

Impact of Opioid-Free Anesthesia Versus Opioid-Based Anesthesia on Time to Extubation: A Scoping Review

Dexter Browning, SRNA; Ariel Clark, SRNA; Mary Connor, SRNA; Erica B. Gates, SRNA; Madison McCaskill, SRNA
Faculty Advisor: Dwayne Accardo, DNP, CRNA
College of Nursing - The University of Tennessee Health Science Center - Memphis, TN

Purpose

The purpose of this scoping review is to evaluate the use of ketamine with opioid free analgesia (OFA) versus traditional opioid usage and its outcome on extubation times.

Specific Aims

To determine whether opioid free anesthesia (OFA) can decrease:

- Time to extubation
- Length of ICU stay
- Length of hospital stay
- Amount of opioid use post-operatively

Background

Opioids are clinically proven to prolong time to extubation.

- Opioids are typically seen as the most effective analgesic and are therefore the most frequently used perioperatively.

Prolonged time to extubation correlates with negative patient outcomes such as:

- Increased length of time in the ICU and associated costs.
- Increased length of hospital stay and associated costs.
- Increased mortality and pulmonary complications.
- Increased post-op nausea & vomiting and mucosal pressure ulcers.

OFA attempts to alleviate the negative outcomes with opioids while still providing adequate analgesia

- This scoping review focuses on primarily utilizing ketamine instead of opioids to potentially improve patient outcomes while alleviating hospital and patient expenses.

