

PMSIG Research: Abstracts, Articles and Reviews
November 2017 Topic : Pain and Sleep Topics

Every other month, the Pain Management Special Interest Group will be providing with some updates on new topics, new information and research related topics. Please feel free to submit a topic, research question to dana-dailey@uiowa.edu. If you would like to help in preparing the information, please let me know as well.

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Pediatric Sleep and Pain [4]
Musculoskeletal Pain and Insomnia [5]
Sleep Health Promotion for PTs – Perspective Paper [6]

Bibliography

1. Lomeli, H.A.p., et al., *Sleep evaluation scales and questionnaires: a review.* \par. Actas Esp Psiquiatr\par, 2008. **36**\par(1\par): p. 50-9\par.
2. Finan, P.H.p., B.R.p. Goodin, and M.T.p. Smith, *The association of sleep and pain: an update and a path forward.* \par. J Pain\par, 2013. **14**\par(12\par): p. 1539-52\par.
3. Altman, M.T.p., M.P.p. Knauert, and M.A.p. Pisani, *Sleep Disturbance after Hospitalization and Critical Illness: A Systematic* \par Review. \par. Ann Am Thorac Soc\par, 2017. **14**\par(9\par): p. 1457-1468\par.
4. Allen, J.M.p., et al., *Sleep and Pain in Pediatric Illness: A Conceptual Review.* \par. CNS Neurosci Ther\par, 2016. **22**\par(11\par): p. 880-893\par.
5. Baker, S.p., et al., *Musculoskeletal pain and co-morbid insomnia in adults; a population study of the \par prevalence and impact on restricted social participation.* \par. BMC Fam Pract\par, 2017. **18**\par(1\par): p. 17\par.
6. Siengsukon, C.F., M. Al-Dughmi, and S. Stevens, *Sleep Health Promotion: Practical Information for Physical Therapists.* Phys Ther, 2017. **97**(8): p. 826-836.

Sleep evaluation scales and questionnaires (Lomeli, H.A. et al, 2008) Abstract

Introduction:

Whenever a new scale is created or translated from another language, it must be validated, establishing its reliability for the new population where it will be used. Sleep quality concept is a construct that can be evaluated using self-report scales. Resulting elements vary depending on the individuals surveyed. This type of evaluation is mainly subjective and includes quantitative aspects such as sleep duration, number of awakenings, latency time, and qualitative aspects such as rest sensation, mood and oneiric content (Valencia, 2000). In the present study we made a critical review of the sleep scales designed for child, adolescent and adult populations that have been validated and the difficulties they might present.

Methodology:

Between September 2005 and May 2006 a bibliographical search was made within PubMed, Ovid and the data base of the periodical and book library of the Ramon de la Fuente Muñiz National Institute of Psychiatry, using and combining the following key words: sleep, sleep questionnaire, sleep scale, sleep inventory, adolescent, adolescent sleep scale. The most

relevant papers to our study were selected. The search was limited to Spanish and English articles, although there was no year or geographical origin limit. Articles that did not include clinimetric data were excluded.

Conclusions:

Based on our bibliographical search and our discussion, we suggested the design and validation of a Spanish scale to evaluate adolescent population which avoids a time interval between awakening and the answering of the instrument in order to decrease recall bias.

The association of sleep and pain: an update and a path forward (Finan, P.H., et al, 2013) **Abstract**

Ample evidence suggests that sleep and pain are related. However, many questions remain about the direction of causality in their association, as well as mechanisms that may account for their association. The prevailing view has generally been that they are reciprocally related. The present review critically examines the recent prospective and experimental literature (2005-present) in an attempt to update the field on emergent themes pertaining to the directionality and mechanisms of the association of sleep and pain. A key trend emerging from population-based longitudinal studies is that sleep impairments reliably predict new incidents and exacerbations of chronic pain. Microlongitudinal studies employing deep subjective and objective assessments of pain and sleep support the notion that sleep impairments are a stronger, more reliable predictor of pain than pain is of sleep impairments. Recent experimental studies suggest that sleep disturbance may impair key processes that contribute to the development and maintenance of chronic pain, including endogenous pain inhibition and joint pain. Several biopsychosocial targets for future mechanistic research on sleep and pain are discussed, including dopamine and opioid systems, positive and negative affect, and sociodemographic factors.

