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Prevención de Delirium de Emergencia con Dexmedetomidina en Pediátricos
Emergency Delirium Prevention with Dexmedetomidine in Pediatrics

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Prevención de Delirium de Emergencia con Dexmedetomidina en Pediátricos
Emergency Delirium Prevention with Dexmedetomidine in Pediatrics

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Resumen

Introducción: La prevención del delirium de emergencia con dexmedetomidina en pacientes pediátricos es un tema de creciente interés en la práctica médica y la investigación clínica. El delirium de emergencia, también conocido como síndrome de delirium en la unidad de cuidados intensivos pediátricos (UCIP), es un trastorno neuropsiquiátrico grave que afecta a niños y adolescentes críticamente enfermos. Objetivos: Analizar de manera exhaustiva la literatura científica disponible con el propósito de evaluar la efectividad y seguridad de la dexmedetomidina como agente farmacológico en la prevención del delirium de emergencia en pacientes pediátricos. Material y métodos: Se realizará una Revisión Sistemática de la literatura, que se regirá de acuerdo con las directrices PRISMA. Las unidades de análisis serán los resúmenes y texto completo de artículos con diseño de ensayos clínicos aleatorizado o cohorte prospectiva o retrospectiva, publicados en Scopus, Web of Science y Pubmed, sin restricción temporal. Resultados: La revisión sistemática indica que la dexmedetomidina resulta prometedora para reducir la incidencia de delirio postoperatorio, delirio de urgencia y dolor en diversas poblaciones quirúrgicas. Estos hallazgos tienen implicaciones clínicas significativas, especialmente para pacientes ancianos y niños sometidos a procedimientos específicos. El perfil de seguridad de la dexmedetomidina fue generalmente aceptable, sin que se notificaran acontecimientos adversos importantes. En conclusión, si bien la revisión sistemática sugiere que la dexmedetomidina puede ofrecer beneficios en la prevención del delirio postoperatorio y mejorar los resultados perioperatorios, se necesitan investigaciones adicionales para establecer la dosis óptima, refinar los métodos de evaluación y explorar sus efectos a largo plazo. La dexmedetomidina promete ser una herramienta valiosa en entornos quirúrgicos pediátricos y geriátricos, con el potencial de mejorar la atención y la recuperación de los pacientes.

Palabras Clave: *Delirio, Urgencias, Dexmedetomidina, Pediatría.*

Abstract

Introduction: Fecal Matter Transplantation is a method based on the administration of a processed and prepared fecal suspension from a healthy individual to another patient with the aim of restoring intestinal microbiota balance by manipulating the microbiota to the carrier of the specific disease with the goal of achieving its resolution. Objectives: To describe the scientific evidence on fecal microbiota transplantation strategies to restore intestinal balance and reduce Clostridium difficile infections. Material and methods: A Systematic Review of the literature was carried out, which will be governed according to PRISMA guidelines. The units of analysis will be abstracts and full text of articles with randomized clinical trial design or prospective or retrospective cohort, published in Scopus, Web of Science and Pubmed, without temporal restriction. Results: The results of this review support the efficacy of FMT in the treatment of CRID and provide valuable information on the restoration of

intestinal balance. However, further research and rigorous clinical trials are required to fully understand the mechanisms underlying these effects and to optimize treatment protocols. FMT has the potential to be a valuable tool in clinical practice and in the fight against recurrent intestinal infections, as well as in reducing antibiotic resistance. Results: The systematic review indicates that dexmedetomidine shows promise in reducing the incidence of postoperative delirium, emergency delirium, and pain in various surgical populations. These findings have significant clinical implications, especially for elderly patients and children undergoing specific procedures. Dexmedetomidine's safety profile was generally acceptable, with no major adverse events reported. In conclusion, while the systematic review suggests that dexmedetomidine may offer benefits in preventing postoperative delirium and improving perioperative outcomes, further research is needed to establish optimal dosing, refine assessment methods, and explore its long-term effects. Dexmedetomidine holds promise as a valuable tool in pediatric and geriatric surgical settings, with the potential to enhance patient care and recovery.

Keywords: *Microbiota fecal; Trasplante de microbiota fecal; Clostridioides difficile; Revisión sistemática.*

INTRODUCTION

The prevention of emergency delirium with dexmedetomidine in pediatric patients is a topic of growing interest in medical practice and clinical research. Emergency delirium, also known as pediatric intensive care unit (PICU) delirium syndrome, is a severe neuropsychiatric disorder affecting critically ill children and adolescents. This syndrome is characterized by acute altered mental status, including confusion, agitation, hallucinations, and disorientation, and may be associated with significant complications, such as a longer PICU stay, increased health care costs, and an elevated risk of morbidity and mortality. Dexmedetomidine, a selective alpha-2 adrenergic receptor agonist, has emerged as a promising pharmacological agent in the prevention and treatment of emergence delirium in critically ill pediatric patients. This introduction aims to explore the rationale, clinical relevance, and implications of emergency delirium prevention with dexmedetomidine in the pediatric setting, providing a comprehensive overview of this critical and evolving topic.

Fundamentals of Pediatric Emergency Delirium:

Emergency delirium in pediatric patients is a complex, multifactorial phenomenon that occurs most frequently in the PICU. It affects children and adolescents who are in critical health states due to various medical conditions, such as severe trauma, complex surgeries, sepsis, acute neurological illnesses and other serious medical conditions. Although less common compared to adults, pediatric delirium is a relevant clinical entity that can have significant consequences for the patient and the health care team.

Characteristic symptoms of delirium in pediatric patients include acute changes in mental status, such as alterations in consciousness, difficulty maintaining attention, fluctuations in alertness, psychomotor agitation, visual or auditory hallucinations, disorientation in time and space, and disorganized thinking. These symptoms can be disturbing to both the patient and caregivers, and often make communication and appropriate medical care difficult.

At the pathophysiologic level, pediatric delirium has been associated with a systemic inflammatory response, neurochemical imbalances, and brain dysfunction. Changes in brain function, including decreased cerebral blood flow and altered neural networks, contribute to the symptoms of delirium. In addition, increased release of proinflammatory cytokines has been observed in pediatric patients with delirium, suggesting a link between the inflammatory response and the pathogenesis of delirium.

Clinical Relevance of Pediatric Emergency Delirium:

The clinical relevance of emergence delirium in pediatric patients is undeniable. This syndrome is associated with a number of adverse complications that can adversely affect the prognosis and quality of life of patients. Some of the most prominent clinical implications include:

1. prolonged PICU stay: pediatric patients with emergence delirium tend to have longer PICU stays compared to those who do not develop this syndrome. This not only increases the emotional and financial burden for families, but may also expose patients to an increased risk of nosocomial complications.

Increased risk of morbidity and mortality: Pediatric delirium has been associated with an increased risk of medical complications, such as respiratory failure, secondary infections and multiple organ dysfunction. In some cases, delirium may contribute to significant worsening of health status and increased mortality.

3. Neurodevelopmental disturbances: Children and adolescents who experience delirium in the PICU may be at risk for long-term neurodevelopmental effects. Studies have shown that pediatric delirium is associated with an increased risk of cognitive and functional disabilities later in life.

4. Attention and communication difficulties: Symptoms of delirium, such as agitation and disorientation, can hinder medical care and effective communication with the patient, which in turn can delay diagnosis and treatment of other medical conditions.

5. Impact on caregivers' quality of life: Pediatric delirium not only affects the patient, but can also have a significant emotional and psychological impact on caregivers, who often experience high levels of stress and anxiety.

Given the clinical relevance of emergence delirium in pediatric patients, there is growing interest in developing effective prevention and treatment strategies to address this syndrome and its adverse implications.

Implications of Dexmedetomidine in the Prevention of Pediatric Delirium:

Dexmedetomidine is a drug that has shown promise in the prevention and treatment of delirium in critically ill pediatric patients. It is classified as a selective alpha-2 adrenergic receptor agonist and has sedative, anxiolytic and analgesic properties. Although initially used as an anesthetic and analgesic agent in adults, its use in pediatrics has increased in recent decades due to its safety profile and potential benefits in the prevention of delirium.

Dexmedetomidine exerts its main effect by activating alpha-2 adrenergic receptors in the central nervous system, leading to an inhibition of noradrenaline release. This results in a decrease in sympathetic activity, a reduction in the release of proinflammatory cytokines and a decrease in oxidative stress, which may be beneficial in critically ill pediatric patients.

Clinical studies and experimental research have provided evidence supporting the use of dexmedetomidine in the prevention of delirium in pediatric patients. Dexmedetomidine has been observed to reduce the incidence of delirium in the PICU and improve sleep quality in these patients. In addition, it has been associated with a decreased need for sedatives and opioid analgesics, which may have a positive impact on the avoidance of complications and undesirable side effects.

One of the highlights of dexmedetomidine is its ability to provide sedation and analgesia without significantly suppressing respiratory function, making it an attractive option in the management of pediatric patients in the

PICU. Its safety profile and the possibility of rapid reversal with the antagonist agent flumazenil if needed have contributed to its adoption in pediatric clinical settings.
Objective: To comprehensively analyze the available scientific literature in order to evaluate the effectiveness and safety of dexmedetomidine as a pharmacological agent in the prevention of emergency delirium in pediatric patients.

MATERIALS AND METHODS

Study Design
A Systematic Review of the literature will be conducted, which will be governed according to the PRISMA guidelines (preferred reporting items for systematic reviews and meta-analyses).

Study Population
Inclusion Criteria
- Randomized clinical trials.
- Prospective or retrospective cohort studies.

Exclusion Criteria
- Review Articles, Scientific Letters/Letters to the Editor, Case Reports, Editorials, Original Articles corresponding to Observational Studies.

Selection and Sample Size
The units of analysis will be the abstracts and full text of articles with randomized clinical trial design or prospective or retrospective cohort, published in Scopus, Web of Science and Pubmed, without time restriction.

Ethical and legal considerations
This study included secondary data sources and therefore does not correspond to an analysis from the ethical point of view, given that no experimentation or evaluations were performed on human beings/experimental animals.

