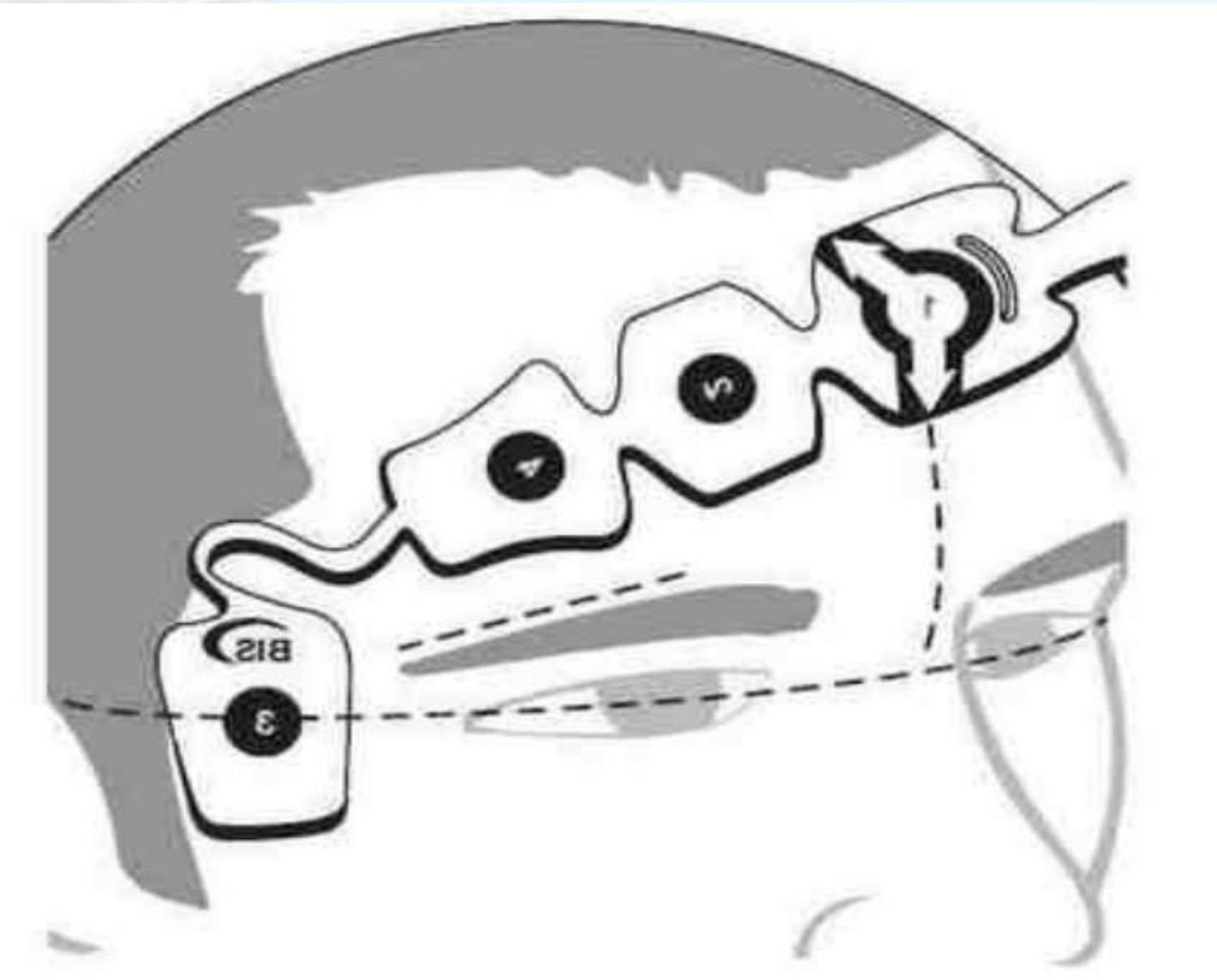


Nurse Education to Improve Use of BIS Protocol for Patients on Neuromuscular Blocking Agents: A Quality Initiative

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Background & Significance



- Inadequate knowledge on sedation management in 59% of nurses. Unfamiliarity with neuromuscular blocking (NMB) agents in 20-40% of the nurses.
- Incidences of awake paralysis in 36% patients. Post-traumatic stress disorder in 5-35% patients.
- Clinical guidelines and studies do support the concept of Bispectral index (BIS) monitoring as an adjunct method in patients who are paralyzed.

