

# Some Points to Ponder through Some New and Old Concepts in Sleep Medicine

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## Introduction

Sleep medicine continues to evolve rapidly. Sleep is a resting state in which an individual becomes relatively quiescent and unaware of the environment. The interest in sleep medicine started taking momentum from seventies and we are now gaining more and more data on the same.

To quote Hamlet, Act III, Scene 1: “to sleep; perchance to dream: ay, there is the rub; for in that sleep of death what dreams may come”.

During sleep most physiological functions decrease, like breathing which becomes slower and deeper, may stop for short periods with significant drops in respiration known as nocturnal desaturation. Since the sleep disorders can occur in 2-4% of the adult population it assumes great significance.

So important that sleep disorders have become in clinical medicine, The Centers for Medicare and Medicaid Services [CMC, USA] is considering the possibility of portable monitoring for determination of patients for CPAP. This seems logical as OSA is life threatening and CPAP at 9to10cm of H2O is as good as lab titrated values. Despite this, the American Academy of Sleep Medicine continues to oppose this portable

monitoring and auto titration CPAP in the routine management of sleep apnea.

The epidemiology of sleep disordered breathing has changed over the years, and new effects are pouring in about changes in metabolic function and cardiovascular outcomes.

Prevalence of symptoms and risk of sleep apnea in primary care has been recently illustrated well in the article by Netzer NC (1).6223 patient forms were analyzed from USA, Spain and Germany from the patients who had come for hypertension, obesity, chronic snoring ,sleepiness and a calculation of OSA was done. It was noted that the rates of frequent sleepiness and drowsy driving were very high. About a third warranted sleep apnea evaluation .Among snorers, 37% of men and 27% of women were at high risk of OSA. The use of CPAP, in patients with heart failure, the improvement in blood pressure management and cardiac function is well documented (2, 3). In India, the prevalence in OSA in urban areas is equally disturbing (4). The prevalence rates for sleep disordered breathing in men aged 35 to 65 years is 19.5% and OSA 7.5%. The data from other groups like Asians are also at increased risk for sleep apneas (5).The exact figures from various centers with the same Berlin questionnaire has to be done to get world wide data.

What are the factors influencing breathing during sleep in adult healthy people? It has been proved beyond doubt that healthy males and females have no difference in oxygen desaturation during NREM or REM sleep( 6, 7). There are definitely changes due to old age which have been demonstrated as changes in respiratory controller function occurring with age (8,9). Alcohol reduces pharyngeal muscle tone in healthy people, snoring appears where prolong apneas and poor sleep quality (10). Benzodiazepines have similar effects like alcohol (11). Caffeine has a bad effect on sleep and has been extensively studied (12). More and more drug related studies in various patient groups are coming in to enhance our knowledge of sleep medicine.

Is there a genetic predilection for sleep apneas? Some authors think so, by demonstrating that many in the family are affected (13, 14). Both the symptoms (15) and sleep laboratory evidence (16) have been shown to present in families beyond doubt. Relatives of non obese obstructive sleep apnea patients have smaller upper airways and a different craniofacial morphological structure than matched controls.

Patients with COPD, with hypercapnia plus cor pulmonale [classical blue bloater if you see any] may have OSA (17, 18). Such patients have, what you call an 'overlap syndrome' [COPD+OSA]. This combination has important consequences in terms of morbidity and treatment. A saw tooth pattern in the SaO<sub>2</sub> trace in a patient with COPD suggests that OSA is also present. If a COPD patient with moderate severe airflow obstruction has day sleepiness time suspect overlap syndrome and treat both simultaneously. Remember, also, that supplemental oxygen therapy alone is not the optimal treatment in these cases as nasal CPAP plus oxygen is the most efficient therapy (19). It is still debatable whether isolated nocturnal hypoxemia should be treated or not with nocturnal oxygen plus CPAP.

The controversy regarding whether fixed CPAP and auto CPAP has been raging for some time. In a classical study done in about 3 months time it was proved beyond doubt that both delivered equally efficacious treatment for the patients(20). But the point is that improved compliance is more in autoCPAP(21,22). Still a lot of work is to be done especially in centers where they rely on CPAP in outpatient based approach.

In the era of travel to distant places and the ensuing jet lag there is a lot of interest in studying the effects especially in normal individuals. The jetlag syndrome

occurs when the asynchrony occur in the person's internal circadian pacemaker and the external clock time secondary to rapid travel across several time zones. Symptoms include problems with sleep onset or maintenance, decreased alertness, decreased performance in the new time zone. Light is the most potent stimulus for shifting the circadian cycle. Melatonin appears to play an important role in synchronizing the suprachiasmatic nucleus of the hypothalamus [internal pacemaker] to the environment. More studies are needed to answer some of the regulatory mechanisms in this connection (23). Interestingly the jetlag worsens with age.

Sleepwalking in adults is interesting, as not all adults had the same problem when they were children. Sleep walking occurs during slow wave sleep and can occur in stage2 and second half of the night (24). It is interesting to note that CPAP can aggravate sleep walking in people with prior sleep deprivation with resulting slow wave sleep rebound.

The metabolic changes in sleep apnea is being studied extensively and leptin seems to have more role in this, especially with a dip in level in the morning in obese OSA patients (25). The effect of treatment for sleep disorders on leptin levels is just coming in (26)

In this short essay, I have put in some of the observations in sleep, or the lack of it which has surfaced as a major health problem. Considering the importance of sleep in the well being of any man or woman, all physicians require a practical working knowledge of sleep disorders. This article is only the tip of the iceberg detailing the points in vast sea of sleep medicine, but I hope this will raise a spark of interest going through old as well as new references. I gave the old references to appreciate what we have gone through the years in the study and understanding of sleep medicine.

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