

Implementing Sleep Promotion Protocol to Reduce ICU Delirium

Karishma Rawal RN^{1,2}, Jennie Peterson PHD., APRN-CNS, CCNS, FAHA¹, Elaine Clayton DNP-RN, NEA-BC²

Johns Hopkins University School of Nursing¹, Johns Hopkins Bayview Medical Center²



JOHNS HOPKINS
NURSING

BACKGROUND

- Delirium has detrimental effects on the health and recovery of critically ill patients. Poor sleep is the key risk factor for ICU delirium (Devlin et al., 2018).
- Common sleep interrupters in the ICU include environmental noises, bright lights, frequent nursing care, pain, critical illness, and psychoactive drugs (Devlin et al., 2018)
- Delirium increases duration of mechanical ventilation, length of hospital stay, hospital costs, rate of readmissions, and mortality (Devlin et al., 2018)
- 80% of ICU patients are affected with delirium (Taha et al., 2023).
- Estimated US medical cost of ICU delirium is \$82.4 billion annually (Ali & Cascella, 2022).
- Increased incidence of delirium among cardiac ICU patients at local site, per nurse leaders.
- Implementing sleep promotion protocol and improving nurse's knowledge of delirium prevention and management may help reduce the rate of delirium.

OBJECTIVES

- To reduce the incidence of delirium among adult patients in the cardiac ICU by improving sleep quality and duration by utilizing sleep promotion protocol over a 10-week implementation period.

METHODS

- Setting:** 12-bed Cardiac ICU (CICU)
- Target Population:** All patients >18 years old discharged from CICU from September to November 2023.
- Implementation:**
 - PowerPoint education material provided to RN staff
 - Non-pharmacological intervention: Sleep promotion protocol (eye mask, ear plugs, noise, and light reduction, clustering nursing care, closing curtains, and playing relaxing music) implemented every night
 - Sleep kits including eye masks, ear plugs, and headphones were distributed to all patients
 - Recruitment via emails, huddles, staff meetings, in-person, and patient door signage reminders
 - Assigned a Nurse Champion
 - Nurses assessed and documented CAM-ICU (delirium measure) and sleep quality every shift.

DATA COLLECTION AND ANALYSIS

- Descriptive statistics: delirium incidence measured by CAM-ICU at baseline and in 10 weeks (Figure 1)
- Sleep documentation adherence measured by chart audits over 10 weeks (Figure 2)
- Descriptive analysis done to assess nurse's knowledge using pre- and post-implementation Qualtrics surveys (Table 1, Table 2, Table 3)

