

Interactive Intervention for Sleep Improvement: The Vitoria Sleep Smart City Project

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Background: Sleep deprivation is a worldwide public health problem. Previous studies have revealed that a significant proportion of the population does not get enough sleep, which has been linked to modern lifestyle factors such as stress, poor nutrition, and excessive use of electronic devices. Lack of sleep has adverse effects on health, well-being, and productivity. It has been shown to be associated with increased risk of accidents, cardiovascular diseases, obesity, type 2 diabetes, and higher mortality rates. Additionally, sleep deprivation has a significant social and economic impact. This study aims to address the problem of nighttime sleep deficiency in Vitoria by implementing an interactive virtual sleep assistant.

Methods: A randomized controlled trial with two parallel groups was conducted. Volunteer workers from the Vitoria City Council with sleep quality or quantity deficits were recruited. The study group received personalized recommendations through an interactive virtual sleep assistant, while the control group received no intervention. Objective sleep monitoring was conducted using activity trackers, and mobile applications and a web-based platform with live chat facilitated participant interactions.

Results: Over an 8-month period, data was collected weekly and analyzed. A total of 206 subjects participated, with 106 in the control group and 100 in the intervention group. The analysis of the collected data showed a significant improvement in the subjective quality of sleep in the intervention group at 8 months. However, no significant changes were observed in the scales of daytime sleepiness, quality of life, and total sleep time.

Conclusions: The use of an interactive virtual assistant can improve the subjective quality of sleep in individuals, although changes in other sleep and quality of life measures were not significant. This strategy represents a potentially effective way to address the problem of sleep deficiency, although more research is needed to assess its impact on other aspects of sleep and daytime life. This study can be a starting point for future research and developments in improving sleep through digital interventions. Although the results did not show significant improvements in all areas, the improvement of subjective sleep quality is a positive outcome that can have a significant impact on individuals' lives.