Perspective

This critical review examines the recent prospective and experimental research (2005-present) on the association of sleep and pain in an attempt to identify trends suggestive of directionality and potential mechanisms. An update on this literature is needed to guide future clinical efforts to develop and augment treatments for chronic sleep disturbance and chronic pain.

Sleep disturbance after hospitalization and critical illness (Altman M.T., et al, 2017) **Abstract**

Rationale:

Sleep disturbance during intensive care unit (ICU) admission is common and severe. Sleep disturbance has been observed in survivors of critical illness even after transfer out of the ICU. Not only is sleep important to overall health and well being, but patients after critical illness are also in a physiologically vulnerable state. Understanding how sleep disturbance impacts recovery from critical illness after hospital discharge is therefore clinically meaningful.

Objectives:

This Systematic Review aimed to summarize studies that identify the prevalence of and risk factors for sleep disturbance after hospital discharge for critical illness survivors.

Data Sources:

PubMed (January 4, 2017), MEDLINE (January 4, 2017), and EMBASE (February 1, 2017).

Data Extraction:

Databases were searched for studies of critically ill adult patients after hospital discharge, with sleep disturbance measured as a primary outcome by standardized questionnaire or objective measurement tools. From each relevant study, we extracted prevalence and severity of sleep disturbance at each time point, objective sleep parameters (such as total sleep time, sleep efficiency, and arousal index), and risk factors for sleep disturbance.

Synthesis:

A total of 22 studies were identified, with assessment tools including subjective questionnaires, polysomnography, and actigraphy. Subjective questionnaire studies reveal a 50-66.7% (within 1 mo), 34-64.3% (>1-3 mo), 22-57% (>3-6 mo), and 10-61% (>6 mo) prevalence of abnormal sleep after hospital discharge after critical illness. Of the studies assessing multiple time points, four of five questionnaire studies and five of five polysomnography studies show improved aspects of sleep over time. Risk factors for poor sleep varied, but prehospital factors (chronic comorbidity, pre-existing sleep abnormality) and in-hospital factors (severity of acute illness, in-hospital sleep disturbance, pain medication use, and ICU acute stress symptoms) may play a role. Sleep disturbance was frequently associated with postdischarge psychological comorbidities and impaired quality of life.

Conclusions:

Sleep disturbance is common in critically ill patients up to 12 months after hospital discharge. Both subjective and objective studies, however, suggest that sleep disturbance improves over time. More research is needed to understand and optimize sleep in recovery from critical illness.

Sleep and pain in pediatric illness (Allen, J.M., et al, 2016) Abstract

Background:

Sleep disruption is a common comorbidity of pediatric pain. Consequences of pain and disrupted sleep, evidence for the pain-sleep relation, and how aspects of illness, treatment, and pharmacological pain management may contribute to or exacerbate these issues are presented.

Aims:

This conceptual review explored the relation between pain and sleep in children diagnosed with chronic medical or developmental conditions. The goal of this review is to expand upon the literature by examining common themes in sleep disturbances associated with painful conditions across multiple pediatric illnesses. Populations reviewed include youth with intellectual and developmental disabilities (IDD), migraines, cystic fibrosis (CF), sickle cell disease (SCD), cancer, juvenile idiopathic arthritis (JIA), juvenile fibromyalgia (JFM), and functional gastrointestinal disorders (FGIDs).

Results:

Consistent evidence demonstrates that children with medical or developmental conditions are more vulnerable to experiencing pain and subjective sleep complaints than healthy peers. Objective sleep concerns are common but often under-studied. Evidence of the pain-sleep relationship exists, particularly in pediatric SCD, IDD, and JIA, with a dearth of studies directly examining this relation in pediatric cancer, JFM, CF, and FGIDs. Findings suggest that assessing and treating pain and sleep disruption is important when optimizing functional outcomes.