RESULTS

Figure 1. Aim 1: Reduce delirium incidence

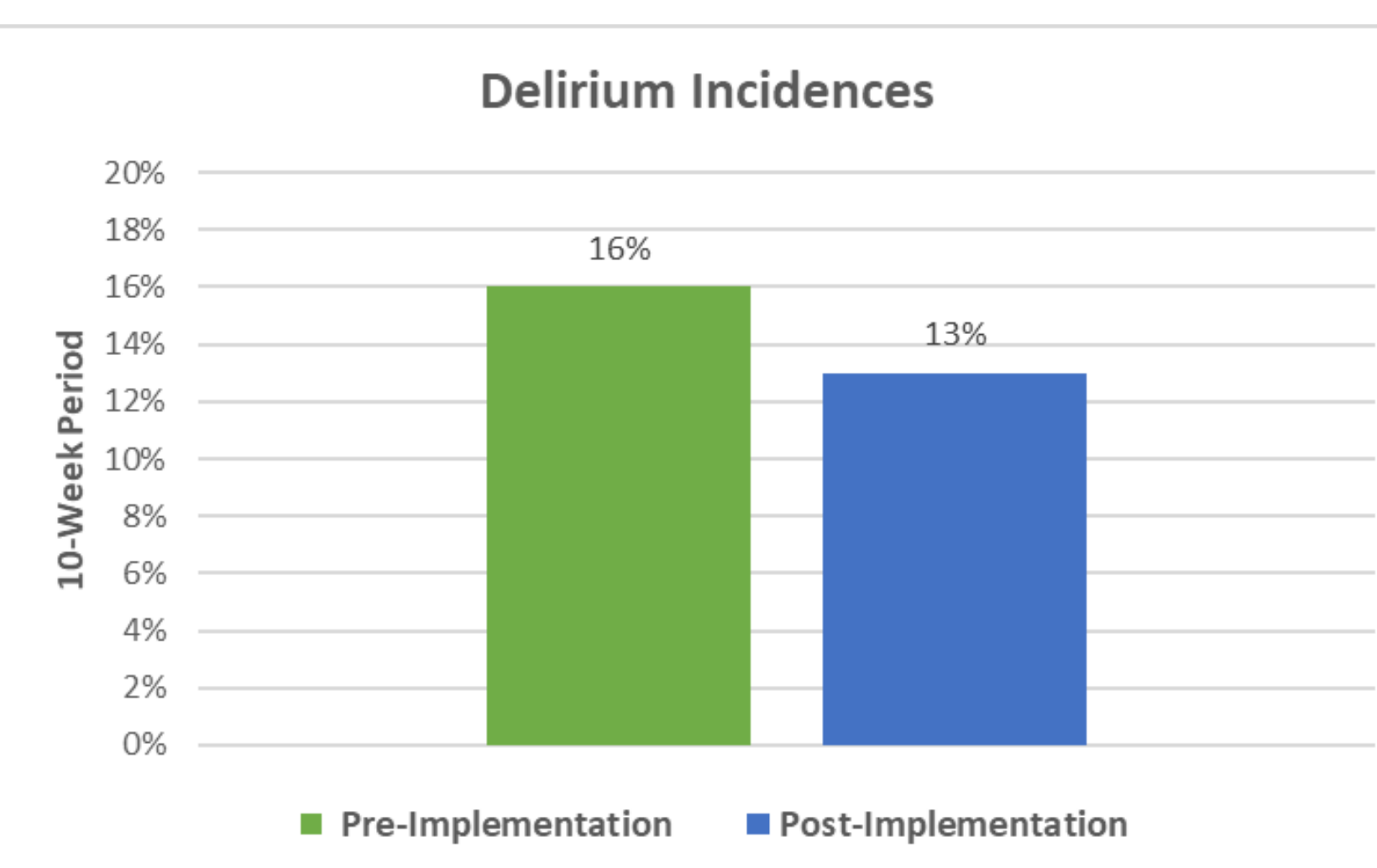
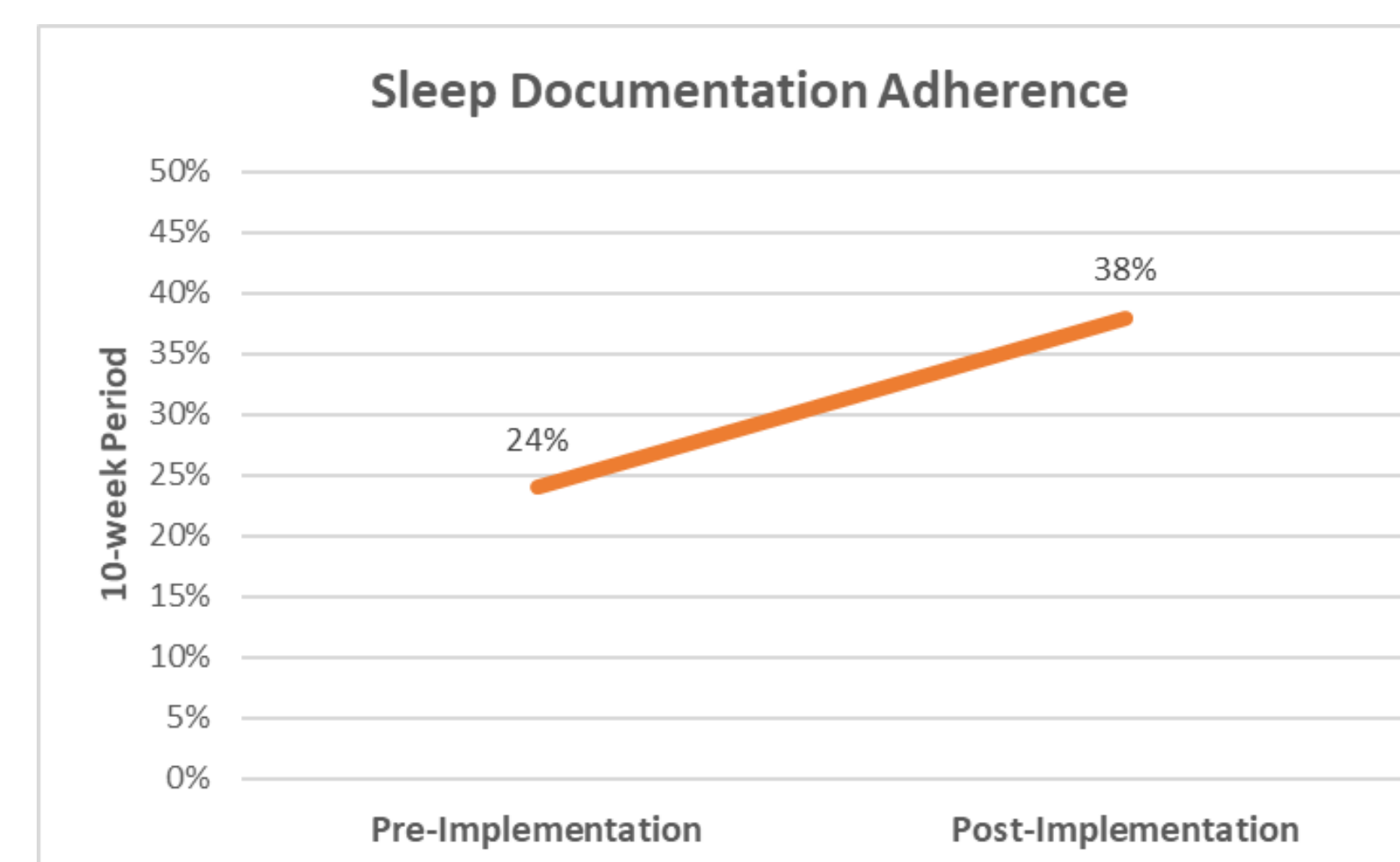