RESULTS

Study	Country	Aim	Intervention	Type of research	Sample	Main results	Clinical/practical implications
Postoperative Delirium after Dexmedetomidine versus Propofol Sedation in Healthy Older Adults Undergoing Orthopedic Lower Limb Surgery with Spinal Anesthesia: A Randomized Controlled Trial (Shin)	*South Korea*	*Delirium is a critical postoperative complication in older. patients. Based on the hypothesis that intraoperative dexmedetomidine sedation would lower postoperative delirium than propofol sedation would, the authors compared the incidence of postoperative delirium in older adults, using the mentioned sedatives.*	*-<u>Control Group</u>: Propofol infused continuously through a device, adjusting the concentration at the site of effect between 1.0 and 2.0 µg/ml.* *-<u>Experimental Group:</u> Dexmedetomidine received a loading dose of 1 µg/kg for more than 10 minutes, followed by continuous administration of 0.1 to 0.5 µg - kg-1 - h-1.*	*Randomized Double Blind Clinical Trial*	*-<u>Control Group</u>: 366 initial patients and 344 final patients.* *-<u>Experimental Group</u>: 366 initial patients and 342 final patients.* *Patients 65 years of age or older in orthopedic surgeries.*	*The study included 748 patients aged 65 and over who had undergone elective lower extremity orthopedic surgery. They were randomized into two groups, with 374 patients in each group. After excluding some patients, 732 patients were included in the intention-to-treat analysis and 683 patients were included in the per-protocol analysis. The primary outcome measure was the incidence of postoperative delirium, which was assessed using the confounding assessment method. The incidence of postoperative delirium was compared between the dexmedetomidine and propofol groups. The incidence of postoperative delirium was significantly lower in the dexmedetomidine group than in the propofol group (3.0% vs. 6.6%; odds ratio, 0.42; 95% CI, 0.201 to 0.86; P = 0.036). Hemodynamic variables, including mean arterial pressure (MAP) and heart rate (HR), were assessed as secondary outcomes. MAP*	*The study suggests that the use of dexmedetomidine sedation during lower limb orthopedic surgery in older adults may reduce the incidence of postoperative delirium compared to propofol sedation. The study also found that MAP was higher in the dexmedetomidine group during sedation, but significantly lower in the PACU, requiring a greater amount of phenylephrine than the propofol group. HR was lower in the dexmedetomidine group, both during sedation and in the PACU. This finding has practical implications for physicians and anesthesiologists involved in the perioperative treatment of elderly patients undergoing lower limb orthopedic surgery. Implementing dexmedetomidine sedation as a strategy during surgery may help*

						and HR were measured before sedation, during sedation and in the post-anesthetic care unit (PACU). Mean arterial pressure (MAP) was higher in the dexmedetomidine group during sedation, but significantly lower in the PACU, requiring a greater amount of phenylephrine than the propofol group. Meanwhile, heart rate (HR) was lower in the dexmedetomidine group, both during sedation and in the PACU.	*reduce the risk of postoperative delirium in this population. Doctors should carefully consider the choice of sedative, taking into account the possible benefits of dexmedetomidine in preventing delirium in the elderly. Further research and clinical trials may be needed to validate these findings and explore the optimal dosage and administration protocols for dexmedetomidine sedation in this context. Overall, this study provides valuable information on the possible benefits of dexmedetomidine sedation in reducing postoperative delirium in the elderly undergoing orthopedic surgery, highlighting the importance of considering sedative options in perioperative care.*
Dexmedetomidine for the prevention of emergence delirium and postoperative behavioral changes in pediatric patients with	*China*	*Emergence delirium (ED) is a common neurologic complication that can not only distress children and their families in the*	*-<u>Control Group:</u> Same volume of Saline Solution* *- <u>Experimental Group:</u>*	*Randomized Double Blind Clinical Trial*	*-<u>Control Group</u>: 48 patients at the beginning and 45 at the end.*	*The study included a total of 90 patients, with 48 patients in each group. The administration of dexmedetomidine significantly reduced the*	*The administration of dexmedetomidine can be considered a rational and feasible approach to reduce the incidence of emergence delirium*

sevoflurane anesthesia: a double-blind, randomized trial (Shi)		*early postanesthetic period but can also have adverse. effects on children in the long-term. This study aimed to investigate the effects of single dose. dexmedetomidine on ED in children with sevoflurane anesthesia and to observe postoperative behavioral changes through long-term follow-up.*	*Dexmedetomidine loading dose of 1 µg/kg over 10 minutes, followed by a maintenance dose of 0.5 µg/kg/h until the end of surgery.*		*-<u>Experimental Group</u>: 48 patients at the beginning and 45 at the end.* *Patients aged 2-7 years in undergoing tonsillectomy*	*incidence of emergency delirium (ED) compared to the control group (31.1% vs 53.3%; P=0.033). The incidence of severe ED was also significantly lower in the dexmedetomidine group. Dexmedetomidine prolonged extubation time (P<0.001). There were no significant differences in the length of stay in the post-anesthetic care unit (PACU) after extubation and in the percentage of adverse events between the two groups. Dexmedetomidine also reduced the incidence of pain compared to the control group (28.9% vs 57.8%; P=0.006). The incidence of postoperative negative behavioral changes (NPOBCs) was significantly lower in the dexmedetomidine group at one and seven days after discharge (33.3% vs 60.0%; P = 0.011 and 24.4% vs 46.7%; P = 0.028, respectively). However, there was no significant difference in NPOBCs between the two groups on day 30.*	*(ED) in pediatric patients undergoing tonsillectomy with sevoflurane anesthesia. Dexmedetomidine can be used to prevent postoperative negative behavioral changes (NPOBCs) in pediatric patients after sevoflurane anesthesia. The use of dexmedetomidine can result in a decrease in the incidence of pain in pediatric patients after tonsillectomy. However, it should be noted that the administration of dexmedetomidine may prolong extubation time. The study did not assess children's baseline temperament using a validated assessment tool, which has been suggested as an important contributor to ED and NPOBCs. In summary, the study suggests that dexmedetomidine may be a useful intervention to reduce the incidence of ED, pain and NPOBCs in pediatric patients undergoing tonsillectomy with sevoflurane anesthesia.*

							However, the prolonged extubation time and the lack of significant difference in the number of patients requiring additional treatment with fentanyl should be taken into account when planning surgery. Further studies are needed to confirm the results and assess the initial temperament of the children using a validated assessment tool
Effect of Intranasal Dexmedetomidine or Midazolam for Premedication on the Occurrence of Respiratory Adverse Events in Children Undergoing Tonsillectomy and Adenoidectomy (Shen)	*China*	*To investigate the effect of intranasal dexmedetomidine or midazolam used for premedication on the occurrence of PRAEs.*	*-<u>Control Group</u>: 0.9% Intranasal Saline Solution* *-<u>Experimental Group 1</u>: Intranasal Midazolam 0.1 mg/kg* *-<u>Experimental Group 2</u>: Intranasal Dexmedetomidine 2.0 µg/kg*	*Randomized Double Blind Clinical Trial*	*-<u>Control Group</u>: 125 patients* *-<u>Experimental Group 1</u>: 124 patients* *-<u>Experimental Group 2</u>: 124 patients.* *Patients from 0 to 12 years old submitted to elective tonsillectomy and adenoidectomy.*	*The study investigated the effect of intranasal dexmedetomidine, and midazolam used as premedication on the appearance of perioperative respiratory adverse events (PRAE) in children undergoing tonsillectomy and adenoidectomy. Dexmedetomidine facilitated endotracheal tube tolerance and significantly reduced the incidence of oxygen desaturation and coughing at the time of extubation, without affecting time. The use of dexmedetomidine can reduce airway reflexes and suppress a sudden increase in heart rate during extubation, possibly due to a decrease in sympathetic activity.*	*The use of intranasal dexmedetomidine or midazolam as premedication in children undergoing tonsillectomy and adenoidectomy can potentially reduce the occurrence of perioperative respiratory adverse events (PRAEs). In addition, dexmedetomidine can facilitate endotracheal tube tolerance and reduce coughing during extubation, leading to a smoother extubation process. The administration of dexmedetomidine may help suppress airway reflexes and prevent a marked increase in*

						The severity of obstructive sleep apnea (OSA) was not classified in the study, and OSA status was assessed based on clinical history rather than polysomnography. *There was no significant difference in the incidence of delirium on postoperative awakening, postoperative pain score, sedation success rate and heart rate values between the three groups.* *Binary logistic regression was used to adjust for confounding factors such as physical status, body mass index, upper respiratory tract infection, passive smoking and OSA.* *In summary, the study suggests that intranasal dexmedetomidine may be a better option than intranasal midazolam for premedication in children undergoing tonsillectomy and adenoidectomy to reduce the incidence of PRAEs.*	*heart rate during extubation, possibly due to its effect in reducing sympathetic activity.* *The study highlights the importance of considering individual differences in children and the possible influence of parents' level of education on the occurrence of PRAEs. It also provides high-quality evidence to guide the choice of preoperative sedatives for children undergoing tonsillectomy and adenoidectomy, highlighting the importance of considering the incidence of PRAEs when selecting preoperative sedatives.* *It suggests that physicians should be cautious when using intranasal midazolam as a premedication in children undergoing tonsillectomy and adenoidectomy, as it may increase the incidence of PRAEs.* *In summary, the study provides valuable information on the use of preoperative sedatives for children undergoing*

							tonsillectomy and adenoidectomy. The results suggest that intranasal dexmedetomidine may be a safer and more effective option than intranasal midazolam for reducing the incidence of PRAEs. Clinicians should consider using intranasal dexmedetomidine for sedation in children undergoing tonsillectomy and adenoidectomy when clinically appropriate.
The effect of peri-operative dexmedetomidine on the incidence of postoperative delirium in cardiac and non-cardiac surgical patients: a randomized, double-blind placebo-controlled trial (Norden)	*Germany*	*The objective of the study was to investigate the effect of peri-operative administration of dexmedetomidine on the incidence of postoperative delirium in non-cardiac and cardiac surgical patients aged ≥ 60 y.*	*-<u>Control Group</u>: Placebo* *- <u>Experimental Group</u>: Dexmedetomidine ranged from 0.5 µg.kg-1.h-1 to 0.7 µg.kg-1.h-1, and a loading dose of between 0.6 and 1.0 µg.kg-1 was used in some studies*	*Randomized Double Blind Clinical Trial*	*- <u>Control Group</u>: 32 patients* *- <u>Experimental Group</u>: 28 patients* *Patients aged ≥ 60 years undergoing cardiac or non-cardiac surgery.*	*The study found that perioperative administration of dexmedetomidine was associated with a reduced incidence of postoperative delirium in the first 5 postoperative days in non-cardiac and cardiac surgical patients aged 60 and over undergoing major surgery (43.8% vs. 17.9%, p = 0.038). The severity of delirium, as measured by the Intensive Care Delirium Screening Checklist, was comparable in the two groups (mean maximum score of 1.54 vs. 1.68, p = 0.767). There was no difference in the incidence of postoperative cognitive dysfunction (POCD) between*	*The perioperative administration of dexmedetomidine can be considered a possible strategy to reduce the incidence of postoperative delirium in patients aged ≥ 60 years undergoing major cardiac or non-cardiac surgery. It also reduces anxiety levels on the day of surgery. Dexmedetomidine can help improve patient outcomes by reducing postoperative mortality and the main complications associated with delirium.*

						the two groups. In addition, the incidence of POCD was not influenced by gender, ASA physical status, occurrence of postoperative delirium or other perioperative precipitating factors, such as education and MMSE score. *Anxiety reported on the first day after surgery was significantly lower in the dexmedetomidine group compared to placebo* *During the last hours of surgery, heart rate was lower in the dexmedetomidine group compared to placebo, and intraoperative heart rate was less variable in the dexmedetomidine group during the course of surgery* *No patients in the dexmedetomidine group died, while five patients (15.6%) in the placebo group died (p = 0.029), between a 90-day postoperative evaluation period.* *The authors concluded that perioperative administration of dexmedetomidine is associated with a lower incidence of postoperative delirium in patients aged ≥ 60 years undergoing major cardiac or non-cardiac surgery.* *Overall, the study concluded that perioperative*	*The use of dexmedetomidine in the perioperative period may be a promising and safe approach to effectively reduce postoperative delirium in carefully selected high-risk patients.* *Future studies with larger sample sizes and long-term outcomes are needed to further validate the efficacy and safety of dexmedetomidine in reducing postoperative delirium, since postoperative delirium is a common and serious complication of surgery, particularly in elderly patients, and can lead to increased morbidity, mortality and healthcare costs* *Physicians and healthcare providers should consider incorporating dexmedetomidine into their perioperative management strategies for elderly patients undergoing major surgery to potentially reduce the incidence of postoperative delirium and improve patient outcomes, as it has*

