

The Effects of Dexmedetomidine Administration in Adult Patients in the Prevention of Postoperative Delirium: A Systematic Review and Quality Improvement Project

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Abstract

Objective. The aim of this project was to provide student registered nurse anesthetist with an educational presentation related to the effectiveness of dexmedetomidine in the prevention of postoperative delirium in adult patients, as well as provide SRNAs with evidence-based findings that may be applicable to their clinical practice of anesthesia.

Background. Postoperative delirium is a frequent complication for adult patients, leading to prolonged hospitalization, increase morbidity and mortality. There is limited and varying research available that proposes a definitive treatment in preventing the incidence of postoperative delirium in adult patients. The administration of dexmedetomidine, an alpha-2 agonist is a common suggested treatment.

Design. This Systematic Review examined current literature to assess the intraoperative administration of dexmedetomidine in helping prevent POD in adult patients. A Quality Improvement Project was designed to improve the awareness of postoperative delirium amongst student registered nurse anesthetist.

Methods. Searched databases included: Science Direct, PubMed and MEDLINE. Inclusion criteria for this systematic review included studies published from 2010 to 2020. The selected population must meet the age requirement of an adult 18 years of age or older and undergoing general anesthesia. Disseminated surveys to student registered nurse anesthetist at Union University.

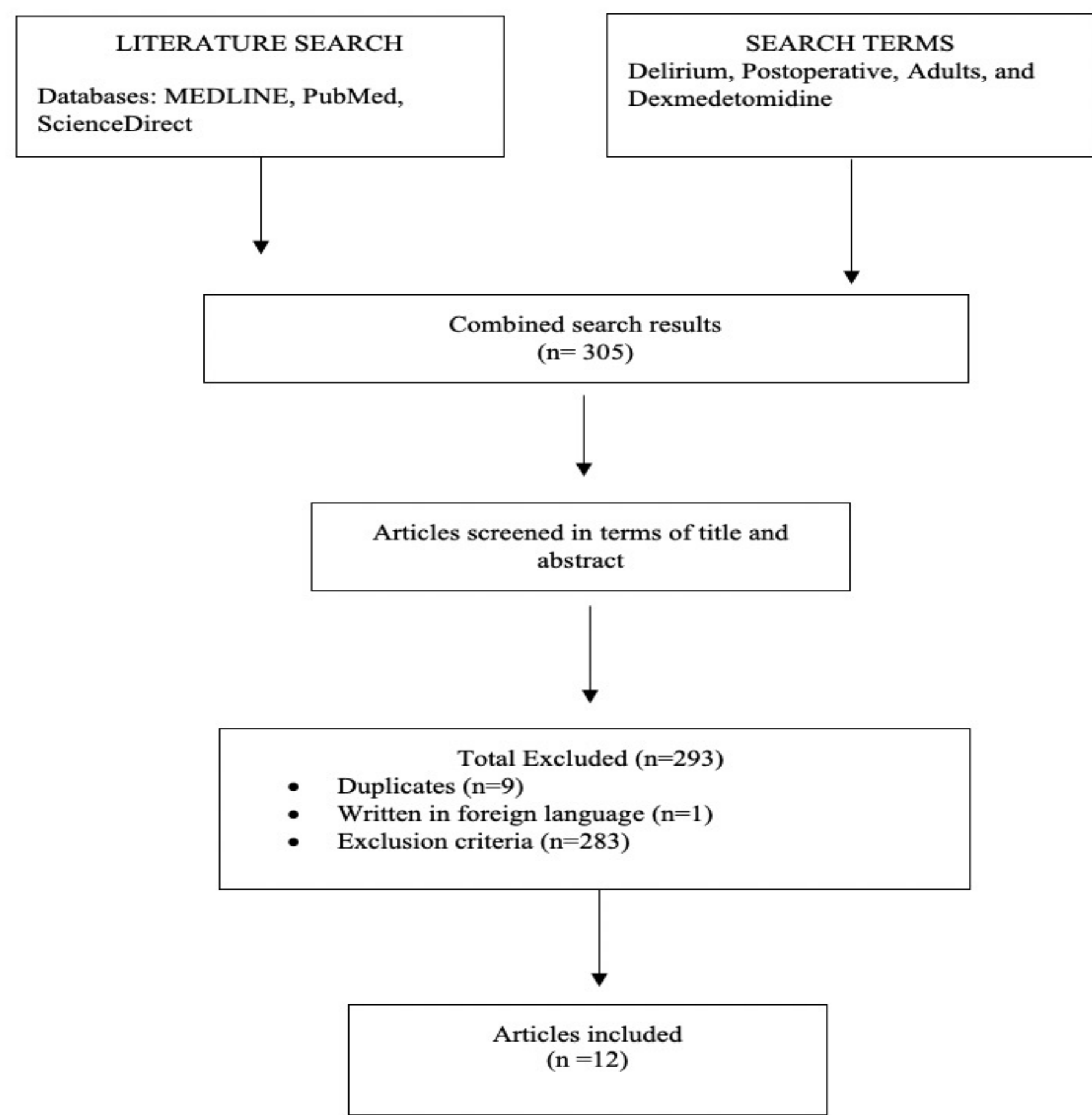
Results. Overall results associated with this review demonstrate that dexmedetomidine may have an effect on the incidence of postoperative delirium. Results from surveyed participants demonstrated an improved understanding of POD and a perceived value in utilizing dexmedetomidine in preventing postoperative delirium.