Figure 2. Aim 3: Improve sleep documentation adherence



Aim 2: Improve nurse's knowledge about sleep promotion protocol and delirium prevention

Table 1: Nurse's knowledge

		Statistic
Pre	Mean	5.55
	95% Confidence Interval	5.17-5.94
	Median	6
	Std. Deviation	0.83
	Range	4-7
Post	Mean	6.56
	95% Confidence Interval	5.81-7.30
	Median	7
	Std. Deviation	1.50
	Range	3-8

Table 2: Nurse's knowledge

How often do you do the following nursing care at night in CICU?		Pre (N=23)	Post (N=21)
Close the curtain	Sometimes	41%	5%
	Always	18%	33%
Play relaxing music	Most of the time	10%	20%
	Always	10%	5%
Cluster nursing care	Sometimes	5%	0%
	Always	57%	67%
Dim the lights	Half of the time	0%	5%
	Always	81%	76%
Lower the noise	Sometimes	5%	0%
	Always	48%	67%

Table 3: Nurse's knowledge

Is delirium assessment possible on a patient with		Pre (N=23)	Post (N=21)
TVP	Yes	0%	62%
	No	9%	0%
Mechanical ventilation	Yes	59%	91%
	No	14%	5%
HFNC	Yes	100%	45%
	No	0%	35%
Swan-Ganz Catheter	Yes	91%	100%
	No	5%	0%

- 123 patients were assessed for delirium incidence and sleep documentation.
- 44 nurses completed the pre- and post-education survey.
- Delirium rate decreased from 16% to 13% in 10 weeks.
- Sleep assessment and documentation adherence increased from 24% to 38%.
- Mean nurse knowledge score increased from 5.55 pre-education to 6.56.

DISCUSSION

- Delirium incidence rate decreased in the Cardiac ICU during this 10-week QI project, which aligns with current EBP guidelines on implementing a sleep promotion protocol (Devlin et al., 2018).
- This project used a sleep questionnaire from the EMR to assess subjective sleep quality and quantity. However, a validated sleep tool Richards-Campbell Sleep Questionnaire (RSCQ), and polysomnography are recommended to identify the effectiveness of the intervention (Hu et al., 2015; Darby et al 2022).
- Non-pharmacologic sleep promotion interventions are recommended; but pharmacological intervention has also been shown to be effective when non-pharmacological management fails (Beltrami et al., 2022; Darby et al., 2022).
- A multidisciplinary delirium intervention protocol must be developed, including education and support for the healthcare team (Moon et al., 2015).

Limitations:

- Short implementation period
- Busy ICU environment
- Increased nursing workload may affect the utilization of the protocol
- High nursing staff turnover
- Small sample size
- Critically ill patients

CONCLUSION

- Implementing sleep protocol reduced delirium incidence in the CICU.
- Non-pharmacological sleep promotion protocol to prevent and manage delirium is cost-effective with no side effects.
- Improved nurses' knowledge of current guidelines and recommendations.
- Subjective sleep assessment and documentation became a part of nursing routine care.
- To improve the generalizability of these findings, further studies are needed to identify the most effective intervention to improve sleep and reduce delirium in the critical care units.

Implications for Practice: These findings suggest that sleep quality and quantity can be improved by implementing non-pharmacological intervention. CAM-ICU and sleep assessment and documentation play a vital role in early recognition and managing delirium. Educating nurses on the sleep promotion protocol and its impact on delirium prevention and management is highly suggested.

Sustainability: Continue education, chart audits, and include sleep hygiene as a standard of care.

REFERENCES