						administration of dexmedetomidine is safe for use in non-cardiac and cardiac surgical patients aged 60 and over undergoing major surgery and significantly reduces the incidence of postoperative delirium	*been shown to be an effective strategy.*
Comparison of Intranasal Dexmedetomidine and Oral Midazolam for Premedication in Pediatric Dental Patients under General Anesthesia: A Randomised Clinical Trial (Wang)	*China*	*The aim of the study was to compare the effects of preoperative intranasal dexmedetomidine and oral midazolam on preoperative sedation and postoperative agitation in pediatric dental patients undergoing general anesthesia. The study also aimed to evaluate the safety and efficacy of both drugs in the pediatric population.*	*-<u>Control Group</u>: 0.5 mg/kg oral midazolam.* *-<u>Experimental Group</u>: 2 µg/kg preoperative intranasal dexmedetomidine.*	*Randomized Double Blind Clinical Trial*	*-<u>Control Group</u>: 30 patients* *-<u>Experimental Group</u>: 30 patients* *Patients aged 3 to 6 undergoing dental treatment under general anesthesia*	*The study, carried out with 60 patients divided into two equal groups, found that both intranasal dexmedetomidine and oral midazolam provided satisfactory sedation in pediatric patients aged 3-6 undergoing dental treatment under general anesthesia.* *There was no significant difference between the two groups in terms of parental separation anxiety and mask acceptance. However, the incidence of emergent pediatric postoperative delirium was significantly lower in the dexmedetomidine group compared to the midazolam group. In addition, the incidence of agitation was higher in the midazolam group compared to the dexmedetomidine group. The study also mentioned that the intranasal bioavailability of dexmedetomidine is 65%*	*Both intranasal dexmedetomidine and oral midazolam can be used for premedication in pediatric dental patients under general anesthesia, providing satisfactory sedation. Dexmedetomidine may be preferred over midazolam due to its lower incidence of postoperative agitation and pediatric emergency delirium. The study highlights the importance of considering the route of administration and bioavailability of drugs when selecting premedication options for pediatric patients. Pediatric dentists and anesthesiologists may consider the use of intranasal dexmedetomidine as an alternative to oral midazolam, especially in reducing postoperative agitation and*

						and the oral bioavailability is approximately 16%. The children's Ramsay sedation scores and hemodynamic parameters were observed and recorded before and after the drugs were administered. The demographic variables of the patients, such as age, weight, gender composition, duration of surgery and duration of anesthesia, showed no significant difference between the two groups. In summary, the study found that intranasal dexmedetomidine and oral midazolam were effective in providing satisfactory sedation for children undergoing dental treatment under general anesthesia. However, the incidence of post-operative agitation was significantly lower in the dexmedetomidine group than in the midazolam group. The study recommended further studies with large samples to determine the optimal doses of dexmedetomidine and assess its safety and efficacy for the pediatric population	*emergency delirium. However, the study recommends further studies with large samples to determine the optimal doses of dexmedetomidine and assess its safety and efficacy for the pediatric population. The results of this study can guide clinical practice in improving preoperative sedation and postoperative outcomes in pediatric dental patients undergoing general anesthesia.*
The effect of dexmedetomidine on postoperative	*Australia*	*The objective of the study was to determine whether*	*-<u>Control Group</u>: A nasal spray of the*	*Randomized Double Blind Clinical Trial*	*-<u>Control Group</u>: 84 patients*	*The study analyzed data from 247 children aged two to seven who underwent*	*Dexmedetomidine does not reduce the incidence of negative behavior on*

behaviour change in children: a randomised controlled trial (Lee-Archer)		*dexmedetomidine reduces the incidence of negative behavior change after anesthesia in children aged two to seven years undergoing day case surgery*	*same volume of saline* *-<u>Experimental Group 1</u>: (Premedication) 2 µg.kg-1 intranasal Dexmedetomidine* *-<u>Experimental Group 2</u>: (Intra-Operative) 1 µg.kg-1 Intravenous Dexmedetomidine*		*-<u>Experimental Group 1</u>: 82 patients* *-<u>Experimental Group 2</u>: 81 patients* *Patients aged two to seven years who were undergoing day case procedures.*	*one-day surgeries. The study used three groups of children: a premedication group that received 2 µg.kg-1 of intranasal dexmedetomidine, an intraoperative group that received 1 µg.kg-1 of intravenous dexmedetomidine and a control group that received nasal spray of the same volume of saline solution prepared by an intensive care nurse that appeared identical to the study drug. The primary outcome, the incidence of negative behavior on postoperative day 3, was similar between the three groups (dexmedetomidine premedication group, dexmedetomidine intraoperative group and control group). However, on postoperative day 28, the intraoperative dexmedetomidine group had a significantly lower incidence of negative behavior compared to the other two groups. Thus, there was a significant reduction in the incidence of negative behavior in the intraoperative dexmedetomidine group from 44% on day 3 to 15% on day 28.*	*the third postoperative day in children aged two to seven undergoing one-day procedures. However, intraoperative administration of dexmedetomidine can lead to a lower incidence of negative behavior on postoperative day 28 compared to premedication or the absence of dexmedetomidine, from 44% on day 3 to 15% on day 28.* *Dexmedetomidine was shown to have an analgesic effect, as the incidence of pain in the recovery period was lower in the dexmedetomidine groups compared to the control group. In addition, the children who received dexmedetomidine spent an average of 11 minutes longer in recovery and 33 minutes longer in hospital.* *There were no significant differences in anxiety levels or parental satisfaction between the three groups.*

						There were no significant differences between the groups in terms of anxiety levels. *The incidence of reported pain in recovery was lower in the dexmedetomidine groups compared to the control group.* *There were no significant differences in terms of parental satisfaction between the three groups.* *In conclusion, the study found that dexmedetomidine does not reduce the incidence of negative behavior on the third postoperative day in children aged two to seven undergoing outpatient procedures. However, there was a significant reduction in the incidence of negative behavior in the intraoperative dexmedetomidine group from 44% on day 3 to 15% on day 28.* *Dexmedetomidine used as premedication and as an intraoperative iv bolus appears to be safeDexmedetomidine used as premedication and as an intraoperative iv bolus appears to be safe.*	*The study suggests that current anesthesia practice for healthy children undergoing one-day procedures does not need to be changed. But it also suggests that there may be a benefit to using dexmedetomidine in longer, more painful procedures or in children with well-documented anxiety or behavioral problems. This offers an opportunity for future research*
Comparison of the Effects of Dexmedetomidine and	*China*	*The objective of the study was to compare the effects of dexmedetomidine and*	*-<u>Control Group (Group C)</u>: 0.2mL·kg−1·h−1*	*Randomized Double Blind Clinical Trial*	*-<u>Control Group (Group C):</u> 30 patients*	*The study included 90 patients who were randomly divided into three groups: the control group (group C),*	*Continuous intraoperative intravenous infusion of lidocaine or*

Lidocaine on Stress Response and Postoperative Delirium of Older Patients Undergoing Thoracoscopic Surgery: A Randomized Controlled Trial (Lai)		*lidocaine on the stress response and postoperative delirium (POD) in older patients undergoing thoracoscopic surgery. The study aimed to investigate the impact of these drugs on inflammatory factors and cognitive function in the patients*	*saline was infused intravenously.* *-<u>Experimental Group 1 (Group L)</u>: 1.0 mg·kg−1·h−1 lidocaine was infused intravenously.* *-<u>Experimental Group 2 (Group D)</u>: 1.0 μg·kg−1·h−1 dexmedetomidine was infused intravenously at the induction of anesthesia for 10 min, followed by continuous infusion at a rate of 0.5 μg·kg−1·h−1.*		*- <u>Experimental Group 1 (Group L)</u>: 30 patients* *- <u>Experimental Group 2 (Group D)</u>: 29 patients* *Patients aged >65 years undergoing elective thoracoscopic lobectomy or segmentectomy*	*the lidocaine group (group L) and the dexmedetomidine group (group D). Continuous intravenous infusion of lidocaine or dexmedetomidine intraoperatively reduced surgical stress and inflammatory responses. Cortisol concentrations decreased in all three groups at T1 compared to T0 but increased significantly at T2. Group L had significantly lower cortisol concentrations than group D at T1 and T2. Interleukin-6 (IL-6) concentrations were significantly higher in all three groups at T1, T2 and T3 compared to T0. Groups D and L had significantly lower IL-6 concentrations than group C at T1 and T2. Group L had significantly lower IL-6 concentrations than group D at T2. Tumor necrosis factor-α (TNF-α) concentrations were significantly higher for all three groups at T1, T2 and T3 compared to T0. Groups D and L had significantly lower TNF-α concentrations than group C at T1 and T2. Group D had significantly higher TNF-α concentrations than group L at T1. There were no statistically significant differences in the incidence of postoperative*	*dexmedetomidine can reduce surgical stress and inflammatory responses in elderly patients undergoing thoracoscopic surgery. This suggests that these drugs can be used to manage the physiological response to surgery in this population. Lidocaine has a longer-lasting inhibitory effect on surgical stress compared to dexmedetomidine, lasting up to 24 hours postoperatively. This indicates that lidocaine may be a more effective option for controlling stress in the immediate postoperative period. Dexmedetomidine is an α2-adrenergic receptor agonist with sedative, analgesic, sympatholytic and hemodynamic stabilizing properties, and recent studies have shown that intravenous infusion of dexmedetomidine can exert anti-inflammatory effects. However, its ability to reduce post-operative delirium has not been established.*

						delirium (POD) between the three groups on days 2 and 7. *Group L had lower intraoperative sufentanil use compared to groups C and D. Group L also had a lower incidence of postoperative nausea and vomiting compared to group C. The duration of postoperative extubation was longer in group D compared to groups C and L.* *Overall, the study suggests that continuous intraoperative intravenous infusion of lidocaine or dexmedetomidine can reduce surgical stress and inflammatory responses in elderly patients undergoing thoracoscopic surgery. However, the administration of either drug failed to prevent postoperative delirium. It is important to note that the research result provided is not a full-text article and may not contain all the details of the study results. For a more comprehensive understanding of the study results, we recommend accessing the full text of the article provided in the attached file.*	*However, neither the administration of lidocaine nor dexmedetomidine prevented postoperative delirium in this study. This suggests that additional interventions may be needed to treat this common complication in elderly surgical patients.* *Both lidocaine and dexmedetomidine are widely used and low-cost drugs, which makes them affordable options for controlling surgical stress and inflammation. However, more research is needed to investigate their long-term effects and impact on clinical outcomes.*
Single-bolus dexmedetomidine in prevention of	*India*	*The objective of the study was to investigate the efficacy of a single-*	*-<u>Control Group</u>: Volume-matched normal Saline*	*Randomized Double Blind Clinical Trial*	*-<u>Control Group</u>: 51 patients*	*The study included a total of 101 patients, with 50 patients receiving*	*The study suggests that a single bolus dose of dexmedetomidine can*

emergence delirium in pediatric ophthalmic surgeries: A randomized controlled trial (Surya)		*bolus dose of dexmedetomidine in reducing the incidence of emergence delirium (ED) in pediatric ophthalmic surgeries. Additionally, the study aimed to assess pain relief, the number of patients who needed rescue analgesia, hemodynamic parameters, and adverse events.*	*-<u>Experimental Group</u>: Dexmedetomidine 0.4 µg/kg as a single bolus over 10 min immediately after intubation*		*- <u>Experimental Group</u>: 50 patients Patients from 2 to 12 years old in ophthalmologic surgery*	*dexmedetomidine and 51 patients receiving normal saline as a control group. The demographic and perioperative characteristics of both groups were similar, except for a higher number of children aged between 1 and 7 years in the dexmedetomidine group. The administration of dexmedetomidine 0.4 µg/kg in a single bolus over 10 minutes immediately after intubation significantly reduced the incidence of emergence delirium (ED) and pain compared to the control group. The incidence of ED was significantly lower in group D (dexmedetomidine group) compared to group C (control group) (2.0% vs. 58.8%, P < 0.0001), and the incidence of severe ED was significantly lower in group D compared to group C (0% vs. 5.9%, P = 0.00), the incidence of pain was significantly lower in group D compared to group C (14% vs. 58.8%, P < 0.0001) and the need for rescue analgesia was significantly lower in group D compared to group C (6% vs. 46%, P < 0.0001). Hemodynamic parameters such as heart rate (HR), systolic blood pressure (SBP)*	*be used effectively to prevent emergency delirium (ED) in pediatric ophthalmic surgery, reducing the need for rescue analgesia without compromising hemodynamic parameters. This finding is significant because ED is a common postoperative neurological complication that causes behavioral disturbances leading to self-trauma and also has long-term adverse effects in children The administration of dexmedetomidine can significantly reduce the incidence of ED and pain in children undergoing ophthalmic surgery. However, the study also found that the presence of parents in the post-anesthetic recovery room (PACU) can help reduce the incidence of erectile dysfunction in children undergoing ophthalmic surgery. By reducing the need for rescue analgesia, dexmedetomidine can minimize the use of additional medications*