- Organizational assessment:
- Lack of optimal assessment
  - Lack of guideline to follow
  - Gaps/ Inconsistencies in practice

Purpose Statement

The purpose is to determine if an educational intervention on NMB agents and application of BIS monitoring will improve ICU nurses' level of knowledge and perception on BIS monitoring and increase the use of the BIS protocol.

Specific Aims

Will an educational module on NMB agents and application of BIS monitoring protocol among ICU nurses with more than six months experience improve these nurses' knowledge and perception of BIS monitoring and increase the use of the BIS monitoring protocol at the end of three months?

- Aim 1:
- Increase knowledge scores. Goal: mean score of at least 15
- Aim 2:
- Improve the perception of BIS monitor, increase the mean between 4 to 6.
- Aim 3:
- Improve quality of care. Goal: 100% usage of the BIS Protocol

Findings

**Demographics:** Age, Sex, Race, years of experience as an RN, years of experience as an ICU nurse, and employment status. Majority of the nurses 59.6%: 20-30 years old.

- Knowledge questionnaire:
- (Pre:  $M = 19.48$  (2.38); Post:  $M = 25.4$  (1.37); ( $t = 16.94$ ,  $p = <0.001$ ), Cohen's  $d = 2.35$ .
- BIS perception score:
- Reliability** (Pre:  $Mdn = 4$ , Range = 3[2.5-5.5]; Post:  $Mdn = 5$ , Range = 2[4-6] ( $Z = 5.57$ ,  $p = <0.001$ )
- Facilitates** (Pre:  $M = 3.90$  (0.83); Post:  $M = 4.83$  (0.53); ( $t = 8.42$ ,  $p = <0.001$ )
- Attitude** (Pre:  $Mdn = 3.75$ , Range 3[2.5-5.5] Post:  $Mdn = 4.75$ , Range 2.75[3- 5.75] ( $Z = 5.79$ ,  $p = < 0.001$ )
- Patient safety** (Pre:  $M = 3.67$  (0.69); Post:  $M = 4.38$  (0.50); ( $t = 7.03$ ,  $p = <0.001$ )
- Education** (Pre:  $Mdn = 4$ , Range 3.5[2.5-6] Post: ( $Mdn = 5$ , Range 2[4-6]; ( $Z = 6.784$ ,  $p = <0.001$ )
- BIS Usage:** Jan: 33.3%, Feb: 62.5%, March: 54.5% and April: 66.6%.

Conceptual Frameworks & Measurement Tools

- Plan-Do-Study-Act cycle
  - AACN Synergy Model (8 patient characteristics + 8 nurse competencies = quality of care.)
- Measurement tools:
- Knowledge Questionnaire (KQ)
  - The Nurses Perception of BIS survey

BIS Sedation Protocol:

