

Improving Nursing Care for Patients in Epilepsy Monitoring Units (EMUs)

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Introduction

- Epilepsy monitoring helps to identify possible triggers, evaluate seizure presentations, and analyze EEG patterns for better seizure management. ^{2,3}
- Inconsistent practice guidelines → High rates of physical injuries and life-threatening medical complications ³
 - Falls, head trauma, or compression fractures ^{3,5}
 - High morbidity and mortality rates ³
 - Increased length of stay and medical costs ⁷
- Inadequate staff training has been identified as a contributing factor of many seizure-related injuries. ^{1,4,6}

Purpose & Aims

The purpose of this project was to adapt, implement and evaluate a structured educational program to educate EMU nursing staff to enhance seizure management and response.

- Aim 1: Increase nursing staff **knowledge** of seizure management and response through implementation of educational program
- Aim 2: Increase nursing staff **confidence** level of seizure management and response through implementation of educational program

Methods

- Pretest-posttest design
- Evidence-based Learning Module
- Epilepsy center at a large medical center in Baltimore, Maryland
- All EMU-trained nurses eligible
- Timeline: November 2020 – January 2021 (~ 11 weeks)
- Measurement (pre-, post-, and 2nd post-intervention)
 - Knowledge Assessment
 - 30 questions (MC, T/F, Select All That Apply)
 - Confidence Survey
 - 17 items (5-point Likert scale)

Results

Sample Characteristics

- 25 participants enrolled, 22 participants completed at least the first phase
- Average years of EMU experience: 2.68 years
 - Majority (= 68.2%) had two or less years of EMU experience
- Average length of EMU orientation: 3.4 shifts
- Only 27.3% were Certified Neuroscience Registered Nurses (CNRNs)
- Question: Was the EMU training adequate?
 - Adequate = 31.8%; Somewhat = 54.5%; No = 4.5%
- Question: Is there a gap in EMU knowledge and training?
 - Yes (=18): Reading/interpreting EEGs, maintaining electrodes, inadequate exposure to events and computer training, and short length of orientation

Aim 1: Nursing Knowledge

- Difference in pre- and post-knowledge assessment scores was +9.52 percent with a mean increase by 2.857 points
- Adult epilepsy nurses had higher pre-training knowledge assessment scores.
- CNRNs scored higher in post-training knowledge assessment.
- No statistically significant difference in scores based on number of years of EMU experience or patient population.

	Pre-Knowledge Assessment	Post-Knowledge Assessment	Difference in Assessment Scores
Number of Responses	22 (100%)	21 (95.5%)	21 (95.5%)
Average Score (SD, Median)	21.272 (2.848, 20.5)	24.191 (2.857, 25.0)	2.857 (2.496, 3.0)
Percent Score (SD, Median)	70.9% (9.494, 68.3)	80.6% (9.523, 83.3)	9.52% (8.319, 10.0)
Missing Data	0 (0%)	1 (4.5%)	1 (4.5%)

Aim 2: Nursing Confidence

- Overall increase in mean confidence levels pre-training (=22) and post-training (=21) for all items.
- Areas with highest improvement in nursing confidence post-training:
 - Reading EEG patterns, knowledge of vagus nerve stimulator (VNS) and responsive neurostimulation system (RNS), ketogenic diet
- Most survey items (=12) illustrated an increase in mean nursing confidence between 1st post-training survey and 2nd post-training survey (=9).
 - No statistical difference in mean nursing confidence was observed between 1st and 2nd post-confidence surveys.

Conclusion

- Findings highlight need for examination of current guidelines to improve training of epilepsy nurses.
- Participants found the training helpful, informative, and a great refresher based on post-training feedback.
- Areas of focus may include EEG interpretation, epilepsy medications, care of surgical patients, and epilepsy devices.
- Collaboration among healthcare professionals at both institutional and national level is integral in development of a standardized nursing education program.

Limitations

- Small convenience sample (=22)
- Low response in 2nd post-intervention confidence survey (=9)
- Data was collected from one epilepsy center but may not represent all epilepsy centers.

Dissemination

- Share participant feedback with key stakeholders
 - Inclusion of a mandatory completion of an EMU learning module every six months
 - Simulation exercises as part of EMU orientation
 - Observation day with an epilepsy fellow

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