						and diastolic blood pressure (DBP) were monitored throughout the procedure. The administration of dexmedetomidine resulted in a significant decrease in HR at 5 minutes and SBP at 15 minutes compared to the control group. The study concluded that a single bolus dose of dexmedetomidine effectively prevented emergency delirium and reduced the need for rescue analgesia without compromising hemodynamic parameters in children undergoing ophthalmic surgery.	*and their associated side effects. Thus, healthcare professionals involved in pediatric ophthalmic surgery may consider incorporating dexmedetomidine as part of their anesthetic management to improve patient comfort and reduce the risk of ED. Overall, the study suggests that dexmedetomidine 0.4 µg/kg as a single bolus over 10 minutes immediately after intubation is an effective and safe option for reducing the incidence of ED and pain in children undergoing ophthalmic surgery without compromising hemodynamic parameters. The study's findings have important clinical and practical implications for anesthesiologists and surgeons performing pediatric ophthalmic surgery.*
Effect of Dexmedetomidine, Dexamethasone, and Ondansetron on Postoperative Nausea and Vomiting in	*Egypt y Arabia*	*This study aimed to evaluate the effects of dexmedetomidine, dexamethasone, and ondansetron for preventing PONV in*	*-<u>Control Group (Group CONT)</u>: received normal saline via infusion after induction of anesthesia.*	*Randomized Double Blind Clinical Trial*	*-<u>Group CONT</u>: 25 patients -<u>Group DEX</u>: 25 patients*	*The study included 100 patients who were randomly assigned to 4 groups: the DEX group, the OND group, the DEXMED group and the CONT group. The DEX group*	*Dexmedetomidine, dexamethasone, and ondansetron are effective in preventing postoperative nausea and vomiting (PONV) in*

Children Undergoing Dental Rehabilitation: A Randomized Controlled Trial (Shama)		*children undergoing dental rehabilitation surgery.*	*-<u>Experimental Group 1 (Group DEX)</u>: received 0.15 mg/kg Dexamethasone via infusion.* *-<u>Experimental Group 2 (Group OND)</u>: received 0.05 mg/kg Ondansetron via infusion.* *-<u>Experimental Group 3 (Group DEXMED)</u>: received 0.3 µg/kg Dexmedetomidine via infusion.*		*-<u>Group OND</u>: 25 patients* *-<u>Group DEXMED</u>: 25 patients* *Patients aged 6-12 years old who were scheduled for dental rehabilitation surgery under general anesthesia*	*received dexamethasone, the OND group received ondansetron, the DEXMED group received dexmedetomidine and the CONT group received saline, each group containing 25 patients.* *Demographic data, including age, gender, ASA I or II physical status classification, body weight, surgery and duration of anesthesia, were comparable between the groups.* *The number of children who developed delirious agitation postoperatively was significantly lower in the group receiving dexmedetomidine compared to the groups receiving dexamethasone, ondansetron and the control group.* *Postoperative pain scores were significantly reduced in the groups receiving dexmedetomidine and ondansetron compared to the control group at different times.* *The incidence of postoperative nausea and vomiting (PONV) was significantly lower in the DEX, DEXMED and OND groups compared to the CONT group ($P < 0.05$). However, the incidence of PONV was not significantly*	*pediatric patients undergoing dental rehabilitation surgery.* *Dexmedetomidine has a better sedative and analgesic effect compared to dexamethasone and ondansetron.* *The optimal dose of dexmedetomidine for better effect on PONV without affecting hemodynamic stability requires more studies.* *The study provides evidence-based information for clinicians to choose the appropriate medication for preventing PONV in pediatric patients undergoing dental rehabilitation surgery.* *The study highlights the importance of preventing PONV in pediatric patients to avoid complications such as wound dehiscence, prolonged hospital admission, readmission, dehydration, and electrolyte imbalance.* *The study suggests that dexmedetomidine can be used as an alternative to dexamethasone and ondansetron for*

						different between the DEX, DEXMED and OND groups (P > 0.05). *The number of patients requiring rescue antiemetics was significantly lower in the DEX, DEXMED and OND groups compared to the CONT group (P < 0.05). However, the number of patients requiring rescue antiemetics was not significantly different between the DEX, DEXMED and OND groups (P > 0.05). The level for all analyses was set at P < 0.05.*	*preventing PONV in pediatric patients undergoing dental rehabilitation surgery, especially in cases where sedation and analgesia are also required.* *The study provides a basis for further research to investigate the optimal dose of dexmedetomidine for preventing PONV in pediatric patients undergoing dental rehabilitation surgery without affecting hemodynamic stability 1.* *Overall, the study has important clinical/practical implications for preventing PONV in pediatric patients undergoing dental rehabilitation surgery, and it provides valuable information for clinicians to choose the appropriate medication for their patients.*
Effect of Dexmedetomidine on Posttraumatic Stress Disorder in Patients Undergoing Emergency Trauma Surgery. (Yu)	*China*	*The objective of the study was to evaluate the effects of intraoperative and postoperative low-dose intravenous pumping dexmedetomidine on posttraumatic stress*	*-<u>Control Group</u>: Normal Saline, 2 mL* *- <u>Experimental Group</u>: Dexmedetomidine hydrochloride, 200 µg/2 mL*	*Randomized Double Blind Clinical Trial*	*-<u>Control Group</u>: 154 patients* *- <u>Experimental Group</u>: 156 patients*	*A total of 310 patients were included in the modified intention-to-treat analysis, with 154 patients in the normal saline group and 156 patients in the dexmedetomidine group. The study found that*	*The administration of low-dose dexmedetomidine during and after emergency trauma surgery can reduce the incidence of post-traumatic stress*

		disorder (PTSD) among patients with trauma undergoing emergency surgery.			*Patients with trauma*	*intraoperative and postoperative administration of low-dose intravenous pump dexmedetomidine reduced the incidence of PTSD among trauma patients undergoing emergency surgery. The first outcome, the incidence of post-traumatic stress disorder (PTSD), was significantly lower in the dexmedetomidine group compared to the control group in the first postoperative month (14.1% vs. 24.0%, p = 0.03). Patients in the dexmedetomidine group scored significantly lower on the clinician-administered PTSD Scale for the Diagnostic and Statistical Manual of Mental Disorders (CAPS-5) compared to the control group (7.3 [5.3] vs 18.9 [6.6]; mean difference, 1.65; 95% CI, 0.31-2.99; P = 0.02). After adjusting for possible confounding factors, patients in the dexmedetomidine group were less likely to develop PTSD than those in the control group in the first postoperative month (adjusted odds ratio, 0.51). The results of this study support the perioperative use of dexmedetomidine to reduce the incidence of PTSD*	*disorder (PTSD) in trauma patients. Thus, dexmedetomidine can be used as a sedative during and after surgery in trauma patients, under appropriate conditions, to help prevent the development of PTSD, as it found that CAPS-5 scores and the incidence of PTSD were significantly lower in the dexmedetomidine group compared to the control group 1 month after surgery, indicating that dexmedetomidine can reduce the severity and occurrence of PTSD in trauma patients in the emergency room. In summary, the study suggests that intraoperative and postoperative administration of dexmedetomidine by intravenous pumping in low doses could be used as a preventive measure for PTSD in trauma patients in the emergency room. The study provides evidence that early anesthetic management can prevent the occurrence of PTSD in trauma patients in the*

						in trauma patients undergoing emergency surgery. *None of the trauma patients developed postoperative stroke, myocardial infarction, acute kidney injury or heart failure.*	*emergency room. The study also suggests that low dose dexmedetomidine pumped during and after emergency trauma surgery was safe and did not cause circulatory instability. These findings could have significant clinical/practical implications for the management of PTSD in trauma patients undergoing emergency surgery.*
In a secondary analysis from a randomised, double-blind placebo-controlled trial Dexmedetomidine blocks cholinergic dysregulation in delirium pathogene esis in patients with major surgery (Jacob)	*Germany*	*The objective of the study discussed in the search result was to investigate the link between blood cholinesterase activities and dexmedetomidine, an alpha-2 adrenoreceptor agonist, in patients with major abdominal or cardiac surgery. The study aimed to determine whether dexmedetomidine could alleviate postoperative delirium (POD) via altering the cholinergic anti-inflammatory pathway (CAIP). The study was a secondary analysis of a randomized, double-blind, placebo-*	*-<u>Control Group</u>: Equivalent volume of Normal Saline* *-<u>Experimental Group</u>: 0,7 µg/kg PC/h e 0,4 µg/kg PC/h de Dexmedetomidina*	*Randomized Double Blind Clinical Trial*	*-<u>Control Group</u>: 30 patients.* *-<u>Experimental Group</u>: 26 patients.* *Abdominal or cardiac surgical patients aged≥ 60 years.*	*The study included 56 cases of complete measurements of cholinesterase activity, with 30 patients receiving standard general anesthesia (placebo) and 26 patients receiving dexmedetomidine in addition to general anesthesia.* *Dexmedetomidine resulted in no change in AChE activity and caused a rapid recovery of BChE activity after an initial decrease, while placebo showed a significant decrease in both cholinesterase activities. Thus, it was found that the use of dexmedetomidine resulted in a significantly lower incidence of postoperative delirium (POD) by altering the cholinergic anti-*	*The study suggests that the perioperative use of dexmedetomidine may have practical implications in reducing the incidence of postoperative delirium (POD). Thus, it was found that administration of dexmedetomidine stabilizes acetylcholinesterase (AChE) activity levels and promotes rapid recovery of butyrylcholinesterase (BChE) activity after surgery, while placebo showed a steady postoperative decline in both enzyme activities. These findings indicate a possible association*

		controlled trial that recently showed a lower incidence of POD in the dexmedetomidine group. The study analyzed the course of perioperative cholinesterase activities of 56 patients, measured preoperatively and twice postoperatively. The objective of the study was to examine whether the use of dexmedetomidine in addition to general anesthesia alters the perioperative course of acetylcholinesterase (AChE) and butyrylcholinesterase (BChE) activity. The study found that dexmedetomidine resulted in no change in AChE activity and caused a rapid recovery of BChE activity after an initial decrease, while placebo showed a significant decrease in both cholinesterase activities. From these data, it can be assumed that dexmedetomidine could alleviate POD via altering the cholinergic anti-inflammatory pathway (CAIP). The study advocates for				*inflammatory pathway (CAIP), acting on cholinesterase activity Dexmedetomidine administration attenuated NF-κB activation and the production of pro-inflammatory cytokines in mice with LPS-induced inflammation. The results of this study suggest a regulatory effect of dexmedetomidine on the cholinergic system, supporting the role of the cholinergic system in the pathogenesis of delirium.*	*between dexmedetomidine and the regulation of cholinesterase activities, which are involved in the cholinergic anti-inflammatory pathway (CAIP). Thus, the anti-inflammatory and immunomodulatory properties of dexmedetomidine may contribute to its potential to relieve POD by increasing CAIP. Further research is needed to validate these results and examine the use of dexmedetomidine in homogeneous populations, with the statistical power to address this question effectively. In addition, the study highlights the role of the cholinergic system in the pathogenesis of delirium and suggests that dexmedetomidine may have a regulatory effect on the cholinergic system, providing information for future research and possible clinical applications.*

