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Systematic Review

Sleep Treatments in Disorders of Consciousness: A Systematic Review

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Abstract: Sleep disorders are among the main comorbidities in patients with a Disorder of Consciousness (DOC). Given the key role of sleep in neural and cognitive functioning, detecting and treating sleep disorders in DOCs might be an effective therapeutic strategy to boost consciousness recovery and levels of awareness. To date, no systematic reviews have been conducted that explore the effect of sleep treatments in DOCs; thus, we systematically reviewed the existing studies on both pharmacological and non-pharmacological treatments for sleep disorders in DOCs. Among 2267 assessed articles, only 7 were included in the systematic review. The studies focused on two sleep disorder categories (sleep-related breathing disorders and circadian rhythm dysregulation) treated with both pharmacological (Modafinil and Intrathecal Baclofen) and non-pharmacological (positive airway pressure, bright light stimulation, and central thalamic deep brain stimulation) interventions. Although the limited number of studies and their heterogeneity do not allow generalized conclusions, all the studies highlighted the effectiveness of treatments on both sleep disorders and levels of awareness. For this reason, clinical and diagnostic evaluations able to detect sleep disorders in DOC patients should be adopted in the clinical routine for the purpose of intervening promptly with the most appropriate treatment.

Keywords: sleep; sleep disorders; sleep–wake cycle; minimally conscious state; vegetative state; DOC

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Citation: Cacciatore, M.; Magnani, F.G.; Leonardi, M.; Rossi Sebastiano, D.; Sattin, D. Sleep Treatments in Disorders of Consciousness: A Systematic Review. *Diagnostics* **2022**, *12*, 88. https://doi.org/10.3390/diagnostics12010088

Academic Editors: Bahia Hakiki and Maenia Scarpino

Received: 30 November 2021
Accepted: 30 December 2021
Published: 31 December 2021

Publisher's Note: MDPI stays neutral with regard to jurisdictional claims in published maps and institutional affiliations.

1. Introduction

After severe Acquired Brain Injury (sABI), certain patients may end up with prolonged/chronic Disorders of Consciousness (DOCs), characterized by alterations of self and/or environmental awareness. Chronic DOCs include the Vegetative State (VS; also known as Unresponsive Wakefulness Syndrome (UWS)), a condition of vigilance unconsciousness, and the Minimally Conscious State (MCS), an altered state of consciousness in which behavioral signs of awareness, albeit reduced and fluctuating, are preserved [1]. Several methods are currently used to evaluate the responsiveness of DOC patients, including behavioral scales (e.g., the revised coma recovery scale [2]) and instrumental tools such as Positron Emission Tomography (PET), functional Magnetic Resonance Imaging (fMRI), and an electroencephalogram (EEG) [3–5]. The use of such instrumental tools can be more informative than relying only on behavioral signs of responsiveness, as certain patients may show brain functional activity while being behaviorally unresponsive [6]. Despite the use of multimodal assessment, which has allowed for better framing of the functional status of patients with DOC, one of the major remaining challenges in clinical practice is finding ways to support the recovery of consciousness, increased awareness, and (residual) cognitive functioning in patients.