Sedation/Analgesia with Bispectral Index (BIS) Monitoring

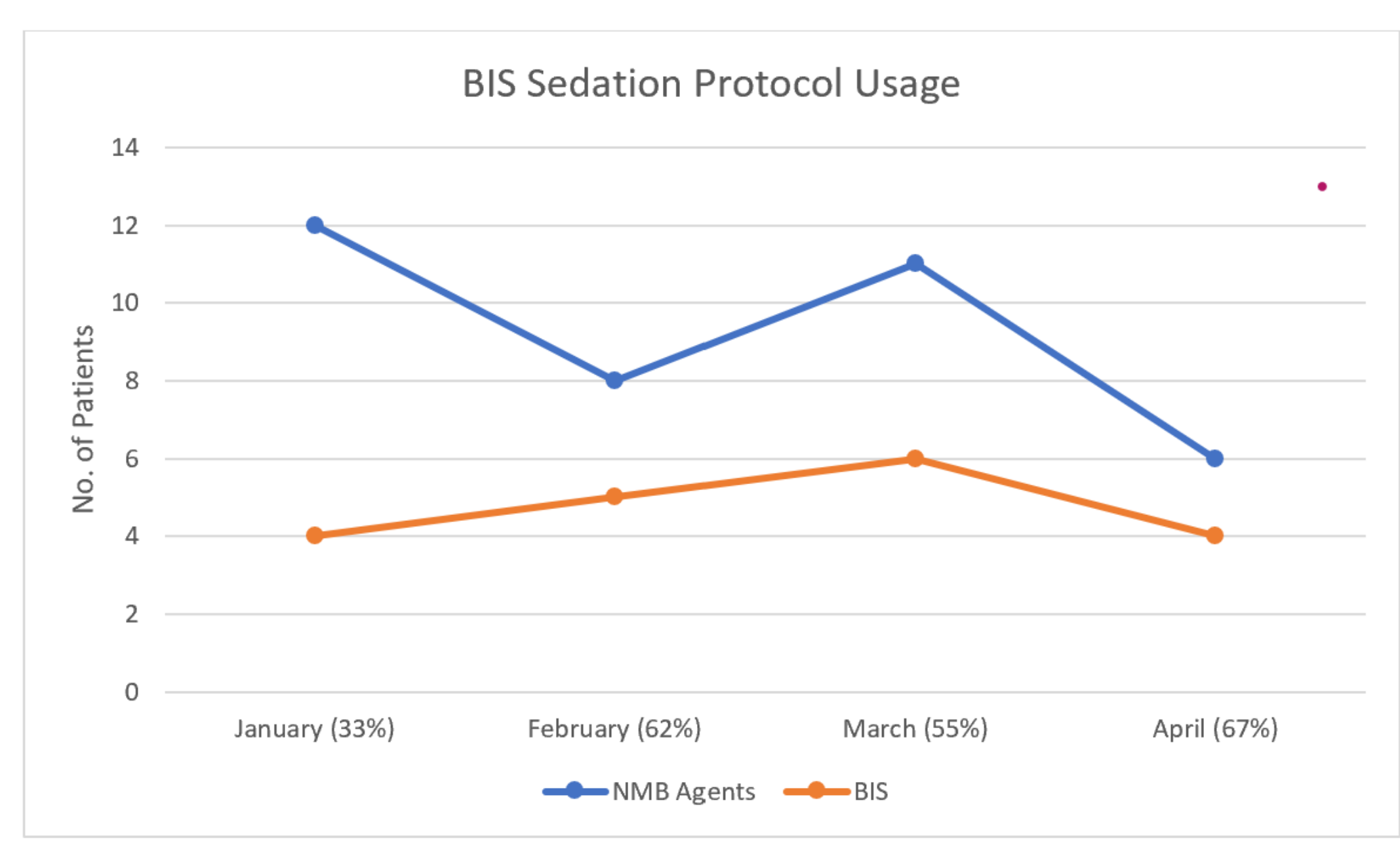
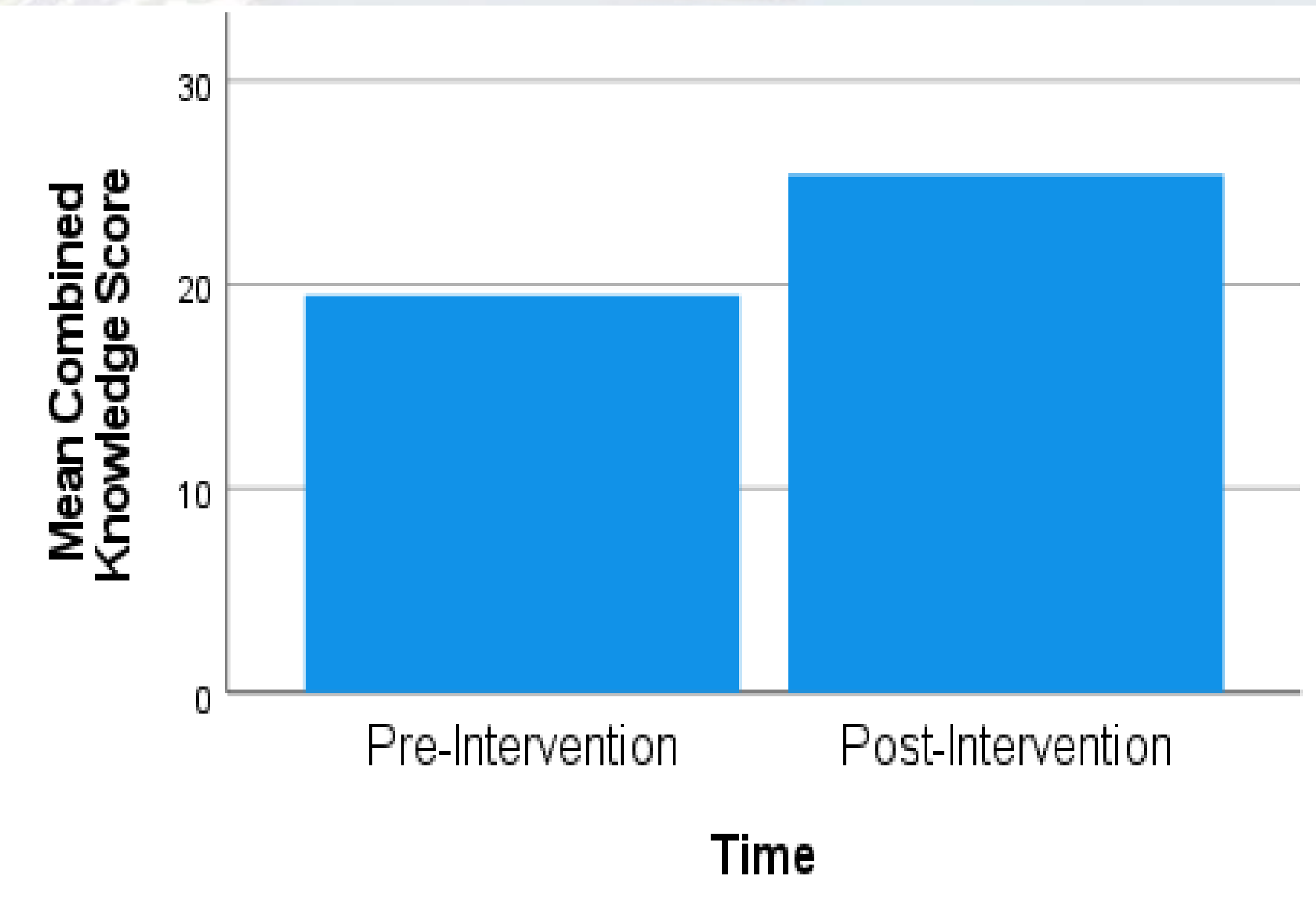
☒ Bispectral Index (BIS)  
Routine, Q 1 HR, First occurrence today at 1656, Until Specified