		further investigations to show the direct connection between dexmedetomidine and cholinesterase activity					
Effect of dexmedetomidine on prevention of postoperative nausea and vomiting in pediatric strabismus surgery: a randomized controlled study.	*China*	*Postoperative nausea and vomiting (PONV) are common side-effects following strabismus surgery. The present study aimed to compare the effects of different doses of dexmedetomidine (DEX) on PONV incidence in pediatric patients undergoing strabismus surgery*	*-<u>Control Group</u>: Placebo, normal saline* *-<u>Experimental Group 1</u>: 0.3 µg/kg dexmedetomidine* *-<u>Experimental Group 2</u>: 0.5 µg/kg dexmedetomidine*	*Randomized Double Blind Clinical Trial*	*-<u>Control Group</u>: 41 patients* *-<u>Experimental Group 1</u>: 40 patients* *-<u>Experimental Group 2</u>: 41 patients* *Pediatric patients undergoing strabismus.*	*The study compared the effects of different doses of dexmedetomidine (DEX) on the incidence of postoperative nausea and vomiting (PONV) in pediatric patients undergoing strabismus surgery. It found that the overall incidence of PONV during the first 24 hours post-operation was significantly lower in the DEX2 group (0.5 µg/kg dexmedetomidine) at 10% compared to the Placebo group at 32%.* *The intraoperative oculocardiac reflex (OCR) was significantly reduced in the DEX2 group (42%) compared to the placebo group (68%). There was no significant difference in postoperative vomiting (PVO) between the three groups. Dexmedetomidine (0.5 µg/kg) reduced OCR and PONV without increasing extubation or recovery time in pediatric patients undergoing strabismus surgery.* *Pediatric anesthesia emergence delirium (PAED) and emergence agitation (EA) scores were similar*	*The study's findings have several clinical and practical implications for the use of dexmedetomidine in pediatric patients undergoing strabismus surgery. The study showed that dexmedetomidine can be used as a supplemental drug to reduce the incidence of postoperative nausea and vomiting (PONV) without lengthening extubation time or recovery time. This is important because PONV is a common side effect of strabismus surgery and can cause discomfort, complications, and delay in patient discharge. The study also found that dexmedetomidine reduced the incidence of intraoperative oculocardiac reflex (OCR), which is associated with traction on the eye muscle during surgery. This is important because OCR*

						between the three groups during recovery time.	*can cause bradycardia and hypotension, which can lead to serious complications. The study used lower doses of dexmedetomidine to reduce the incidence of adverse events such as bradycardia and hypotension, which are associated with higher doses of dexmedetomidine. The study concluded that dexmedetomidine (0.5 μg/kg) reduced OCR and PONV without lengthening extubation time or recovery time in pediatric patients undergoing strabismus surgery. The study's findings suggest that dexmedetomidine can be used as an effective and safe antiemetic drug in pediatric patients undergoing strabismus surgery. However, the study also mentioned that the optimal dose of dexmedetomidine for achieving anti-emetic effects has not been well documented, and that the sedative effect of dexmedetomidine is dose dependent. Therefore, further studies are needed to*

							determine the optimal dose of dexmedetomidine for different surgical procedures and patient populations.
Postoperative infusion of dexmedetomidine via intravenous patient-controlled analgesia for prevention of postoperative delirium in elderly patients undergoing surgery	*China*	*Postoperative delirium (POD) is a common clinical complication in elderly patients after surgery and predicts poor outcomes. The aim of the study was to investigate whether postoperative infusion of dexmedetomidine (DEX) had a prophylactic effect on POD in elderly patients.*	*-<u>Group Control</u>: 3 ug/kg sufentanil without Dexmedetomidine* *-<u>Experimental Group</u>: 3 ug/kg sufentanil and 3 ug/kg Dexmedetomidine*	*Randomized Double Blind Clinical Trial*	*-<u>Group Control</u>: 116 patients* *-<u>Experimental Group</u>: 120 patients* *Patients over the age of 60 undergoing thoracoabdominal tumor surgery.*	*The study included 236 patients over 60 years of age undergoing thoracoabdominal tumor surgery, with 120 patients in the DEX group and 116 patients in the control group.* *The incidence of postoperative delirium (POD) in all patients was 7%. However, the incidence of postoperative delirium (POD) in the control group was significantly higher than in the DEX group (10.1% vs. 3.4%, P = 0.042).* *There were no significant differences in length of hospital stay, length of ICU stay, percentage of patients discharged within 7 days of surgery, non-delirium-related complications and all-cause deaths within 30 days between the two groups.* *The incidence of hypertension was lower in the DEX group compared to the control group (P = 0.003). However, the incidence of non-delirium-related complications was*	***Practical Implications of the Paper:*** *- Administering dexmedetomidine (DEX) via intravenous patient-controlled analgesia (PCIA) after major thoracoabdominal surgery in elderly patients may help reduce the occurrence of postoperative delirium (POD).* *- The study found that the incidence of POD was significantly lower in the DEX group compared to the control group.* *- This finding suggests that incorporating DEX into postoperative pain management protocols may be beneficial in preventing POD in elderly patients undergoing surgery.* *- The use of DEX via PCIA can potentially improve patient outcomes by reducing the incidence of delirium, which can lead to prolonged hospital*

						similar between the two groups. *The study found that postoperative infusion of dexmedetomidine via patient-controlled intravenous analgesia (PCA) can reduce the incidence of postoperative delirium in elderly patients undergoing major thoracoabdominal surgery. The primary endpoint of the study was the incidence of POD, assessed twice daily within 7 days of surgery by the Richmond Agitation-Sedation Scale (RASS) and the Confusion Assessment Method - Intensive Care Unit (CAM-ICU). Secondary outcomes were days of postoperative hospitalization, length of ICU stay, adverse events and complications not related to delirium. The study involved 236 patients aged over 60, who were randomly assigned to the DEX group (Group D) or the control group (Group C). DEX was delivered via PCIA pump 1-3 days after surgery, which consisted of 3 ug/kg sufentanil and 3 ug/kg DEX in Group D, and 3 ug/kg sufentanil without DEX in Group C. The PCIA parameters were programmed as follows:*	*stays, increased resource utilization, and poor functional recovery.* *- Additionally, the study showed that the use of DEX did not significantly affect other outcomes such as length of hospital stay, ICU stay time, non-delirium complications, and 30-day all-cause deaths.* *Note: The practical implications of this paper suggest that incorporating DEX into postoperative pain management protocols may be a valuable strategy to prevent postoperative delirium in elderly patients undergoing major thoracoabdominal surgery.*

						total amount of 150 ml, bolus dose of 2 ml with a 10 min block and background infusion rate of 2 ml/h.	
Effects of dexmedetomidine at different dosages on perioperative hemodynamics and postoperative recovery quality in elderly patients undergoing hip replacement surgery. under general anesthesia: a randomized controlled trial	*China*	*To evaluate the effects of different doses of dexmedetomidine on hemodynamics during surgery and recovery after general anesthesia in elderly patients undergoing hip replacement.*	*-<u>Control Group 1 (NS Group)</u>: received normal saline 0.1 ml/kg for 15 min before anesthesia induction + 0.125 ml/kg/h continuous infusion until the end of operation.* *-<u>Control Group 2 (MD Group)</u>: received midazolam 0.03 mg/kg for anesthesia induction.* *-<u>Experimental Group 1 (D0.25 Group)</u>: received dexmedetomidine 0.25 μg/kg for 15 min before anesthesia induction + 0.5 μg/kg/h continuous infusion until the end of operation.* *-<u>Experimental Group 2 (D0.5 Group)</u>: received dexmedetomidine*	*Randomized Double Blind Clinical Trial*	*-<u>Control Group 1 (NS Group)</u>: 30 patients.* *-<u>Control Group 2 (MD Group)</u>: 30 patients.* *-<u>Experimental Group 1 (D0.25 Group)</u>: 30 patients.* *-<u>Experimental Group 2 (D0.5 Group)</u>: 30 patients.* *-<u>Experimental Group 3 (D0.75 Group)</u>: 30 patients.* *Patients ≥ 65 years undergoing hip replacement.*	*Dexmedetomidine in different doses (0.25/0.5/0.75 μg/kg) was administered to elderly patients undergoing hip replacement surgery under general anesthesia. Compared to the control groups, there were significant reductions in mean arterial pressure (MAP) and heart rate (HR) in the D0.5 and D0.75 groups at various times during the perioperative period. The percentage of patients with reductions in MAP and HR >20% from baseline was higher in the D0.5 and D0.75 groups compared to the other groups. The 95% confidence interval (CI) of the relative risk (RR) for MAP below >20% of baseline in the D0.5 and D0.75 groups was greater than 1, indicating a higher risk of MAP reduction. No serious side effects were observed, and the incidence of adverse events was similar between all groups. Fourteen patients in the D0.75 group had to stop the dexmedetomidine infusion due to unstable hemodynamic parameters.*	*Dexmedetomidine can be used in elderly patients undergoing hip replacement surgery under general anesthesia to relieve postoperative agitation without causing delayed recovery. In addition, at a dose of 0.25 to 0.5 μg/kg as an initial loading dose, followed by a continuous infusion of 0.5 μg/kg/h, it can provide a comfortable recovery after general anesthesia with mild hemodynamic inhibition. However, care should be taken when using higher doses of dexmedetomidine, as it can cause significant reductions in mean arterial pressure (MAP) and heart rate (HR) during the perioperative period. Therefore, monitoring hemodynamic parameters is essential when administering dexmedetomidine in higher doses to ensure patient safety.*

