Effects of Sleep on Speech and Language Outcomes in Stroke Rehabilitation

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Introduction

Sleep disturbance is prevalent among patients who have suffered from stroke, and poor sleep may have an impact on stroke recovery. Suboptimal sleep has been linked to poor cognition and memory in those with neurodegenerative disease, and even normal adults. This relationship may carry clinical implications about the sleep needs of stroke patients who are receiving speech and language therapy during their rehabilitation.

Studies that explicitly address the effects of sleep on speech and language outcomes post-stroke are scarce, though we came across a variety of studies which measured multiple outcome domains that are closely linked to speech and language processes. These included measures of overall cognition, memory, attention, executive function, reaction time, vigilance, and motor learning.

Methods

Full text inclusion (n = 19)

Excluded due to: • No control (n = 1) • Low treatment compliance (n = 2) • Lack of direct outcome measures (n = 1)

Excluded to: • Irrelevance/Study type (n = 122)

Results

Conclusions

• There is mixed evidence for a positive effect of sleep on stroke outcomes related to speech and language.
• CPAP non-compliance is a major barrier to evaluating its effect on stroke outcomes.
• Most studies were limited by small sample size.
• Only two studies directly investigated language outcomes, and these authors excluded patients with severe aphasia. Therefore, we need studies that specifically address this population.
• A few studies looked for differences in MMSE among high-functioning patients, and ceiling effects likely came into play.
• Animal studies were consistent but the results need to be replicated in humans.
• 7 out of 12 human studies showed significant effects on motor outcomes, while less than half of those showed significant differences in cognitive measures.

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References are available upon request.

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Figure 1: Summary of quality appraisal findings by author. Key: Good quality: Green, Adequate: Yellow, Poor: Red

Table 1: Summary of study findings by domain. Key: Significant: Green, Non-significant: Yellow

Table 2: Summary of study findings by domain. Key: Significant: Green, Non-significant: Yellow

Please refer to the main text for detailed analysis and discussion.