



Editorial

Respiratory Disorders During Sleep: A New Dimension for 2018[☆]

Los trastornos respiratorios durante el sueño 2018: una nueva dimensión

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Sleep-disordered breathing and sleep apneas in particular are very common¹; they reduce quality of life and are a risk factor for various diseases.^{2,3} The study of sleep apnea has led to exponentially more attention being paid to sleep disorders of a more neurological nature, and also to the indication of home non-invasive mechanical ventilation in patients with hypoventilation, a phenomenon that inexplicably is not fully associated with sleep. Moreover, we now know that sleep should be considered a sleep/health tandem, like diet and exercise.⁴ For these reasons, sleep disorders have gained new importance, and given their prevalence and morbidity, must be viewed as a healthcare, social and economic challenge.^{5,6}

The growing demand to address various sleep disorders has not been accompanied by new strategies, and those currently available may even be considered outdated. Tertiary hospitals are now becoming saturated with patients who are undiagnosed or inappropriately monitored, a situation that defies logic, since all healthcare levels should be involved in the management of such a common disease. We must therefore adjust our thinking to the changing reality, and prioritize collaboration between medical professionals, scientists, technicians, data scientists, and patients to identify needs and improve our understanding, so that the required changes can be implemented.

Three research concepts must take precedence: (1) basic bench studies and studies in animal models to elucidate the mechanisms of sleep disorders; (2) creative and innovative proposals for developing new processes, and (3) the translation of these advances to clinical practice in order to improve care at the bedside. The entire

working environment of the sleep unit (in which the lab plays only a small part) has to adapt to the new scenarios.^{7,8} Sleep science must be led by accredited professionals with a more comprehensive perception of sleep, working in conjunction with extra-hospital medical services to improve and develop new procedures. Above all, we need to adapt our current approach and increase our capacity for change.⁷

One of the most important strategic lines of the Spanish Sleep Group is the development of this new concept of “sleep entering a new dimension”. This important project can be summed up in 4 points: (1) optimization of procedures; (2) network organization; (3) definition of the best use of information and communication technologies (ICT), including telemedicine, and (4) perception of sleep as health, to enable overall changes in sleep habits. With regard to the first point, the need for simplified equipment is undeniable, and a working network (primary care, nursing) is essential; only complex patients should be seen in hospitals. In this respect, the Spanish group, specifically in Lerida and Cáceres, has achieved positive results, although these are not universally applied due to problems in some healthcare settings. Medical technology, far from being a private “black box” available to a selected few, must be simple and universal, adapted to the needs of medical professionals, patients, and above all, society as a whole. The concept of sleep as health is fundamental and must be one of our basic objectives.

All these factors, and the possibly over-rapid and under-questioned development of certain techniques (including ICTs), call for a critical, possibilist analysis.⁹ Virtual sleep laboratories, video conferences, diagnostic procedures, and telematic monitoring are a reality, but their effectiveness should be confirmed. For example, initial studies have shown that ICTs, specifically telemedicine applied to sleep disorders, can be complicated to use.¹⁰ We call this the “technological obstructionism syndrome”. To resolve this problem and to progress, we need: (1) simple equipment and software, and collaboration among professionals, companies, and patients; (2) personalized and

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appropriate selection of patients, diseases, and even health systems, to overcome the shortcomings of telemedicine highlighted in some studies; (3) cost-effectiveness analyses; (4) training for both professionals and patients and, finally, (5) positive help from ethics committees to address the difficult ethical issues.

If the problems mentioned above are resolved, there is no doubt that ICT in its various forms will be very useful. Procedures can be simplified, helping the patient avoid unnecessary trips to centers and improving their follow-up. However, one should always bear in mind the key concepts of personalization, understanding and simplification, and remember that ICTs will not obviate all face-to-face visits.

As we have seen, sleep involves much more than simple monitoring technology. This new dimension also includes ambitious projects, such as the sleep/health binomial. The epidemiological study “Give us your sleep”, part of the Vitoria mHealth Sleep City project, will yield significant data that might change the sleeping habits of the population, and help prevent disease and address factors beyond purely respiratory issues. Harnessing the power of large data science companies, such as Google, will enable clinicians to study many patients, although confounding elements may be a problem.

The first challenges to resolve now are: (1) sleep-disordered breathing (apneas and hypoventilation, both associated with mechanical ventilation and telemedicine); (2) sleep in women; (3) chronobiology; (4) pediatrics; (5) interdisciplinary approaches; (6) collaboration between different healthcare levels and patients, and (7) finally, sleep as health. Etiological studies are important for the application of curative treatments, while telemedicine in particular can be used in areas such as patient management and care. We need a new willingness to focus on sleep. The challenges are to reach the majority of patients, to achieve their participation with cost-effective management, and to view sleep within a global concept of sickness and health. Respiratory medicine

must incorporate most of these aspects and ensure a harmonious coexistence.

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References

1. Heinzer R, Vat S, Marques-Vidal P, Marti-Soler H, Andries D, Tobback N, et al. Prevalence of sleep-disordered breathing in the general population: the Hypno-Laus study. *Lancet Respir Med*. 2015;3:310–8.
2. Lim DC, Pack AI. Obstructive sleep apnea: update and future. *Annu Rev Med*. 2017;68:99–112.
3. Pack AI. Application of personalized, predictive, preventative, and participatory (P4) medicine to obstructive sleep apnea. A roadmap for improving care? *Ann Am Thorac Soc*. 2016;13:1456–67.
4. Mukherjee S, Patel SR, Kales SN, Ayas NT, Strohl KP, Gozal D, et al., American Thoracic Society ad hoc Committee on Healthy Sleep. An Official American Thoracic Society Statement: the importance of healthy sleep, recommendations and future priorities. *Am J Respir Crit Care Med*. 2015;191:1450–8.
5. Pietzsch JB, Garner A, Cipriano LE, Linehan JH. An integrated health-economic analysis of diagnostic and therapeutic strategies in the treatment of moderate-to-severe obstructive sleep apnea. *Sleep*. 2011;34:695–709.
6. Watson NF. Health care savings: the economic value of diagnostic and therapeutic care for obstructive sleep apnea. *J Clin Sleep Med*. 2016;12:1075–7.
7. Doarn CR, Merrell RC. Are you a disruptor and is anyone paying attention? *Telemed J E Health*. 2015;21:319–20.
8. Shelgikar AV, Durmer JS, Joynt KE, Olson EJ, Riney H, Valentine P. Multidisciplinary sleep centers: strategies to improve care of sleep disorders patients. *J Clin Sleep Med*. 2014;10:693–7.
9. Farré R, Navajas D, Montserrat JM. Is telemedicine a key tool for improving continuous positive airway pressure adherence in patients with sleep apnea? *Am J Respir Crit Care Med*. 2018;197:12–4.
10. Isetta V, León C, Torres M, Embid C, Roca J, Navajas D, et al. Telemedicine-based approach for obstructive sleep apnea management: building evidence. *Interact J Med Res*. 2014;3:e6.