			0.5 µg/kg for 15 min before anesthesia induction + 0.5 µg/kg/h continuous infusion until the end of operation. *-<u>Experimental Group 3 (D0.75 Group)</u>: received dexmedetomidine 0.75 µg/kg for 15 min before anesthesia induction + 0.5 µg/kg/h continuous infusion until the end of operation.*			*However, dexmedetomidine was able to relieve agitation in elderly patients undergoing hip arthroplasty after intravenous general anesthesia combined with inhaled sevoflurane, and there was no delay in awakening from general anesthesia. According to the Riker Agitated Sedation Scale, dexmedetomidine significantly relieved emergency agitation or delirium compared to SN*	*Dexmedetomidine can effectively relieve emergency agitation or delirium during the recovery period after general anesthesia and may have potential benefits in reducing postoperative pain in elderly patients undergoing hip replacement surgery. Further research is needed to determine the optimal dosage and administration regimen of dexmedetomidine in elderly patients undergoing hip replacement surgery to achieve satisfactory sedation and analgesia while maintaining stable hemodynamics.*
Dexmedetomidine decreased the post-thyroidectomy bleeding by reducing cough and emergence agitation – a randomized, double-blind, controlled study	*China*	*Bleeding after thyroidectomy occurs due to violent coughing during emergence. Dexmedetomidine is helpful for the smooth emergence and suppression of cough. The purpose of the present study was to compare the effects of dexmedetomidine on postoperative bleeding after thyroidectom*	*-<u>Control Group (Group S)</u>: Normal Saline was administered* *-<u>Experimental Group (Group D)</u>: Dexmedetomidine was administered (0.6 µg/kg/h) without a loading.*	*Randomized Double Blind Clinical Trial*	*-<u>Control Group</u>: 70 patients* *-<u>Experimental Group</u>: 69 patients* *Patients (ASA I–II, aged 20 to 60 years) undergoing thyroidectomy*	*The administration of dexmedetomidine significantly reduced the incidence of severe cough (4.3% vs. 11.5%) and emergency agitation (7.9% vs. 20.1%) compared to the control group, and postoperative bleeding was significantly lower in the dexmedetomidine group by the second postoperative day.* *There were no significant differences in patient characteristics, duration of surgery, amount of*	*The administration of dexmedetomidine during recovery from anesthesia can effectively reduce postoperative bleeding after thyroidectomy by suppressing coughing and emergent agitation. Thus, it can be considered a useful intervention to minimize the risk of postoperative bleeding in patients undergoing thyroidectomy.*

						intraoperative fluid and duration of study drug infusion between the two groups. Hemodynamic data showed little change during the infusion of the study drugs, with no significant differences in mean arterial pressure between the two groups. However, heart rate was significantly lower in the dexmedetomidine group immediately before extubation. The Ramsay sedation scale scores were significantly higher in the dexmedetomidine group, indicating a calmer state in the post-anesthetic care unit. Overall, the results suggest that the administration of dexmedetomidine during recovery from anesthesia can effectively reduce postoperative bleeding by suppressing coughing and emergency agitation.	*Doctors may consider using dexmedetomidine (0.6 µg/kg/h) without a loading dose as a preventative measure to decrease the incidence of severe cough and emergence agitation, which are known risk factors for post-operative bleeding after thyroidectomy. However, further evaluation is required to determine the optimal dosing method and infusion rate of dexmedetomidine to reduce coughing and emergence agitation. Overall, the study suggests that dexmedetomidine may be a useful drug in reducing post-operative bleeding after thyroidectomy by reducing cough and agitation on awakening. However, more studies are needed to confirm these results and determine the optimal dose and timing of dexmedetomidine administration.*
Analysis of anesthetic effect of dexmedetomidine in femoral shaft fracture surgery	*China*	*The objective of the study, as stated in the research paper, was to investigate the effect of dexmedetomidine (DEX)*	*-<u>Control Group</u>: normal saline in the same volume and time.*	*Randomized Double Blind Clinical Trial*	*-<u>Control Group</u>: 26 patients.* *-<u>Experimental Group</u>: 26 patients.*	*The experimental group, which received continuous dexmedetomidine (DEX) pumping during anesthesia, had significantly lower mean*	*The use of dexmedetomidine (DEX) during femoral shaft fracture surgery can effectively stabilize*

		on hemodynamics and recovery period after femoral shaft fracture surgery. The study aimed to compare the effects of DEX and propofol, which is the most used sedative anesthetic in clinical practice, on various parameters such as mean arterial pressure (MAP), heart rate (HR), extubation time, agitation score, and agitation rate.	*-<u>Experimental Group</u>: Dexmedetomidine was 1 ug/kg in the first 10 minutes, and then the maintenance dose was 0.5 ug/(kg/h)*		*Patients, aged between 3 and 7 years, who underwent surgery to reduce a diaphyseal fracture of the femur.*	*arterial pressure (MAP) and heart rate (HR) compared to the control group at times T2 to T4. The extubation time of the experimental group was longer than that of the control group. However, the Pediatric Anesthesia Emergence Delirium (PAED) score and the incidence of agitation in the recovery period were lower in the experimental group compared to the control group at times T5 to T7.* *In conclusion, the study found that intravenous anesthesia combined with continuous DEX pumping can effectively stabilize patients' hemodynamics and reduce the incidence of postoperative agitation during anesthesia recovery. The study suggests that DEX can be used as an adjuvant drug for general anesthesia in femoral shaft fracture surgery to improve patient comfort during the perioperative period.*	*patients' hemodynamics, as evidenced by significantly lower mean arterial pressure (MAP) and heart rate (HR) in the experimental group compared to the control group. It may also help to reduce the incidence of postoperative agitation during recovery from anesthesia, as indicated by lower Pediatric Anesthesia Emergence Delirium (PAED) scores and lower rates of agitation in the experimental group.* *DEX has a highly selective α2-adrenergic receptor agonist effect, which can reduce and mitigate adverse reactions as much as possible. As well as this, it has a certain neuroprotective effect on the developing brain, without affecting memory, and is more suitable for the developing brain and can awaken at any time during sedation, and sedation also has a protective effect on the nervous system.* *However, it is important to note that the use of*

							DEX can prolong extubation time, which should be considered in clinical practice. Overall, the results suggest that incorporating dexmedetomidine into intravenous anesthesia for femoral shaft fracture surgery can bring practical benefits in terms of stabilizing hemodynamics and reducing post-operative agitation. However, the possible impact on extubation time should be taken into account when considering its use.
Ketamine Enhances Intranasal Dexmedetomidine-Induced Sedation in Children: A Randomized, Double-Blind Trial	*China*	*The study aimed to compare the sedative effects of dexmedetomidine alone versus a combination of dexmedetomidine and ketamine in pediatric patients undergoing surgery under general anesthesia. The study measured the duration of sedation, ease of parental separation, and facemask acceptance scores, as well as the Modified Observer's Assessment of Alertness/Sedation Scale (MOAA/S) scores after intervention.*	*- Control Group (Group DK): Ketamine 2 mg kg−1 and Dexmedetomidine 2 µg kg−1* *- Experimental Group (Group D): Dexmedetomidine 2 µg kg−1*	*Randomized Double Blind Clinical Trial*	*- Control Group (Group DK): 33 patients at the beginning and 31 at the end.* *- Experimental Group (Group D): 33 patients at the beginning and 32 at the end.* *Patients from 3 to 7 year old undergoing surgery under general.*	*The study included 66 children, with 63 children included in the analysis. There were no significant differences in subject characteristics or clinical parameters between the two groups. However, the combination of intranasal dexmedetomidine and ketamine produced better sedation for pediatric tonsillectomy than dexmedetomidine alone. 30 minutes after premedication, the level of sedation assessed by the Modified Observer's Assessment of Alertness/Sedation Scale (MOAA/S) was lower in the*	*Pre-medication with a combination of intranasal dexmedetomidine and ketamine can improve sedation in preschool children undergoing tonsillectomy, compared to dexmedetomidine alone. This finding suggests that combination therapy may be a more effective option for sedation in this patient population. The use of intranasal premedication of dexmedetomidine and ketamine is associated with improved sedation*

						group receiving dexmedetomidine and ketamine (Group DK) compared to the group receiving dexmedetomidine alone (Group D). The median difference in the MOAA/S score was 1.0 (95% confidence interval [CI]: 1.0-2.0, P<0.001). *Group DK showed a considerably faster onset of sedation (15 minutes, 95% CI: 14.2-15.8 min) compared to Group D (24 minutes, 95% CI: 23.2-24.8 min), with a mean difference of 8.0 minutes (95% CI: 7.0-9.0 min, P<0.001).* *The parental separation anxiety and face mask acceptance scores were lower in Group DK compared to Group D. However, there were no significant differences between the two groups in terms of emergency time, incidence of emergency delirium, postoperative pain scores, length of stay in the PACU and adverse effects.*	*and higher scores on the Pediatric Sedation Assessment Score (PSAS) and the Modified Aldrete Score (MAS) compared to dexmedetomidine alone. This indicates that combination therapy can provide better sedation quality and patient satisfaction. Importantly, combination therapy does not prolong emergency time or increase the risk of clinically relevant adverse events. This suggests that it is a safe and well-tolerated option for premedication in pediatric tonsillectomy. In summary, the study suggests that the intranasal combination of dexmedetomidine and ketamine may be a safe and effective premedication for pediatric tonsillectomy, which may improve the quality of care for pediatric patients undergoing surgery under general anesthesia. The combination can provide better sedation, faster onset of sedation*

							and prevent the decline in heart rate seen in patients treated with dexmedetomidine alone. The combination can also help children separate calmly from their parents and accept mask induction without hemodynamic fluctuations and respiratory compromise.
Functional Magnetic Resonance Imaging of Brain Function and Emergence Agitation of Patients with Dexmedetomidine-Assisted General Anesthesia under Comfortable Nursing Intervention	*China*	*The aim of the study is to explore the effects of dexmedetomidine (DEX) on functional magnetic resonance imaging (fMRI) and emergency agitation in patients undergoing routine anesthesia. The emergency agitation of patients undergoing general anesthesia surgery with sevoflurane under comfortable nursing intervention, 66 patients undergoing upper abdominal surgery were selected. According to nursing and anesthesia methods, the patients were randomly divided into a control group (routine nursing and anesthesia), group A (routine nursing and DEX-assisted anesthesia) and group B (comfortable nursing*	*-<u>Control group</u>: were intravenously pumped with 0.9% NaCl solution at the same speed.* *-<u>Experimental Group 1 (Group A)</u>: received Dexmedetomidine 1 μg/kg/h anesthesia induction under routine nursing intervention.* *-<u>Experimental Group 2 (Group B)</u>: given Dexmedetomidine 1 μg/kg/h anesthesia induction under comfort nursing intervention.*	*Randomized Double Blind Clinical Trial*	*-<u>Control group</u>: 22 patients* *-<u>Experimental Group 1 (Group A)</u>: 22 patients* *-<u>Experimental Group 2 (Group B)</u>: 22 patients* *Patients undergoing upper abdominal.*	*Dexmedetomidine (DEX)-assisted anesthesia, together with a comfortable nursing intervention, significantly reduced the occurrence of emergency agitation in patients undergoing general anesthesia surgery with sevoflurane. It also led to a decrease in heart rate, mean arterial pressure, awakening time, extubation time, Riker's sedation and agitation scale (SAS) score and anesthetic dosage, while increasing Ramsay scores, post-anesthetic care unit (PACU) stay and anesthesia maintenance time. Group B (comfortable nursing and DEX-assisted anesthesia) showed better results compared to group A (routine nursing and DEX-assisted anesthesia), with a reduction in extubation time, SAS score, PACU stay and length of hospital stay, and*	*Dexmedetomidine (DEX)-assisted anesthesia, together with a comfortable nursing intervention, can effectively reduce the occurrence of emergency agitation in patients undergoing general anesthesia surgery with sevoflurane. This can lead to better patient outcomes and satisfaction with nursing care. However, comfortable nursing intervention can further enhance the benefits of DEX-assisted anesthesia by reducing extubation time, post-anesthesia care unit (PACU) stay and hospital stay, as well as increasing nursing satisfaction scores.* *The results suggest that the combination of DEX-*

		and DEX-assisted anesthesia). Differences in brain fMRI characteristics, hemodynamic indices, anesthesia recovery rates and nursing satisfaction in the perioperative period were evaluated.				*an increase in the nursing satisfaction score. The length of hospital stay was significantly reduced, and the nursing satisfaction score was evidently increased in group B compared to the control group and group A. However, temporal lobe functional connectivity Z-scores increased in group A and group B compared to the control group, while those of the hippocampus decreased. There was no significant difference in the functional connectivity Z-values between the different brain regions in each group. The amount of remifentanil and sevoflurane use was reduced in groups A and B compared to the control group. There was no considerable difference in the amount of remifentanil and sevoflurane use between group A and group B. Heart rate was notably lower in group A and group B compared to the control group at times T2, T3, T4, T5 and T6. In summary, the study suggests that the use of DEX in combination with sevoflurane during general anesthesia surgery, together with a comfortable nursing*	*assisted anesthesia and a comfortable nursing intervention may be a valuable approach to avoid emergency agitation and improve the patient experience during the perioperative period. However, future research should evaluate changes in the functional connectivity of various brain regions in patients with different anesthesia methods before and after surgery. In addition, analysis of the mechanism of DEX in the emergency agitation induced by general anesthesia with sevoflurane through animal model experiments may provide more information. In addition, the study highlights the importance of careful nursing during the perioperative period to reduce anxiety and fear, improve complications during the recovery period and enhance the overall effects of nursing and treatment.*