Conclusion:

It is essential that research further examine objective sleep, elucidate the pain-sleep relationship, consider physiological and psychosocial mechanisms of this relationship, and investigate nonpharmacological interventions aimed at improving pain and sleep in vulnerable pediatric populations.

Musculoskeletal pain and co-morbid insomnia in adults; a population study of the prevalence and impact on restricted social participation (Baker, S., et. al, 2017) Abstract

Background:

Comorbidity is common in patients consulting in primary care. Musculoskeletal pain and insomnia each increase the risk of the other. Co-occurrence may pose an increased burden on well-being. However, the prevalence and impact of co-existing pain and insomnia in adults living in the community who may present to primary care is unclear. The aim of this study was to report the prevalence of pain and insomnia in adults registered with primary care, and to examine the impact of co-occurrence on social activities.

Methods:

This population-based prospective cohort study of adults aged ≥ 18 years ($n = 1181$) used health survey data collected via baseline and 12 month follow-up questionnaires. Baseline data on pain, insomnia (4 symptoms: delayed sleep onset, difficulty maintaining sleep, early waking and non-restorative sleep) and putative confounders and social activity restriction at follow up was collected. Associations between baseline pain, insomnia and restricted social activities (RSA) at 12 months were examined using logistic regression, with adjustment for confounders. Interaction terms between pain and each insomnia symptom were examined in final models.

Results:

Mean respondent age was 49.6 (SD \pm 15.2) years, 55.7% were female. At baseline, 880 (74.5%) reported pain, 122 (10.3%) delayed sleep onset, 298 (25.2%) difficulty maintaining sleep, 188 (15.9%) early waking, and 215 (18.2%) reported non-restorative sleep. At follow-up 200 (16.9%) reported RSA. Pain and each insomnia symptom were associated with RSA at 12 month follow-up; pain [unadjusted odds ratio (OR):2.3;95%CI:1.5,3.5), delayed sleep onset (OR:6.1;95%CI:4.0,9.1), difficulty maintaining sleep (OR:3.2;95%CI:2.3,4.4), early waking (OR:4.1;95%CI:2.9,5.9), and non-restorative sleep (OR:4.0; 95%CI:2.8,5.8). Only delayed sleep onset (OR:2.6;95%CI:1.5,4.5) remained significantly associated with restricted social activities in the fully adjusted model. There was a significant interaction between pain and delayed sleep onset (OR:0.3;95%CI:0.1,0.99; $p = .049$) and restricted social activity at 12 months in the final multivariable model.

Conclusions:

Pain and insomnia commonly co-occur, resulting in greater impact upon subsequent functional ability. Delayed sleep onset is the insomnia symptom most strongly associated with reduced functional ability. Clinicians should be aware of the common co-occurrence of insomnia symptoms, inquire about sleep in patients consulting with pain, and offer interventions that target both sleep and pain.

Sleep Health Promotion: Practical Information for Physical Therapists (Siengsukon, et. Al, 2017) Abstract

Sleep disturbances occur in one third of the US population, and the Centers for Disease Control and Prevention's National Center for Injury Prevention and Control has deemed insufficient sleep to be a public health problem. Knowledge about sleep and skills to screen sleep disorders and to promote sleep health have been recommended for physical therapists. Furthermore, in survey studies, physical therapists overwhelmingly agree that sleep is important for health and poor sleep impairs function. Sleep is critical for the proper functioning of the body, including immune function, tissue healing, pain modulation, cardiovascular health, cognitive function, and learning and memory. Sleep disruptions occur across the life span and in individuals with various conditions that are typically treated by physical therapists. Therefore, the purpose of this perspective paper is to (1) discuss the relevance of sleep to physical therapist practice, (2) recommend tools to screen for the 3 most common sleep disorders, and (3) provide suggestions for how therapists can integrate sleep health in prevention, health promotion, and wellness interventions.