



Fragmented Sleep is linked to Cognitive Function Decline in the Third Trimester of Pregnancy

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ABSTRACT

Sleep quality deteriorates frequently in late pregnancy. In accordance with these findings, a minor objective cognitive decrease in pregnant women has been discovered in earlier investigations by other researchers. For the consolidation of memories, sleep is crucial. The study's main hypothesis was that a decline in sleep quality during pregnancy would contribute to cognitive impairment. The Department of Gynecology and Obstetrics at the Medical University of Warsaw recruited 19 pregnant women in their third trimester of pregnancy for the study, and 20 non-pregnant women served as controls. The Wechsler Adult Intelligence Scale vocabulary subtest, the D2 Attention Test, the OSPAN task (Operational Span Task), autography to look at sleep patterns, and questionnaire were used in the assessment.

Keywords: Pregnancy; Non-pregnant women; Critical condition

INTRODUCTION

Sleep is essential for biological function, and sleep disruption can cause physiological and psychologic dysfunction, as well as cognitive decline. Surgery stimulates the innate immune system, resulting in neuroinflammatory alterations that impair cognition. We explored the role of perioperative sleep fragmentation in the neuroinflammatory and cognitive responses of surgery since surgical patients with sleep disturbances are more likely to develop postoperative delirium, an acute type of cognitive loss.

Scale of Athens Insomnia Ford Insomnia Response to Stress, the Epworth Sleepiness Scale, the Regenstein Hyperarousal Scale, and the Beck Depression Inventory) Although there were no differences in the groups, pregnant women had lower attention scores and inferior working memory scores (measured as the total number of letters remembered). Additionally, pregnant women slept less soundly, woke up more frequently, slept for longer periods of time on average, and spent more time in bed overall. Women who were pregnant only had a

higher FIRST score during psychological testing. Using mediation analysis, we discovered that frequent awakening may be the main cause of the decline in working memory function, accounting for roughly 40% of the overall effect Consolidation of working memory may be hampered by pregnancy. Pregnant women frequently lament their ineffective everyday functioning and restless sleep. In this study, we demonstrated a link between poorer cognitive functioning and less restful sleep during pregnancy. Women who experience sleep issues during pregnancy should be expected to experience cognitive deterioration. As a result, we should focus more on treating sleep disturbances in pregnancy.

LITERATURE REVIEW

Series of self-reporting tools

Most pregnant women report cognitive decline during their pregnancies. As a result, there are conflicting research findings regarding pregnancy-related objective cognitive decline.

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Pregnant women frequently complain about sleep difficulties as well. According to the adopted criteria for insomnia in the third trimester, a substantially higher percentage of pregnant women than the general population have insomnia symptoms in the latter months of pregnancy along with regular pregnancy symptoms [1]. Additionally, obstructive sleep apnea and restless legs syndrome are more prevalent in pregnant women, peaking at correspondingly near the end of pregnancy. Thus, it is known that pregnancy impairs both cognition and sleep.

DESCRIPTION

With the aid of software and Statistics, the data were examined. In the first stage of exploratory research, we used a Student's t-test to see whether there were any variations in sleep parameters, psychological scale scores, and cognitive function between pregnant and non-pregnant women. The following phase involved performing a number of straightforward linear regressions in order to set up mediation analysis. The mediator and dependant variables in the mediation model were chosen based on the factors that had the strongest pregnancy-related effects. In the end, our primary objective was to investigate any pregnancy-related mediators of cognitive issues, hence we utilised the PROCESS macro for we investigated whether the number of awakenings might be used to explain the differences in cognitive functioning between pregnant and non-pregnant women. To respond to this query, In order to respond to this query, we conducted a mediation study using the number of awakenings as a mediator variable, pregnancy as the primary explanatory variable, and the number of remembered letters as a dependent variable We looked at a sample of 19 pregnant women who were on average 33 weeks together with 20 non-pregnant women who were the same age. Despite having comparable verbal knowledge and idea formation skills to controls, pregnant women in our group had lower scores on the OSPAN test in terms of total letters remembered as well as a general index, which indicated a decline in working memory performance. Additionally, we discovered that pregnant women performed considerably worse on the attention test D2 Similar outcomes have been reported in the literature [2].

Pregnant women had significantly poorer sleep quality as determined pregnant women's sleep quality, as determined by actigraphy, was significantly worse than that of control non-pregnant women. They had lower sleep efficiency, a larger frequency of awakenings, and a longer average period of awakenings. However, they stayed in bed more often. Pregnant women's sleep quality changes and it gets worse as the pregnancy goes on, according to objective sleep research utilising polysomnography. A wake after sleep initiation is longer and total sleep duration is shorter in the third trimester of pregnancy.

Intermittent hypoxia, reoxygenation, hypercapnia or hypocapnia, as well as changes in cerebral blood flow and sleep fragmentation, occur in both adults and children during untreated apnoea and hypopnoea. These impacts can cause

cognitive deficiencies that have functional consequences for job and school efficiency. The specificity and sensitivity of the tests, which are rarely established particularly for obstructive sleep apnoea, are important in determining how obstructive sleep apnoea affects cognition. We examine both the neuronal adaptive and maladaptive processes in response to hypoxaemia in this Review. The overall effect on cognitive and emotional performance is determined by the stage of this dynamic process, the effects on other body systems, cognitive reserve, and individual vulnerability. We also investigate the role of fragmented sleep and disruption of sleep structure, with a focus on the influence at different stages of illness development. This Review will address the gap in the underlying pathophysiology of new clinical and translational results, arguing that they contribute to the inherent complexity of the relationship between obstructive sleep apnea and the brain [3-6].

It appears that the quality of sleep decreases during pregnancy, which may not only have a negative impact on mood but also impede cognitive functioning. Therefore, it is important to practise sleep disorder diagnosis and prevention during pregnancy. Cognitive behavioural therapy for treating insomnia should be highly advised if a sleep disturbance is identified.

CONCLUSION

All pregnant women, as well as those who do not report sleep issues, should adhere to strict bedtime and sleep hygiene guidelines in order to improve their cognitive functioning. Our investigation demonstrated that decreased cognitive functioning in late pregnancy may be caused by sleep fragmentation. Therefore, enhancing a woman's quality of sleep during pregnancy may benefit not just her overall health but also her memory.

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