Methods

Study Design

- Scoping Review

Search Engine Utilized

- University of Tennessee Health Science Center library

Databases

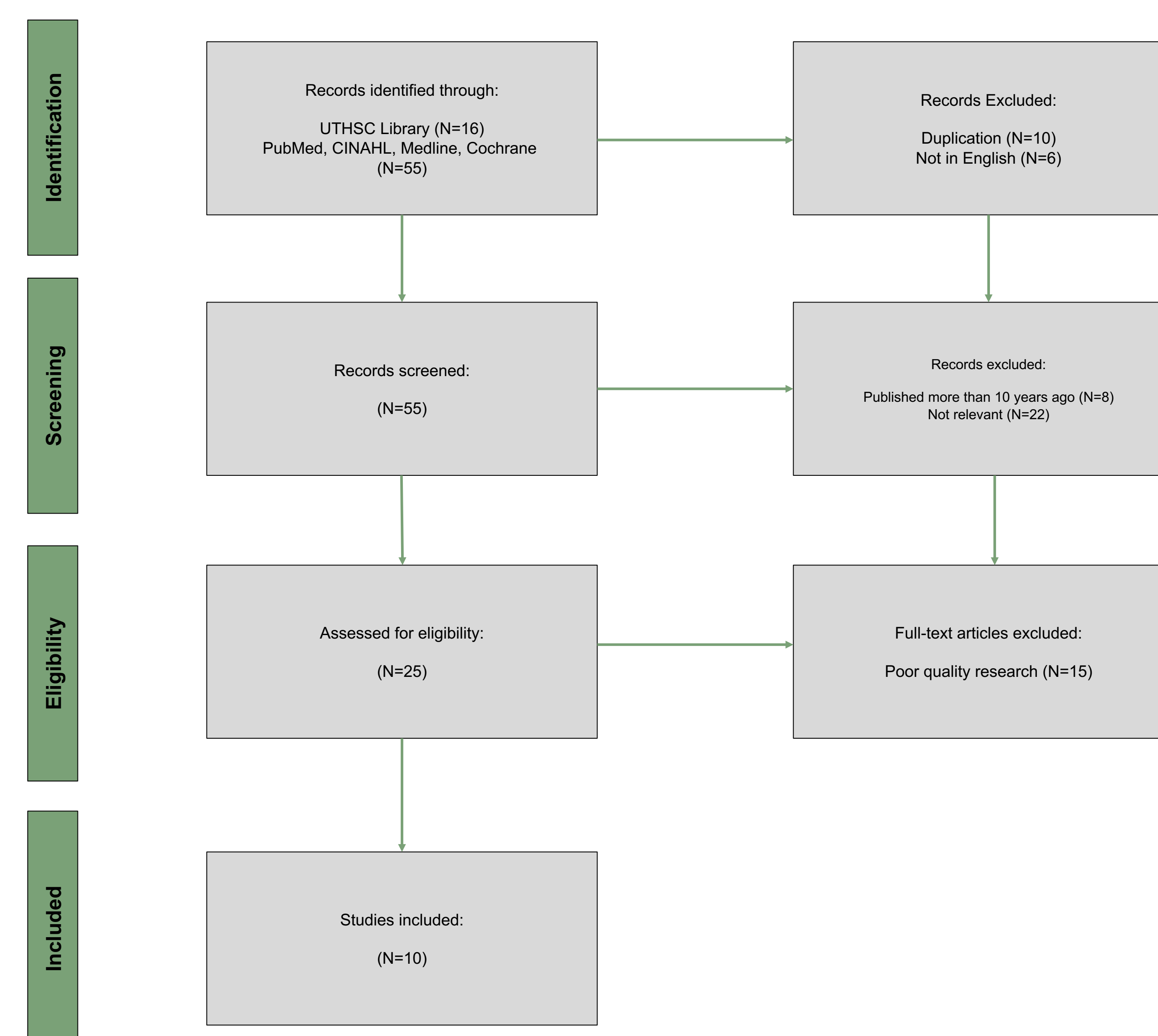
- PubMed
- CINAHL
- Medline
- Cochrane

Literature Search

- Conducted search from September 2021 to November 2021

Eligibility Criteria

- Articles published in English language in last ten years
- Participants underwent surgery with mechanical ventilation and received either opioid free anesthesia (OFA) or opioid anesthesia (OA)



Results

- **Post-operative extubation times were shorter in the OFA groups.**
- **ICU length of stay was decreased in the OFA group.**
- **Length of stay in the hospital was equal in the OFA group and control group.**
- **Post-operative opioid consumption was decreased in OFA group.**

Results Table

	1	2	3	4	5	6	7	8	9	10
Outcome #1: postoperative extubation time in OFA group	↑ ¹	↑ ¹	↓ ¹	↓ ¹	↓ ¹	↓ ¹	↓ ¹	↓ ¹	↓ ¹	—
Outcome #2: LOS in ICU in OFA group	↓ ¹	NE	↓	NE	↓ ¹	NE	—	—	↓ ¹	↓ ¹
Outcome #3: LOS in Hospital in OFA group	NE	↑	NR	NE	—	NE	↓ ¹	NE	NE	—
Outcome #4: opioid consumption post-operatively in OFA group	NE	NE	↓ ¹	↓ ¹	↓ ¹	NE	NE	↓ ¹	NE	↓ ¹

LEGEND

1 = Sharma, K. et al. (2020); 2 = An, G. et al. (2021); 3 = Moghad, M. et al. (2017); 4 = Buccoheit, J. et al. (2019); 5 = Guinot, P. et al. (2019); 6 = Hegazy, M. et al. (2020); 7 = Grant, M. C. et al. (2020); 8 = Patel, J. et al. (2016); 9 = Mahmoud, H. E. et al. (2018); 10 = Manasco, A. T. et al. (2020)

SYMBOL KEY

↑ = Increased, ↓ = Decreased, — = No Change, NE = Not Examined, NR = Not Reported, √ = applicable or present

LOS = Length of Stay, OFA = Opioid-free Anesthesia

* higher-level evidence; † statistically significant findings; ‡ statistical significance not reported

Levels of Evidence: one level 1 evidence article, four level 2 evidence articles, two level 3 evidence articles, and three level 4 evidence articles

Implications for Practice

- **Effects of OFA in the Perioperative Setting: Ketamine**
 - Ketamine will reduce opioid consumption when used as an adjunct for pain control.
 - Ketamine will reduce time to extubation.
- **Populations with Prolonged Intubation Times**
 - Routine use of Ketamine in these populations should be considered to reduce time to extubation.
 - Routine use of Ketamine in populations with prolonged intubation times can prevent negative sequelae of extended intubation.

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