Advancing Insights into Postoperative Sleep Quality and Influencing Factors

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Submitted to: Journal of Medical Internet Research
on: November 24, 2024

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Abstract

(JMIR Preprints 24/11/2024:69193)
DOI: https://doi.org/10.2196/preprints.69193

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Words Count: 433

Dear Editor:

I am writing to provide my comments on the recently published article titled "*Quantitative Impact of Traditional Open Surgery and Minimally Invasive Surgery on Patients' First-Night Sleep Status in*

the Intensive Care Unit: Prospective Cohort Study" by Shang et al. (*J Med Internet Res 2024;26:e56777*)[1]. This paper addresses an important clinical question regarding postoperative sleep quality and provides valuable insights into the advantages of minimally invasive surgery (MIS). I commend the authors for their efforts in utilizing both subjective questionnaires and objective wearable technology to explore this topic. However, I would like to share several thoughts that could help further refine the interpretation of results and consider additional avenues for future studies.

First, this study focuses on postoperative sleep but overlooks baseline sleep conditions. Preoperative sleep disorders or psychological issues, such as anxiety or depression, could predispose patients to postoperative disturbances, while good baseline sleep quality may confer greater resilience [2]. Preoperative assessments using tools like PSQI or short-term monitoring could help clarify the independent impact of surgical methods. Additionally, pain management significantly affects sleep through both direct and indirect mechanisms. While MIS likely reduces sleep interference due to less pain, the absence of quantitative pain scores and analgesic data limits interpretability. Future research should address preoperative sleep and analgesic strategies to provide a more comprehensive understanding.

Second, wearable devices offer convenience but have limitations in postoperative or ICU settings. They rely on accelerometers and heart rate variability without EEG support, risking overestimation of sleep duration, especially in sedated patients[3]. Environmental factors like ICU noise and caregiving activities can further compromise accuracy, while algorithms optimized for healthy populations may not reflect critically ill patients' sleep patterns. Future studies should improve algorithms, validate accuracy in complex environments, and integrate devices with other monitoring methods to enhance clinical utility.

Third, psychological factors, such as preoperative anxiety or depression, significantly influence postoperative sleep. Patient perceptions of MIS, such as reduced trauma and faster recovery, may also indirectly improve sleep. However, the study did not quantify these factors, potentially underestimating their role. Additionally, the single-center design and small sample size limit generalizability and subgroup analyses. Future research should adopt multicenter, larger-scale studies and include psychological assessments to enhance applicability and robustness.

In conclusion, Shang et al.'s study provides meaningful insights into the impact of surgical approaches on postoperative sleep quality, particularly highlighting the potential benefits of minimally invasive surgery. While the findings are valuable, addressing the aforementioned limitations could enhance the robustness and clinical relevance of future research. I appreciate the authors' contribution to this important topic and look forward to further advancements in this field.

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