy, revealing that current diagnostic tools are insufficient (Laharnar, 2021). However, in terms of treatment, OSA cannot be cured using any medication (Romero-Corral et al., 2010). One of the reasons why OSA prevalence and identification are considered complex is because its pathophysiologic mechanisms are overlapping. For medical practitioners, physical or historical examinations are often not accurate or sufficient to make any diagnosis for the condition. However, Laratta et al., (2017) report that the ‘gold standard’ for OSA diagnosis is polysomnography (level I study), which collects data from seven or more data channels. Polysomnography – also known as a sleep study – is an in-depth test that is generally used to diagnose sleep disorders (Rundo & Downey, 2019). It records oxygen levels, heart rate, breathing, and brain activity among other indicators, making it an extensive multi-parameter study and diagnostic tool. When patients are at risk of OSA, polysomnography can help to confirm the diagnosis, even when there’s no cardiopulmonary comorbidity. Such a strategy for diagnosis can help to expedite diagnosis, especially for individuals that usually report unrefreshing sleep or fatigue. **OSA Treatment**

A treatment approach that is considered effective for OSA is continuous positive airway pressure (CPAP) therapy. Continuous positive airway pressure (CPAP) is an intervention that allows the patient to breathe normally throughout the night by preventing pharyngeal collapse (Malhotra et al., 2000). Some benefits of CPAP include improved quality of life, positive impacts on sleepiness, and improved cognitive performance (Coman et al., 2016; Rakel, 2009). Additionally, this intervention was shown to decrease comorbidity risks in most patients. Laratta et al. (2017) explain that patients with OSA should undergo CPAP treatment, with evidence indicating that it reduces apnea-hypopnea index (AHI), a measurement that is used to define the severity of sleep apnea, and sleepiness symptoms.

Gradually, the persistent use of CPAP improves the quality of life of the patient, making it a great treatment option. For instance, in patients with obstructive sleep apnea-hypopnea (OSA), CPAP has been found to delay the development of cardiovascular disease. CPAP is established to be effective in the elimination of upper airway collapse in sleep, which increases sleep quality and restfulness. Studies have further suggested that CPAP has constructive impacts on CVD (cardiovascular disease) markers, especially by reducing c-reactive protein (CRP) levels that are usually higher in patients with OSA (Ayas et al., 2006). While studies to evaluate the long-term capabilities of CPAP on CVD outcomes in patients with OSA are not conclusive, present estimates show that its impacts are positive.

One interesting trend in OSA diagnosis and management is personalization, with individualized approaches chosen over other blanket approaches. Each patient is different and the reality is that OSA differs from one person to the next. When treatment is tailored to a patient's unique physiology, better results and outcomes can be experienced to stem the condition before it worsens. Other proactive countermeasures to OSA and its associated risks of cardiovascular disease morbidity and mortality are diet and exercise. Studies into the aspects indicate that where OSA is prevalent, weight reduction and diet have a corrective impact on sleep disruption (Dobrosielski et al., 2017). With the recognition of these dimensions, the future trends toward OSA might move to demand lifestyle changes as a viable countermeasure.

## **Economic Impacts of OSA**

The discussion reveals that OSA has multiple impacts on health and the quality of sleep for various individuals. But, what are some economic impacts of OSA? One major impact of OSA is that it limits the participation of patients with OSA in the workforce (Al Ghanim et al., 2008). People with OSA might experience sleepiness, which leads to impaired work performance because of limited cognitive abilities. Another related impact is the occurrence of occupational injuries as individuals suffering from apnea suffer from work-related injuries. Studies reveal that people with OSA are up to seven times more at risk of motor vehicle crashes than those without the condition (George, 2001). With the extensive impacts of OSA, the healthcare industry is realizing that lack of treatment generates more economic damages than earlier realized (Al Ghanim et al., 2008). All the conditions that develop because of OSA such as hypertension, mood disorders, cardiovascular disease, and other injuries tally up as healthcare costs. Treatment and therapy options like CPAP have been found to reduce these costs, making it a cost-effective healthcare initiative against OSA's negative consequences (Sassani et al., 2004).

## Future Perspectives on OSA

OSA remains a challenging condition that creates impediments and risks for patients. Some direct impacts of OSA include related comorbidities like cancer, and cardiovascular diseases as well as significant economic costs. The prevalence and emergence of OSA is a wake-up call that society needs to recognize the impact of the condition. For now, CPAP remains the gold standard for treating OSA, with its use shown to decrease negative consequences like comorbidity. CPAP has also been found to increase positive effects like the quality of life, positive impacts on sleepiness, and improved cognitive performance. Yet, there's a need for better predictive tools to catch the condition early, as well as alternatives for the enhanced management of OSA.

In the future, research into OSA might reveal the presence of biomarkers and genetic predisposing factors that might indicate OSA emergence and its adverse outcomes. It's time that the public and health practitioners alike take sleep as a challenge that can be addressed through education, research, access to care, and proactive interventions. OSA is a budding pandemic that's ruining the lives of millions and if it's not treated as a priority, might create a world of sick, desperate, and hopeless people. Like Matthew Walker once said, *"The best bridge between despair and hope is a good night's sleep."* So, when we treat OSA, we heal individuals, families, and the world.

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# Accomplishment and Congratulations



On behalf of BioNatural Healing College (BNHC), I would like to congratulate Mr. Wais Seddiqi for his big academic accomplishment along with very hard work and dedication to earning his Master of Arts degree in Medical Sciences from the Pacific Northwest University of Health Sciences (PNWU) Washington State.

In addition, Mr. Seddiqi has been accepted into the Pacific Northwest University of Health Sciences (PNWU), College of Osteopathic Medicine.

We wish him much success with continuing to be a part BNHC family and ask Almighty God to grant him the opportunity, to make it easy for him to continue his medical school to become a physician for the health improvement of humanity.

Best regards,

Nadir Sidiqi

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Dr. Nadir Sidiqi Ph.D

President/Dean of Academics

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