Conclusions. The most apparent conclusion from this review is that additional research is required to determine the effectiveness of dexmedetomidine in preventing postoperative delirium. Methods in preventing postoperative delirium should continue to be explored by anesthesia providers.

*References are available upon request

Introduction

- Postoperative delirium (POD) is an acute psychological disorder characterized by agitation, hallucinations, combativeness, confusion, and irritability.
- Approximately 51% of adults experience POD after surgery.
- POD associated with prolonged hospitalization, increase morbidity and mortality.
- Current pharmacological treatments can lead to poorer long-term outcomes and can exacerbate and prolong adverse outcomes.



Methods

Systematic Review
Total # of articles selected: 12

Databases:
•MEDLINE (Ovid), PubMed and Science Direct

Search Range:
• < 10 years old with a date range of 2010 - 2020, peer-reviewed randomized control trials

Population: Adults within each study were at least 18 years of age or older undergoing general anesthesia, while gender or ethnicity were not limiting factors.

Quality Improvement
Design: Likert Scale Questionnaire
Participation: Union University DNP Nurse Anesthesia students, class of 2021 cohort. Each participant is 18 years of age or older, currently enrolled in and or have completed anesthesia related coursework.
Total participants: 15
Method of education and evaluation: Participants were provided a digital PowerPoint presentation containing evidence-based findings related signs and symptoms of postoperative delirium and the effects of dexmedetomidine. Recommended dosing and evidenced based benefits were discussed. Participants were asked to complete a scaled questionnaire after viewing the evidenced based material to examine their perceived value of dexmedetomidine in their clinical practice.

Results

Systematic Review
• Dexmedetomidine can have an effect on the incidence of postoperative delirium. The most evident conclusion is that more research is necessary to determine the efficiency of dexmedetomidine as a modality to prevent postoperative delirium. The neuroprotective properties of dexmedetomidine are documented, however there is insufficient evidence that supports its utilization perioperatively in the prevention of delirium in the adult population.

Quality Improvement
• Results from intervention revealed there was an improved understanding of postoperative delirium amongst SRNAs and a perceived value in the utilization of dexmedetomidine in preventing postoperative delirium in adult patients.
• 11 of 15 participants strongly agreed that prevention is the most effective means in preventing postoperative delirium, 4 agreed.
• 11 participants strongly agreed to the possible utilization of dexmedetomidine within their practice after viewing the presentation while, 3 agreed and 1 neither agreed nor disagreed.
• 11 of 15 participants surveyed strongly agreed that the information included in the provided presentation was relevant to their practice as student registered nurse anesthetist, while 4 agreed.

Relevance to Clinical Practice

- Methods in preventing postoperative delirium should continue to be explored by anesthesia providers. Adult patients with advancing age and multiple comorbidities are at an increased risk of developing complications associated with postoperative delirium. The incidence of postoperative delirium has implications which negatively impact recovery, hospital length of stay and cost.
- Based on the results of this intervention student registered nurse anesthetist were provided evidence-based findings associated with the effects of dexmedetomidine and its prevention of delirium. These findings may be useful in their clinical practice of anesthesia, in identifying and preventing complications associated with postoperative delirium.