

Sleep Disturbance and Disorders within Adult Inpatient Rehabilitation Settings:

A Systematic Review to Identify Both the Prevalence of Disorders and the Efficacy of Existing Interventions.

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Laver, K. E., Spargo, C., Saggese, A., Ong, V., Crotty, M., Lovato, N., ... & Vakulin, A. (2020). Sleep Disturbance and Disorders within Adult Inpatient Rehabilitation Settings: A Systematic Review to Identify Both the Prevalence of Disorders and the Efficacy of Existing Interventions. *Journal of the American Medical Directors Association*. <https://doi.org/10.1016/j.jamda.2020.03.002>

It is well established that sleep is an important factor impacting recovery post-injury. Consequently, Laver and colleagues conducted a systematic review synthesising the extent of research investigating the prevalence of sleep disturbances and disorders amongst ageing adult rehabilitation unit inpatients. Their review also aimed to identify interventions which have been used to improve sleep quantity and/or quality amongst the cohort.

Of the 19 studies which met inclusion criteria, 12 included ageing adults who have experienced a stroke and the remaining studies included people with diverse conditions. Prevalence studies synthesised, concluded that obstructive sleep apnea is a common sleep condition amongst those with stroke, while some form of sleep disturbance is consistent across ageing rehabilitation unit inpatients with diverse conditions. The three intervention studies synthesised

investigated the efficacy of Continuous Positive Airway Pressure (CPAP) therapy on the sleep and functional rehabilitation outcomes of inpatients. Their review is important as it has confirmed that many ageing adults receiving rehabilitation have a sleep condition which may impact functional rehabilitation outcomes. As a result, Laver and colleagues advocate that implementing interventions and/or programs to promote better sleep amongst rehabilitation unit inpatients, including interventions which consider the hospital environment, are worthwhile.

Environmental determinants of sleep in rehabilitation settings: The need for an evidence-base

Environmental factors overnight in hospital (for example, noise, light and temperature) have an impact on sleep outcomes [1-21]. Studies have confirmed that increased sound [10-13, 15-19, 21] and light [12, 16] throughout the evening are both associated with adverse sleep quantity and/or quality. As the referenced studies generally investigate the impact of determinants overnight on the sleep of people within intensive care units or acute settings, they do not add to our understanding surrounding the impact of hospital environmental determinants on the sleep and functional rehabilitation outcomes of rehabilitation unit inpatients. This is an area worthy of further investigation, confirmed by findings from Laver and colleagues and Amato [22] which both highlight that a lack of research in this area exists.

Acquired brain injury, sleep, and rehabilitation environments

It is important that research investigate the impact of environmental determinants overnight on the sleep outcomes of people who have experienced an acquired brain injury (ABI) and are receiving rehabilitation. It is well

established that adverse sleep outcomes are a consequence of experiencing an ABI [23-29].

The adverse sleep consequences of ABI is problematic as poorer sleep is associated with unfavourable functional rehabilitation outcomes.

In the face of medical complications and physical and cognitive impairments that are associated with newly diagnosed ABIs, sleep disorders can often go unnoticed [32]. Early identification and treatment of sleep difficulties is imperative [33] as for people with ABI, increased sleep over and above what is typically required by people without injury is necessary to promote recovery [34, 35]. This is especially so during the acute stage of injury where improved sleep is instrumental in addressing recovery [35, 36].

The impact of rehabilitation unit environmental factors overnight on the sleep of people with an ABI is largely unknown [22]. At the Gold Coast University Hospital Neurorehabilitation Unit, we have conducted a pilot study to investigate baseline levels of environmental factors overnight and the impact that these have on the sleep and fatigue of inpatients with an acquired brain injury (ABI) receiving rehabilitation.

Preliminary findings were presented at The Hopkins Centre, 2019 ***Bold Ideas Better Solutions Symposium*** [37], and these preliminary findings concluded that overnight sound levels (measured in decibels [dBs]), within a patient's room over a period of seven nights, were consistently above World Health Organization (WHO) hospital environment guidelines [38]. Please see the line graph [right] where a single night's sound has been illustrated. These findings are similar to Oliveira, Gomes [16] which confirmed that overnight sound levels