						intervention, can effectively reduce the occurrence of agitation on awakening in patients and improve patient outcomes. The study also provides insights into the effects of anesthesia methods on patients' brain function and the importance of nursing management during the perioperative period.	
Premedication with dexmedetomidine to reduce emergence agitation: a randomized controlled trial	*South Korea*	*Nasal bone fracture is the most common type of facial fracture, and the high incidence of severe emergence agitation occurring after closed reduction of the nasal bone fracture can be challenging to manage.* *The purpose of this trial was to evaluate whether pre-operative administration of dexmedetomidine is effective in reducing the incidence and severity of emergence agitation in adults undergoing closed reduction of nasal bone fractures*	*-<u>Control Group</u>: 0.5 ml.kg−1 0.9% saline intravenously over 10 min before anesthetic induction* *-<u>Experimental Group</u>: Dexmedetomidine 1 μg.kg−1 in an equal volume of saline, intravenously, over 10 min before anesthetic induction*	*Randomized Double Blind Clinical Trial*	*-<u>Control Group</u>: 45 patients.* *-<u>Experimental Group</u>: 45 patients.* *Patients 20 to 60 years of age who were scheduled to undergo closed reduction of a nasal bone fracture.*	*The study found that the preoperative administration of dexmedetomidine resulted in several significant benefits, including a lower incidence of emergency agitation, a reduction in the severity of agitation and a shorter duration of agitation. Aono four-point scale scores were lower in the dexmedetomidine group compared to the control group (median: 1 vs. 1, 95% confidence interval of difference: 0.01 to 0.02, P = 0.02).* *The number, severity and duration of agitation episodes were significantly lower in the dexmedetomidine group. In addition, the number of patients who moved intraoperatively was lower in the dexmedetomidine group.*	*Preoperative administration of dexmedetomidine can effectively reduce the incidence and severity of emergency agitation (EA) in adults undergoing closed reduction of nasal bone fractures. It also reduces the duration of agitation and minimizes patient movement during the operation. This finding suggests that preoperative administration of dexmedetomidine may be a valuable strategy for improving patient comfort and satisfaction during the procedure. It may also contribute to better post-operative outcomes by reducing the risk of complications associated with agitation and*

						The length of stay in the post-anesthetic care unit (PACU) was longer in the dexmedetomidine group, but the anesthesia time was shorter. However, there was no significant difference in numerical rating scale (NRS) pain scores between the two groups. *Overall, the study suggests that preoperative administration of dexmedetomidine may be an effective strategy for reducing the incidence and severity of agitation on awakening in adults undergoing closed reduction of nasal bone fractures. The results of the study may have important implications for the management of patients undergoing this type of surgery.*	*displacement of the corrected fracture. Dexmedetomidine can be used as an adjuvant anesthetic to help maintain stable intraoperative anesthesia, leading to more stable maintenance of anesthesia and less movement during surgery. With this, the study highlights the possible benefits of dexmedetomidine in reducing agitation and improving the overall surgical experience for patients undergoing closed reduction of nasal bone fractures. It provides evidence for the use of dexmedetomidine as a preoperative medication in this specific surgical context.*
The Comparison of the Efficacy of Early versus Late Administration of Dexmedetomidine on Postoperative Emergence Agitation in Children Undergoing Oral Surgeries: A Randomized Clinical Trial.	*Iran*	*Emergence Agitation (EA) is a dissociated state of consciousness characterized by irritability, uncompromising stance, and inconsolability. The etiology of EA is not completely understood. Dexmedetomidine is a highly selective α2-adrenoreceptor agonist*	*-<u>Experimental Group (Group A)</u>: received dexmedetomidine infusion during the first 10 minutes and saline solution during the last 10 minutes of surgery.* *-<u>Experimental Group (Group B)</u>:*	*Randomized Double Blind Clinical Trial*	*-<u>Experimental Group (Group A)</u>: 41 patients.* *-<u>Experimental Group (Group B)</u>: 40 patients.* *Patients aged between 5 and 70 months who had undergone adenotonsillectomy*	*The study included 81 children undergoing oral surgery and randomly assigned them to two groups: early administration of dexmedetomidine (group A, n=41) and late administration of dexmedetomidine (group B, n=40).* *The early group (Group A) had a significantly shorter extubation time compared*	*The study is that the late administration of dexmedetomidine 1 µg/kg during the last 10 minutes of surgery is a safe and effective choice for reducing the incidence of emergence agitation (EA) in children undergoing oral surgeries. The study found that the late administration of*

		with sedative and analgesic properties, which has been used to reduce the incidence of EA. We aimed to assess the efficacy of early versus late administration of dexmedetomidine on EA in children undergoing oral surgery	*received saline solution during the first 10 minutes and dexmedetomidine infusion during the last 10 minutes of surgery.*		*or cleft palate repair surgery.*	*to the late group (9.59-3.15 vs. 15.43-8.40 min, P<0.001). While the late group (Group B) had a lower FLACC pain score (2.0±1.5 vs. 4.2±1.6, P<0.001) and a higher Ramsay sedation score (3.5±1.4 vs. 1.8±0.8, P<0.001) compared to the early group. There was no significant difference between the groups in terms of demographic data, total anesthesia time, operative time and length of stay in the PACU. However, delayed administration of dexmedetomidine reduced the incidence of emergency agitation (EA) and improved postoperative pain control.*	*dexmedetomidine provided better sedation and analgesia than the early administration during the first 10 minutes of surgery. The study also showed that the late administration of dexmedetomidine reduced the incidence of EA and post-anesthesia care unit (PACU) length of stay and improved postoperative pain management. Therefore, the study suggests that dexmedetomidine can be used as an adjuvant to sevoflurane anesthesia to reduce the incidence of EA in children undergoing oral surgeries. The study also highlights the importance of choosing the most appropriate technique or drug to reduce the incidence of EA toward smooth recovery from anesthesia.*
Efficacy of premedication with intranasal dexmedetomidine for removal of inhaled foreign bodies in children by flexible	*China*	*Tracheobronchial foreign body aspiration in children is a life-threatening, emergent situation. Currently, the use of fiberoptic bronchoscopy*	*- <u>Control Group</u>: Normal Saline used was 0.01 ml. kg^{-1}.* *-<u>Experimental Group</u>: dose of*	*Randomized Double Blind Clinical Trial*	*- <u>Control Group</u>: 20 patients.* *-<u>Experimental Group</u>: 20 patients.*	*The study found that premedication with intranasal dexmedetomidine at a dose of 1 µg-kg-1 administered 25 minutes before induction of anesthesia significantly*	*The study is significant for the management of tracheobronchial foreign body aspiration in children. The study found that intranasal dexmedetomidine at a*

fiberoptic bronchoscopy: a randomized, double-blind, placebo-controlled clinical trial.		*for removing foreign bodies is attracting increasing attention. Oxygen desaturation, body movement, laryngospasm, bronchospasm, and breath-holding are common adverse events during foreign body removal. Dexmedetomidine, as a highly selective α2-adrenergic agonist, produces sedative and analgesic effects and does not induce respiratory depression. We hypothesized that intranasal dexmedetomidine at 1 μg kg − 1 administered 25 min before anesthesia induction can reduce the incidence of adverse events during fiberoptic bronchoscopy under inhalation general anesthesia with sevoflurane.*	*intranasal Dexmedetomidine used in the study was 1 μg·kg^{-1}, administered 25 minutes before anesthesia induction*		*Tracheobronchial foreign body aspiration in patients aged 6 to 48 months.*	*reduced the incidence of adverse events during fiberoptic bronchoscopy in children, including laryngospasm, breath holding and coughing. Patients who received intranasal dexmedetomidine had lower parent-child separation scores, better tolerance to the anesthetic mask and lower sevoflurane consumption compared to those who received saline. Dexmedetomidine also reduced the frequency of postoperative agitation without prolonging recovery time. In addition, the incidence of CO2 retention was significantly lower in the dexmedetomidine group, and patients who received dexmedetomidine needed less rescue medication during the procedure.*	*dose of 1 μg·kg−1 administered 25 minutes before anesthesia induction can reduce the incidence of adverse events during fiberoptic bronchoscopy under inhalation general anesthesia with sevoflurane. The use of intranasal dexmedetomidine can reduce the incidence of laryngospasm, breath-holding, and coughing during foreign body removal, which are common adverse events during the procedure. Patients who received intranasal dexmedetomidine also had a lower parent-child separation score, more satisfactory tolerance of the anesthetic mask, and less consumption of sevoflurane. The frequency of postoperative agitation was significantly lower in patients given intranasal dexmedetomidine, and the recovery time was similar in the two groups. The study suggests that intranasal dexmedetomidine can*

							be used as a premedication for children undergoing fiberoptic bronchoscopy for foreign body removal, and can improve the safety and efficacy of the procedure.
Postoperative delirium after long-term general anesthesia in elderly patients, how to reduce it? *Protocol of a double-blinded, randomized, placebo-controlled trial.*	*China*	*Long operation duration (>4 hours' anesthesia) of laparotomy in elderly patients would increase the risk of postoperative delirium (POD), which is characterized by acute cognitive dysfunction, changes in the level of consciousness, obvious attention disorder, emotional disorder, and sleep-waking cycle disorder. The occurrence of POD is closely related to the risk of death, and it will also seriously affect the cognitive function of patients, prolong postoperative hospital stays, and increase medical expenses.* *It is known that dexmedetomidine could function in sedation, analgesia, and anti-sympathetic effect, and it also could simulate the*	*-<u>Control Group</u>: continuous infusion of 0.9% sodium chloride solution* *-<u>Experimental Group</u>: continuous infusion of dexmetomidine*	*Randomized Double Blind Clinical Trial*	*-Patients aging 60–75 years' old; receiving hepatobiliary laparotomy with an estimated duration of >4 hours in general anesthesia*	*The study aims to explore the efficacy and safety of dexmedetomidine in reducing the incidence of postoperative delirium in elderly patients undergoing long-term general anesthesia in laparotomy.* *The study design is a prospective, single-center, single-blind, randomized, controlled clinical trial.* *The mechanism of delirium is unclear and may be related to inflammation, sleep deprivation, physiological stress, traumatic stimulation, medications (anticholinergics, opioids, benzodiazepines) and neurological damage caused by cerebral hypoxia. Surgery can cause a stress response, release inflammatory mediators, and induce delirium.* *Sample size estimation will be based on the incidence of delirium on the first day after the operation. The incidence rate in the*	*The study aims to investigate the efficacy and safety of dexmedetomidine in reducing the incidence of postoperative delirium in elderly patients undergoing long-term general anesthesia in laparotomy. If the results of the study show that dexmedetomidine is effective in reducing postoperative delirium, this could have significant practical implications for the management of elderly patients undergoing long operations.* *The use of dexmedetomidine as a sedative, analgesic and antisympathetic agent could improve patient outcomes by reducing the risk of postoperative delirium. The findings of this study could inform clinical practice*

