How nomenclature can drive diagnosis and treatment: A discussion paper, aimed largely at the dental and orthodontic professions on how the use of specific terminology has influenced diagnosis and treatment of Sleep Apnea

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Abstract

May 22, 2018. American Thoracic Society International Conference, San Diego, USA.

"Nearly 1 Billion people worldwide have Sleep Apnea", International Sleep Experts estimate. A new data analysis presented by ResMed at the 2018 American Thoracic Society International Conference held in San Diego, indicates than the prevalence of Sleep Apnea impacts more that 936 million people worldwide - nearly ten times greater than previous estimates.

"June 10, 2019. More than 170 million people in North and South America have sleep apnea, according to a new study released today by apnea device-maker ResMed (NYSE:RMD). The company reached the 170 million figure based on the American Academy of Sleep Medicine (AASM) 2012 criteria and termed it a "conservative" estimate. The figure represents 37% of adults on the two continents."

On the rise and fall of the apnea–hypopnea index: A historical review and critical appraisal

Conclusion

From the present historical review and critical appraisal, it is concluded that the introduction of the AHI in the previous century was appropriate and has served a purposeful role in the establishment of OSA as disease in its own right. This approach was pivotal in differentiating the clinical picture of OSA from other disorders such as obesity hypoventilation syndrome and narcolepsy. Moreover, it was instrumental for developing and assessing effective treatment modalities including CPAP therapy. However, in the course of time, the AHI has become a proxy for the existence and severity rating of OSA, construed as a uniform disease concept. This conception has instigated controversy in the scientific literature and has been a source of uncertainty regarding the clinical relevance of OSA, given the fact that several clinical trials yielded unclear results. At present, the traditional role of the AHI as a diagnostic marker and severity indicator of clinically relevant OSA is on the retreat. The observation that OSA covers a large spectrum of clinical and pathophysiological features necessitates new paradigms not only for the overall diagnosis of clinically relevant OSA, but also for allowing precision medicine to focus on various treatable traits that constitute this heterogeneous disease. We believe it is time to release the AHI as a mainstay for OSA diagnosis and to start using more precise clinical markers, many of which still remain to be discovered. Despite close to five decades of research and the development of sophisticated breathing devices and appliances there is no diminution of the problem in sight and the numbers of untreated cases continue to grow. The treatment continues to be based on nighttime intervention with machines and oral appliances, and this does not address the aetiology of the problem. It is unlikely that any progress will be made for as long as the status quo remains. A different approach is required to achieve a different outcome. The current nomenclature steers us in a specific direction which is in fact to address the consequence, not the problem. This discussion paper will explain how the nomenclature associated with the broad-based condition, loosely called 'sleep apnea', contributes to our narrow focus on the origin of the disease. This causes a single lens focus of the diagnosis and treatment being accepted as the 'Gold Standard' for the identification of a definable 'disease' with a definable interventive treatment regimen approach. Could this in fact be the prime reason for the poor resolution of a serious worldwide problem? People with the best intentions are looking for the right answers in the wrong places. Most people who wake up multiple times during the night do not do so because they can't 'sleep'. They wake up because they can't 'breathe'. That is why it is so important to remember that the two "Gold Standards" for the treatment of Sleep Disorders have nothing to do with Sleep per se. CPAP machines and Oral Appliances are Breathing Devices, yet are prescribed, delivered, fitted, monitored and titrated by people who, by and large, do not have any formal education in the field of Functional Breathing or the Behaviour, Mechanics, Dynamics or Biochemistry of this vital and complex function called Sleep. Sleep is a

physiological function, not a disease, and therefore should not require a specialty called 'Sleep Medicine'. Sleep Medicine is there to treat the comorbid, end stage sequelae of disrupted sleep, largely as a result of disrupted breathing. This paper will cover the principles of Evidence Based Medicine as applied to the following areas:

Confusing observation with interpretation (or mixing)

Observation is a factual statement of what is actually happening and should not Include speculation or supposition as to its origin. Interpretation, on the other hand, is an individual view of why and how this observation is happening and this interpretation can be influenced by the background, training, emotional or financial investment and agenda of the observer, as well as its common usage in a peer group within a profession.

Nomenclature

This should be clear, precise and state nothing but the observable fact without any qualification or reference to the cause, outcome or behaviour.

treating a syndrome with multiple origins and comorbidities as a single 'disease'

The term 'Sleep Apnea' is a grab-bag term used much in the same way that 'flu is used. Because such a high percentage of cases are termed 'idiopathic' there is no defined place for them, so they are simply referred to in a generic way.

Lack of standardisation of sleep testing equipment, parameters and reporting.

In the 2018 Annual Report of the AASM the President stated that there appears to be no control over the numbers of people nor types of equipment used in HST (Home Sleep Testing). Yet these sleep tests are sent to 'Board Certified Sleep Physicians', most often in remote locations overseas, for scoring and often diagnosis, where the person making the diagnosis never gets to see or interview the patient and is relying on nothing other than raw data numbers. The critical factor of observation has now been subsumed by data, and those data are produced by a variety of machines and conditions which have varying standards.

Focusing on only one segment of a multifactorial issue.

Every one of the 11 body systems are independent to a degree, as well as being interdependent, and overall functionality is unlikely to happen when one or another system is out of alignment. This often creates a cascade or flow on effect that will influence the entire organism.