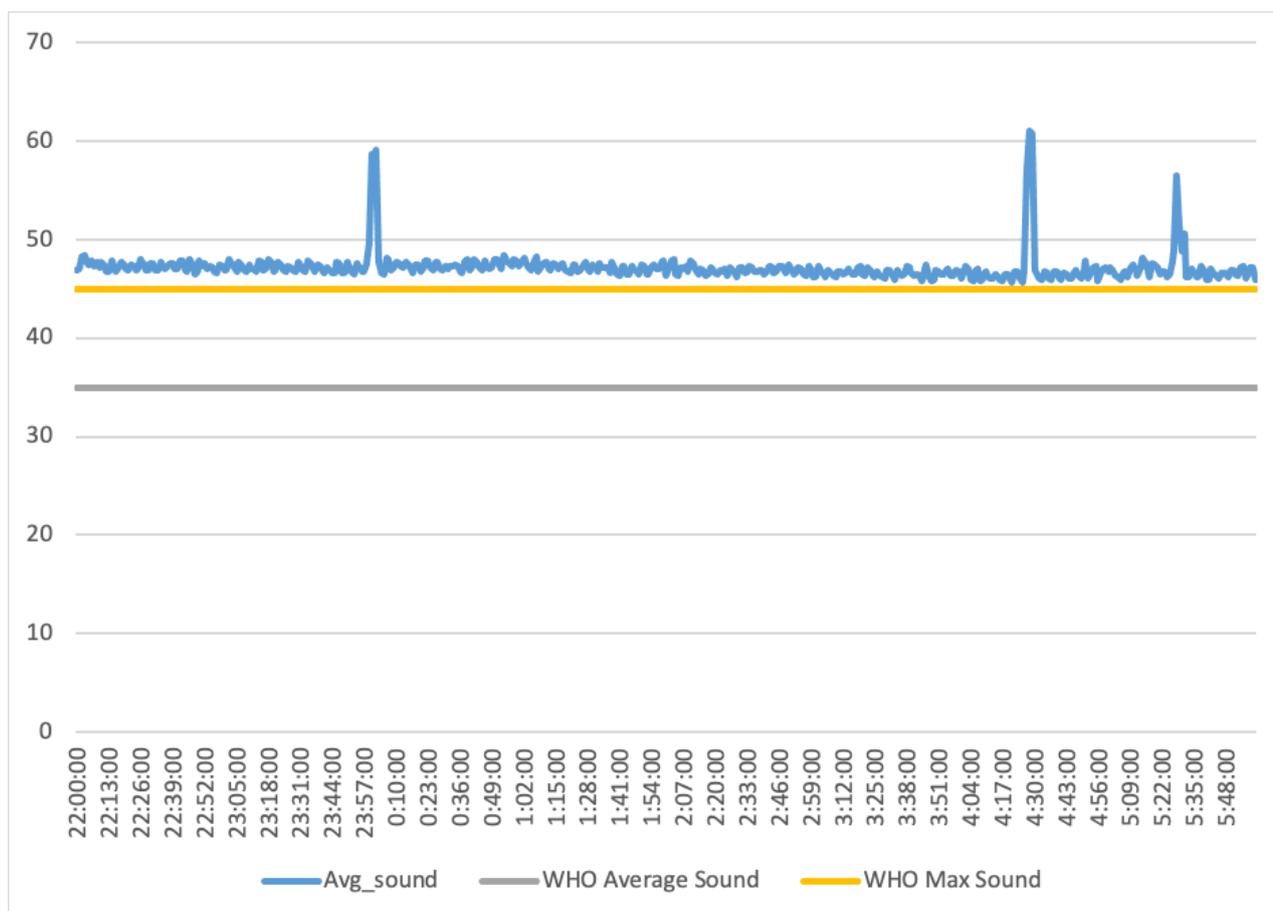
in a paediatric unit were consistently above WHO recommendations. In combination, the findings suggest that high levels of overnight noise are likely prevalent throughout diverse hospital units. The increased noise in hospital overnight may have an impact on patient recovery and wellbeing.

Concluding remarks

Environmental factors overnight may adversely impact the sleep and functional rehabilitation outcomes of rehabilitation unit inpatients. Due to a lack of research, definitive conclusions are not possible. Laver and colleagues suggest that interventions and/or programs that promote sleep are necessary, and these need to consider environmental factors. Prior to the development of such interventions, rigorous research needs to establish baseline measures of environmental determinants, and investigate the impact of these determinants on sleep and functional rehabilitation outcomes. Such research can inform interventions and programs that should be implemented. It is expected that the pilot study undertaken by THC researchers and colleagues from the Gold Coast University Hospital Unit can assist in identifying important factors to consider for future interventions.

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[Image 1]



[Alt text: Line chart demonstrating readings for average sounds, WHO average sound and WHO Maximum sound readings]

[End Images]

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A joint initiative of Griffith University, Menzies Health Institute Queensland, Metro South Health and the Queensland Government.

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