

Evaluation

Data Collection

Before the educational presentation, a 10-question multiple-choice pre-test assessment and two Likert scale survey items were administered to the participants in attendance.

Concluding the educational presentation, a 10-question multiple-choice post-test assessment, two Likert scale survey items, and an additional two open-ended questions, were administered to the same staff in attendance. Completed assessment and survey questions were collected by a third party and secured into a folder for data analysis by the author.

Data Analysis

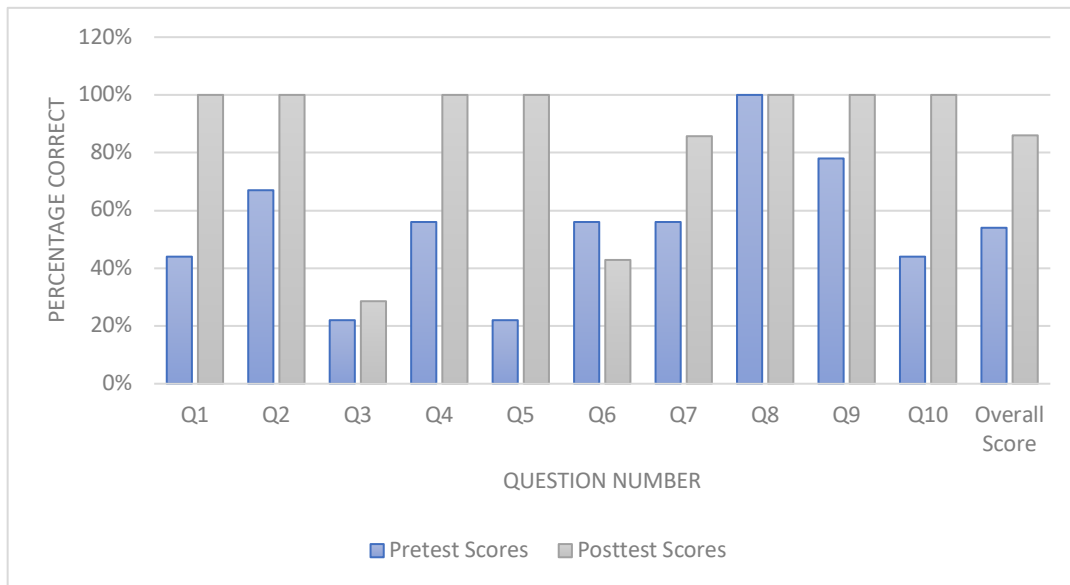
Knowledge-based assessment questions and Likert scale items were analyzed using descriptive statistics after completion of the presentation. Open-ended items were collected and summarized into themes.

Results

Knowledge Assessment. The outcomes of the ten knowledge questions suggested that the educational presentation impacted the participants positively. Prior to the educational presentation, the overall score for the 10-question multiple-choice assessment was 54 percent. After the presentation, the overall score was 86 percent. This was an overall increase of 59.3 percent from pre-test to post-test scores. The questions showing the greatest increase in scores were questions one, five, and ten. The topic assessed in these questions was the pharmacokinetics of remifentanyl. In addition, participants accurately answered seven questions in the post-test assessment (100 percent correct). See Figure 1 for further results of knowledge-based questions.

Figure 1

Pre-test and Post-test Assessment Comparison



Likert Scale Items. A five-point Likert scale, ranging from strongly agree to strongly disagree, was utilized to assess the support for the use of remifentanyl PCA in labor analgesia before and after the educational presentation. Prior to the presentation, 77.8 percent of participants either strongly agreed or agreed that remifentanyl PCA was a feasible alternative for parturients when neuraxial anesthesia is contraindicated. After the educational presentation, 100 percent of participants either strongly agreed or agreed with this statement. This was a 14.63 percent increase in the mean score following the educational intervention. In addition, another statement assessed the willingness to use remifentanyl PCA in parturients with contraindications to neuraxial anesthesia if a remifentanyl PCA protocol was available. Prior to the presentation, 77.8 percent of participants either strongly agreed or agreed with the statement. After the presentation, 100 percent of participants either strongly agreed or agreed with this statement. This was a 17.5 percent increase in the mean scores from the pre-test to the post-test. Overall, prior to the

presentation, answers ranged from neutral to strongly agree. Subsequently, after the presentation, answers ranged from agree to strongly agree, suggesting that participants may be more likely to use remifentanil PCA in the parturient population when neuraxial anesthesia is contraindicated.

Open-ended items. Two participants commented that IV fentanyl or nitrous oxide and Nubian were utilized as an alternative to neuraxial anesthesia in their current practice. Three participants responded with comments about the potential barriers to the implementation of a remifentanil protocol. Common themes seen included the cost of remifentanil and providers unwilling to adapt to a change in practice.

