Implementation of the SLEEP-MAD Mnemonic for Improving Sleep Quality in the Intensive Care Unit: A Pilot Study

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**Background**

- Patients report inadequate sleep as one of the most stressful factors of their intensive care unit (ICU) admission.
- Multiple factors may contribute to poor patient sleep quality in the ICU.
- Improving sleep quality in patients is important as studies have linked sleep disturbance to various negative sequelae.
- SLEEP-MAD is a mnemonic that has been developed as a standardized nursing tool to help improve patient sleep quality in the ICU setting.

**Objectives**

- **Primary:** to assess the impact of SLEEP-MAD mnemonic implementation on patient sleep quality in the ICU.
- **Secondary:** to evaluate compliance rates of SLEEP-MAD mnemonic implementation; to evaluate impact of SLEEP-MAD mnemonic implementation on incidence of delirium, ICU length of stay, ICU mortality, and usage of sedatives.

**Methods**

- Observational, prospective, single-site quality improvement pilot study conducted in the Burnaby Hospital ICU.
- Three phases: pre-mnemonic implementation, training and education, post-mnemonic implementation.
- Convenience sampling with target of N=30 patients per group.
- Richards-Campbell Sleep Questionnaire (RCSQ) was employed as the sleep measurement tool; scores range from 0 to 100, with higher scores indicating better sleep.

**Inclusion:**

- Patients ≥18 years staying ≥1 night in the ICU

**Exclusion:**

- Cognitive dysfunction (severe dementia; acute traumatic brain injury, stroke, hepatic encephalopathy)
- Target RASS goal ≤-3
- Acute seizures
- Anoxic brain injury
- Acute alcohol/illicit drug abuse
- Receiving neuromuscular blockade agents
- Comfort care
- Off-service/post-op sleep apnea monitoring
- Ready to transfer out
- S edatives & stimulants
- Lights
- E arplugs
- E nvironmental disturbances
- P ain assessment
- M edications
- A ctivity
- D elirium

**Background**

- RCSQ scores improved post SLEEP.
- Time: 21 (43.8) ± 0.11 vs. 5 (9.8)* ± 0.23.
- Overall environment exclusion: Amount in oral morphine dose equivalents, 18 (14.6) ± 1.9 vs. 60 (57.7) ± 60.6.
- Acute alcohol/illicit drug abuse: Pre: 14 (52.9) ± 2.8 vs. Post: 6 (57.7) ± 44 (30.3).
- Receiving neuromuscular blockade agents: Pre: 0.81 ± 0.02 vs. Post: 0.76 ± 0.04.
- Acute seizures: Pre: 0.47 vs. Post: 0.23.
- Acute alcohol/illicit drug abuse: Pre: 0.02 ± 0.01 vs. Post: 0.02 ± 0.00.

**Results**

- The pre and post groups were not randomized and thus were imbalanced; this increases the risk of confounding factors.

**Discussion & Limitations**

- RCSQ scores improved post SLEEP-MAD implementation, but differences were not statistically significant.
- Sicker patients in post phase.
- Increased use of mechanical ventilation/BIPAP in post phase.
- Increased use of sedatives in post phase.
- 28% non-compliance rate for SLEEP-MAD mnemonic uptake.
- This was a smaller, single-site study with inadequate sample size to statistically detect the observed RCSQ score difference of 10.
- The one week education period may not have captured all nursing staffing resulting in suboptimal compliance rates.
- The pre and post groups were not randomized and thus were imbalanced; this increases the risk of confounding factors.

**Conclusions**

- This pilot study demonstrated improved patient sleep quality with SLEEP-MAD mnemonic implementation.
- It is feasible to conduct larger validation studies to confirm this observation.
- Future studies should employ randomization or matched cohorts and a prolonged training period to optimize results.

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