		normal sleep state of human body, but there is still a lack of clinical study of dexmedetomidine on the incidence of POD in elderly patients undergoing long-term general anesthesia in laparotomy				*treatment group is 15.5, and 42 in the control group. The measurement data will be tested using the independent sample t-test for normal distribution and homogeneity of variance, and the Mann-Whitney U-test for non-corresponding data. The study is still ongoing, and the results are not yet available.*	*guidelines and protocols for the perioperative management of elderly patients, with the aim of reducing the occurrence of postoperative delirium. The study design, implementation and reporting of the results follow established guidelines, ensuring the reliability and validity of the results. Further research and replication of the study in different settings would be necessary to confirm the practical implications of the use of dexmedetomidine in reducing postoperative delirium in elderly patients undergoing long-term general anesthesia in laparotomy.*
The effect of two different doses of dexmedetomidine to prevent emergence agitation in children undergoing adenotonsillectomy: a randomized controlled trial.	*China*	*To evaluate different doses of dexmedetomidine for the prevention of emergence agitation in children undergoing adenotonsillectomy.*	*-<u>Experimental Group 1 (DEX 0,5 Group)</u>: 0.5 µg.kg-1 dexmedetomidine* *<u>Experimental Group 2 (DEX 1,0 Group)</u>: 1.0 µg.kg-1 dexmedetomidine*	*Randomized Double Blind Clinical Trial*	*-<u>Experimental Group 1 (DEX 0,5 Group)</u>: 58 patients* *<u>Experimental Group 2 (DEX 1,0 Group)</u>: 61 patients* *Patients aged 3 - 10 years scheduled for adenotonsillectomy*	*The study aimed to evaluate the effect of two different doses of dexmedetomidine in preventing emergence agitation (EA) in children undergoing adenotonsillectomy. The results showed that both doses of dexmedetomidine were effective in preventing EA, with no significant difference between the two groups. The study also evaluated other factors such*	*In pediatric patients undergoing adenotonsillectomy, both doses of dexmedetomidine (0.5 g.kg-1 and 1 g.kg-1) were equally effective in preventing emergency agitation without delaying extubation and awakening. This suggests that a lower dose of dexmedetomidine (0.5*

						as cough score and SpO2 below 95%, but these did not show significant differences between the two groups. The study found that the time to awake, time to extubate, and time of PACU stay were significantly shorter in the DEX 0.5 group compared to the DEX 1 group. The study concluded that both doses of dexmedetomidine were equally beneficial for the prevention of EA in children undergoing adenotonsillectomy.	*g.kg-1) can be used to achieve the desired effect, potentially reducing the risk of adverse events associated with higher doses. The combination of the PAED and EA scales can accurately assess agitation in pediatric patients, providing a reliable method for evaluating the effectiveness of interventions. The study highlights the importance of monitoring SpO2 levels during anesthesia, as a higher percentage of patients in the DEX 1 group had low SpO2 compared to the DEX 0.5 group. This finding emphasizes the need for careful dose selection and monitoring to ensure patient safety.*
Effect of two different doses of dexmedetomidine on the incidence of emergence agitation after strabismus surgery: a randomized clinical trial.	*Egypt*	*Emergence agitation is a postoperative negative behavior that affects mainly children. We studied the effect of two different doses of dexmedetomidine on the incidence and degree of EA in children undergoing strabismus surgery*	*-<u>Control Group</u>: Placebo received 10 mL of normal saline* *-<u>Experimental Group 1</u>: 0.5 µg.kg−1 of Dexmedetomidine.*	*Randomized Double Blind Clinical Trial*	*-<u>Control Group</u>: 30 patients.* *-<u>Experimental Group 1</u>: 30 patients.* *-<u>Experimental Group 2</u>: 30 patients.*	*The main results of the study were related to the effect of two different doses of dexmedetomidine on the incidence of agitation on awakening after strabismus surgery. The study was a randomized clinical trial that included three groups: a high-dose dexmedetomidine group, a low-dose*	*The clinical/practical implications of the study are that dexmedetomidine can be used to reduce the incidence of emergence agitation after strabismus surgery in children. The study showed that the incidence of agitation was significantly lower*

			-<u>Experimental Group 2</u>: 0.25 µg.kg−1 of Dexmedetomidine.		*Strabismus surgery in children aged 3 - 10 years.*	*dexmedetomidine group and a placebo group. The incidence of agitation was significantly lower in the high Dex group compared to the other groups and was also significantly lower in the low Dex group compared to the placebo group. However, the Pediatric Anesthesia Emergence Delirium (PAED) score was significantly lower in both Dex groups compared to the placebo group. The time to eye opening was significantly longer in the high Dex group compared to the low Dex group and the placebo group. The time to discharge from the PACU with an Aldrete score of 9 or 10 was significantly longer in the high Dex group compared to the other two groups. The incidence of bradycardia and hypotension was low and not significantly different between the groups. In general, dexmedetomidine at a higher dose (0.5 g.kg -1) resulted in a reduction in the incidence of emergency agitation compared to a lower dose (0.25 g.kg -1), but at the cost of longer recovery times.*	*in the high dose dexmedetomidine group compared to the other groups, and it was significantly lower in the low dose dexmedetomidine group compared to the placebo group. The median FLACC score was significantly lower in both dexmedetomidine groups compared to the placebo group. Recovery times, including the time from removal of the laryngeal mask to eye opening and the time stay in the post-anesthesia care unit, were significantly longer in the high dose dexmedetomidine group compared to the other groups. However, no significant bradycardia or hypotension was recorded. The study concluded that dexmedetomidine (0.5 µg/kg) before emergence from general anesthesia resulted in a reduction in the incidence of emergence agitation compared to dexmedetomidine (0.25 µg/kg) but at the*

							expense of recovery times without adverse effects. Therefore, the use of dexmedetomidine can be considered as a safe and effective option to reduce the incidence of emergence agitation in children undergoing strabismus surgery.
Oral trans-mucosal dexmedetomidine for controlling of emergence agitation in children undergoing tonsillectomy: a randomized controlled trial	*Egypt*	*Emergence agitation is a negative behavior commonly recorded after pediatric tonsillectomy. We investigated the efficacy of preoperative premedication with oral transmucosal buccal dexmedetomidine on the incidence and severity of emergence agitation in preschool children undergoing tonsillectomy under sevoflurane anesthesia.*	*-Control Group: Placebo received 10 mL of normal saline* *-Experimental Group 1 (Group DEX I): 0.5 µg.kg−1 of Dexmedetomidine.* *-Experimental Group 2 (Group DEX ii): 1.0 µg.kg−1 of Dexmedetomidine.*	*Randomized Double Blind Clinical Trial*	*-Control Group: 30 patients.* *-Experimental Group 1: 30 patients.* *-Experimental Group 2: 30 patients.* *Patients aged (3 - 6 years), ASA I - II were enrolled into receive oral transmucosal.*	*The study investigated the efficacy of preoperative premedication with oral transmucosal dexmedetomidine on the incidence and severity of emergency agitation (EA) in preschool children undergoing tonsillectomy under sevoflurane anesthesia.* *Patient demographic and surgical data were compared between the groups, and there were no significant differences in the preoperative sedation score or extubation time.* *Significant differences were observed between the groups in the incidence and frequency distribution of each degree of Watcha score at various points in the postoperative period, with significant differences between the DEX I and DEX II groups.* *The DEX groups had lower scores on the objective pain*	*Oral trans-mucosal dexmedetomidine can effectively control the heart rate and intraoperative arterial blood pressure in children undergoing tonsillectomy. This finding can be useful for anesthesiologists who aim to maintain hemodynamic stability during surgery. The use of oral trans-mucosal dexmedetomidine did not significantly affect the severity of emergence agitation in children undergoing tonsillectomy. This finding suggests that other pharmacological treatments may be necessary to manage emergence agitation in children. The OTM route for drug administration is easy, needle-free, and avoids the first-pass metabolism. This*

						scale (OPS) at various times after arrival in the PACU, with no difference between the DEX I and DEX II groups. In addition, patients in the DEX II group had a lower mean heart rate at 15 minutes intraoperatively and lower mean blood pressure at various times, with no significant differences between the groups at other times.	*finding suggests that the OTM route can be a suitable drug delivery method for preoperative medication in small children. The study demonstrated the clinical advantage and the simple technique of oral trans-mucosal dexmedetomidine premedication for emergence agitation in preschool children undergoing tonsillectomy under sevoflurane anesthesia compared with saline placebo. This finding suggests that oral trans-mucosal dexmedetomidine can be a useful tool for anesthesiologists to manage emergence agitation in children undergoing tonsillectomy. The study also highlights the need for further research to investigate the optimal dose and route of administration of oral trans-mucosal dexmedetomidine for sedative premedication in children.*

DISCUSSION

The results of the systematic review titled "Prevention of Emergency Delirium with Dexmedetomidine in Pediatrics" provide valuable insights into the use of dexmedetomidine in various pediatric and geriatric surgical settings. In this discussion, we will compare these findings with those of other studies, identify methodological errors and limitations, draw certain conclusions, and discuss the implications for future research.

Several studies included in this systematic review have demonstrated the potential benefits of dexmedetomidine in reducing the incidence of postoperative delirium (PD) in different patient populations. For instance, the study involving elderly patients undergoing major cardiac or non-cardiac surgery found a significant reduction in the incidence of PD (43.8% vs. 17.9%) with dexmedetomidine compared to the control group. This aligns with the findings in the study on pediatric tonsillectomy and adenoidectomy, which reported a lower incidence of emergency delirium (ED) in the dexmedetomidine group (31.1% vs. 53.3%).

However, there are also studies, like the one involving children undergoing outpatient procedures, that did not find a significant reduction in negative behavior on the third postoperative day with dexmedetomidine premedication. These variations in outcomes highlight the importance of patient demographics, surgical procedures, and dosing regimens in determining the efficacy of dexmedetomidine.

While the systematic review provides valuable insights, it is crucial to acknowledge certain methodological limitations. Some studies had relatively small sample sizes, which might limit the generalizability of their findings. Additionally, the assessment of delirium, pain, and other outcomes might have been influenced by subjective measures, potentially introducing bias. The absence of standardized definitions for delirium severity and the reliance on clinical history to assess obstructive sleep apnea (OSA) are notable limitations.

To further advance our understanding of dexmedetomidine's role in preventing delirium and improving perioperative outcomes, future research should focus on addressing the following areas:

1. Dosing Optimization: Investigate the optimal dosing regimens for different patient populations and surgical procedures to maximize the benefits while minimizing potential side effects.

2. Objective Delirium Assessment: Implement objective measures for delirium assessment, such as validated delirium scales, to reduce subjectivity and improve accuracy.

3. Long-term Effects: Examine the long-term effects of dexmedetomidine administration on cognitive function, as some studies in this review did not find differences in postoperative cognitive dysfunction (POCD).

4. Safety and Adverse Events: Conduct larger-scale studies to assess the safety profile of dexmedetomidine, especially in the context of major surgeries and prolonged use.

5. Standardization: Standardize the definitions and criteria for assessing outcomes like delirium severity and OSA, to enhance the comparability of results across studies.

The systematic review indicates that dexmedetomidine shows promise in reducing the incidence of postoperative delirium, emergency delirium, and pain in various surgical populations. These findings have significant clinical implications, especially for elderly patients and children undergoing specific procedures. Dexmedetomidine's safety profile was generally acceptable, with no major adverse events reported.

In conclusion, while the systematic review suggests that dexmedetomidine may offer benefits in preventing postoperative delirium and improving perioperative outcomes, further research is needed to establish optimal dosing, refine assessment methods, and explore its long-term effects. Dexmedetomidine holds promise as a valuable tool in pediatric and geriatric surgical settings, with the potential to enhance patient care and recovery.

CONFLICTS OF INTEREST

There are no exist.

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