☐ fentanyl (SUBLIMAZE) INFUSION  
0-200 mcg/hr, INTRAVENOUS, TITRATE

☐ midazolam (VERSED) INFUSION  
0-10 mg/hr, INTRAVENOUS, TITRATE

☐ propOFOL 1% (DIPRIVAN) 10mg/ml infusion  
0-100 mcg/kg/min, INTRAVENOUS, TITRATE

Cluster Bar Chart on BIS Perception and Protocol



Project Design & Description

- Large metropolitan hospital, Dallas, TX.
- IRB approval, & letter of support obtained.
- Pre-test and Post-test method
- Convenience sampling: n=52 nurses
- In-service: WebEx, PowerPoint
- Flyers and emails
- Data collection: Survey & Chart reviews
- Project time (1/2021- 4/2021)
- Multi-disciplinary team approach
- Data Analysis: Descriptive stats, Paired  $t$ -test, Z test. and Cohens'  $d$ .

Implications for Practice

- The post-test results showed positive outcomes through education.
- Sustainability: ICU nurse residency program and ICU checklist.
- Advocate on use BIS protocol.
- More physician engagement
- Further studies: relation of BIS on hemodynamic variation & incidences of awake paralysis.
- Studies on use in pediatric population.
- Monitor its use in heavily sedated patients but not on NMB agents.