Pre-test Assessment

1. Remifentanil is an:
 - A. Lipophilic, synthetic opioid
 - B. NSAID
 - C. Non-lipophilic, synthetic opioid
 - D. Natural
2. Remifentanil is metabolized by:
 - A. The liver
 - B. The lung
 - C. Plasma and tissue esterases
 - D. Plasma cholinesterase
3. Context sensitive half-life of remifentanil is:
 - A. 1 – 3 minutes
 - B. 3 – 5 minutes
 - C. 5 – 7 minutes
 - D. 7 – 10 minutes
4. The fetus is unable to metabolize remifentanil due to its lack of circulating plasma and tissue esterases.
 - A. True
 - B. False
5. Regarding the pharmacology of remifentanil, which of the following statements is true:
 - A. The dose of remifentanil needs to be altered in patients with a low creatinine clearance.
 - B. Caution must be used when dosing remifentanil in patients with pseudocholinesterase deficiency.
 - C. Complete recovery of respiratory drive occurs within 45 minutes.
 - D. The pharmacodynamics are more closely related to lean body weight than to actual body weight.
6. Remifentanil PCA is shown to have a higher rate of minor adverse events, including pruritis, nausea, or vomiting.
 - A. True
 - B. False
7. Best practices for improving parturient safety using remifentanil PCA would include everything EXCEPT:
 - A. Continuous pulse oximetry
 - B. Capnography with supplemental O₂
 - C. Vital signs taken Q 30 min
 - D. Naloxone at bedside
 - E. One-on-one nursing care

8. Compared to other analgesic modalities, there is evidence that remifentanyl is superior to IM meperidine, IV fentanyl, and inhaled nitrous oxide.

A. True

B. False

9. Which opioid used in labor analgesia has been associated with the least neonatal adverse effects.

A. IM meperidine

B. IV fentanyl

C. Remifentanyl PCA

D. IV morphine

10. Since remifentanyl's context-sensitive half-life is time-independent, full recovery of respiratory drive will occur within:

A. 5 min

B. 10 min

C. 15 min

D. 20 min

Pre-test Survey

11. Remifentanyl PCA is a feasible alternative for parturients when neuraxial anesthesia is contraindicated.

1 – Strongly Disagree

2 - Disagree

3 - Neutral

4 - Agree

5 – Strongly Agree

12. If there was a remifentanyl PCA protocol in place in my obstetrical unit, I would use it for my parturients with contraindications to neuraxial anesthesia.

1 – Strongly Disagree

2 - Disagree

3 - Neutral

4 - Agree

5 – Strongly Agree

Post-test Assessment

1. Remifentanyl is an:

A. Lipophilic, synthetic opioid

B. NSAID

C. Non-lipophilic, synthetic opioid

D. Natural

2. Remifentanyl is metabolized by:
- A. The liver
 - B. The lung
 - C. Plasma and tissue esterases
 - D. Plasma cholinesterase
3. Context sensitive half-life of remifentanyl is:
- A. 1 – 3 minutes
 - B. 3 – 5 minutes
 - C. 5 – 7 minutes
 - D. 7 – 10 minutes
4. The fetus is unable to metabolize remifentanyl due to its lack of circulating plasma and tissue esterases.
- A. True
 - B. False
5. Regarding the pharmacology of remifentanyl, which of the following statements is true:
- A. The dose of remifentanyl needs to be altered in patients with a low creatinine clearance.
 - B. Caution must be used when dosing remifentanyl in patients with pseudocholinesterase deficiency.
 - C. Complete recovery of respiratory drive occurs within 45 minutes.
 - D. The pharmacodynamics are more closely related to lean body weight than to actual body weight.
6. Remifentanyl PCA is shown to have a higher rate of minor adverse events, including pruritis, nausea, or vomiting.
- A. True
 - B. False
7. Best practices for improving parturient safety using remifentanyl PCA would include everything EXCEPT:
- A. Continuous pulse oximetry
 - B. Capnography with supplemental O₂
 - C. Vital signs taken Q 30 min
 - D. Naloxone at bedside
 - E. One-on-one nursing care
8. Compared to other analgesic modalities, there is evidence that remifentanyl is superior to IM meperidine, IV fentanyl, and inhaled nitrous oxide.
- A. True
 - B. False
9. Which opioid used in labor analgesia has been associated with the least neonatal adverse effects.
- A. IM meperidine

- B. IV fentanyl
- C. Remifentanyl PCA
- D. IV morphine

10. Since remifentanyl's context-sensitive half-life is time-independent, full recovery of respiratory drive will occur within:

- A. 5 min
- B. 10 min
- C. 15 min
- D. 20 min

Post-test Survey

11. Remifentanyl PCA is a feasible alternative for parturients when neuraxial anesthesia is contraindicated.

- 1 – Strongly Disagree
- 2 - Disagree
- 3 - Neutral
- 4 - Agree
- 5 – Strongly Agree

12. If there was a remifentanyl PCA protocol in place in my obstetrical unit, I would use it for my parturients with contraindications to neuraxial anesthesia.

- 1 – Strongly Disagree
- 2 - Disagree
- 3 - Neutral
- 4 - Agree
- 5 – Strongly Agree

1. How often do you encounter a patient with a contraindication to neuraxial anesthesia?

2. Reflect and describe a time when you were unable to provide effective pain relief due to contraindication to neuraxial anesthesia. What alternative method of analgesia did you use?

3. What are some potential barriers you perceive to the implementation of a remifentanyl protocol for laboring parturients with contraindications to neuraxial anesthesia at your facility?

Presenter Evaluation

The presenter delivered the material in a clear and structured manner.

- 1 – Poor
- 2 – Fair
- 3 – Good
- 4 – Very Good

5 – Excellent

The presenter was knowledgeable about the topic and any related issues.

1 – Poor

2 – Fair

3 – Good

4 – Very Good

5 – Excellent

The presentation was concise and informative.

1 – Poor

2 – Fair

3 – Good

4 – Very Good

5 – Excellent

Overall, I would rate this presentation as:

1 – Poor

2 – Fair

3 – Good

4 – Very Good

5 – Excellent