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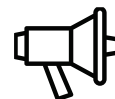


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METHODS OF SEDATIVE THERAPY IN DENTISTRY (REVIEW OF LITERATURE)

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Abstract: One major issue in modern dentistry is the use of sedatives in pediatric dentistry. The use of various sedative strategies to reduce stress and anxiety in children receiving dental procedures has been thoroughly examined in recent articles. This site offers up-to-date information about different sedation techniques, their effects on patients' psycho-emotional states, and the effectiveness of dental care.

The research's goal. The effectiveness and safety of various sedative treatment techniques in pediatric dentistry are evaluated in this study, which compiles results from current domestic and international studies.

The study looked at the literature on sedation in pediatric dentistry from both domestic and international sources. The Cochrane Library, Google Scholar, and PubMed databases served as the main sources of information. The years 2000 through 2023 were covered in the literature study. Peer-reviewed articles, publications with insufficient evidence, and studies that repeated data from previously included studies were excluded. According to the analysis, the most popular and well studied method of sedation is inhalation sedation using sevoflurane and nitrous oxide, which provides quick, controllable relaxation with few side effects. Midazolam oral sedation has shown notable effectiveness in reducing anxiety and improving children's cooperation, although careful dose control is necessary. Propofol intravenous sedation offers deep sleep for complex procedures, but it necessitates the presence of qualified medical personnel to handle any issues. Dexmedetomidine has shown effectiveness in reducing anxiety and pain without producing significant respiratory depression; nonetheless, it requires careful dosing. Parents and patients expressed great pleasure with all sedation methods, particularly inhalation sedation with sevoflurane and nitrous oxide.

For children with modest anxiety, inhalation sedation with nitrous oxide and sevoflurane is the preferred method due to its safety and effectiveness. Although the effects of dexmedetomidine sedation, oral sedation with midazolam, and intravenous sedation with propofol were favorable, they need closer observation. To improve sedation techniques and raise patient and parent satisfaction, further research is needed.

Key words: nitrous oxide, intravenous sedation, pediatric dentistry, sedative treatment, inhalation sedation, oral sedation, safety, and effectiveness.

Annotatsiya: Zamonaviy stomatologiyaning dolzarb muammolaridan biri bolalar stomatologiyasida sedativ vositalardan foydalanish hisoblanadi. So'nggi yillarda bolalarda stomatologik muolajalar jarayonida stress va xavotirni kamaytirishga qaratilgan turli sedatsiya strategiyalari ilmiy adabiyotlarda keng qamrovda o'rganilmoqda. Ushbu ishda sedatsiyaning turli usullari, ularning bemorlarning psixosotsial holatiga ta'siri hamda stomatologik davolash samaradorligi bo'yicha zamonaviy ma'lumotlar keltirilgan.

Bolalar stomatologiyasida qo'llaniladigan turli sedativ davolash usullarining samaradorligi va xavfsizligini zamonaviy mahalliy va xorijiy tadqiqotlar asosida baholashdan iborat.

Tadqiqot doirasida bolalar stomatologiyasida sedatsiya masalalariga oid mahalliy va xorijiy ilmiy adabiyotlar tahlil qilindi. Asosiy ma'lumot manbalari sifatida Cochrane Library, Google Scholar va PubMed ma'lumotlar bazalaridan foydalanildi. Adabiyotlar tahlili 2000–2023-yillar oralig'ini qamrab oldi. Retsenziyalanmagan maqolalar, dalillari yetarli bo'lmagan nashrlar hamda ilgari kiritilgan tadqiqotlarni takrorlovchi ishlar tahlildan chiqarib tashlandi.

Tahlil natijalariga ko'ra, eng ommalashgan va yaxshi o'rganilgan sedatsiya usuli sevofluran va azot(I) oksidi yordamida amalga oshiriladigan ingalyatsion sedatsiya bo'lib, u tez va boshqariladigan tinchlanishni minimal nojo'ya ta'sirlar bilan ta'minlaydi. Midazolam bilan peroral sedatsiya bolalarda xavotirni kamaytirish va hamkorlikni yaxshilashda yuqori samaradorlikni ko'rsatgan bo'lsa-da, dozani qat'iy nazorat qilishni talab qiladi. Propofol bilan vena ichiga sedatsiya murakkab muolajalar uchun chuqur sedatsiyani ta'minlaydi, biroq malakali tibbiy xodimlar ishtirokini talab etadi. Deksmetomidin nafas olishni sezilarli darajada susaytirmagan holda og'riq va xavotirni kamaytirishda samarali bo'lib, ehtiyotkor dozalanishni talab qiladi. Barcha sedatsiya usullarida bemorlar va ota-onalar tomonidan yuqori qoniqish darajasi qayd etilgan, ayniqsa sevofluran va azot(I) oksidi bilan ingalyatsion sedatsiya eng yuqori baholangan.

Yengil va o'rtacha darajadagi xavotirga ega bolalar uchun xavfsizligi va samaradorligi sababli sevofluran va azot(I) oksidi bilan ingalyatsion sedatsiya eng maqbul usul hisoblanadi. Deksmetomidin, midazolam bilan peroral sedatsiya va propofol bilan vena ichiga sedatsiya ijobiy natijalar bergan bo'lsa-da, ular yanada sinchkov kuzatuvni talab qiladi. Sedatsiya usullarini takomillashtirish va bemorlar hamda ota-onalar qoniqishini oshirish uchun qo'shimcha tadqiqotlar zarur.

Kalit so'zlar: azot(I) oksidi, vena ichiga sedatsiya, bolalar stomatologiyasi, sedativ davolash, ingalyatsion sedatsiya, peroral sedatsiya, xavfsizlik, samaradorlik.

Аннотация: Одной из актуальных проблем современной стоматологии является применение седативных средств в детской стоматологии. В последние годы в научных публикациях всесторонне изучаются различные стратегии седации, направленные на снижение стресса и тревожности у детей при проведении стоматологических вмешательств. В данной работе представлена актуальная информация о различных методах седации, их влиянии на психоэмоциональное состояние пациентов и эффективности стоматологического лечения.

Оценить эффективность и безопасность различных методов седативного лечения в детской стоматологии на основе анализа современных отечественных и зарубежных исследований.

В исследовании был проведён анализ научной литературы по вопросам седации в детской стоматологии с использованием отечественных и зарубежных источников. Основными базами данных послужили Cochrane Library, Google Scholar и PubMed. В обзор были включены публикации за период с 2000 по 2023 годы. Из анализа исключались нерецензируемые статьи, публикации с недостаточной доказательной базой, а также исследования, дублирующие ранее включённые данные.

Результаты анализа показали, что наиболее распространённым и хорошо изученным методом является ингаляционная седация с применением закиси азота и севофлурана, обеспечивающая быстрое и контролируемое расслабление при минимальных побочных эффектах. Пероральная седация мидазоламом продемонстрировала высокую эффективность в снижении тревожности и улучшении сотрудничества у детей, однако требует строгого контроля дозировки. Внутривенная седация пропофолом обеспечивает глубокую седацию при сложных вмешательствах, но требует присутствия квалифицированного медицинского персонала. Дексметомидин эффективен в снижении тревожности и болевого синдрома без выраженного угнетения дыхания, однако также требует тщательного дозирования. Высокий уровень удовлетворённости пациентов и родителей отмечен при всех методах седации, особенно при ингаляционной седации с применением закиси азота и севофлурана.

Для детей с умеренной тревожностью предпочтительным методом является ингаляционная седация закисью азота и севофлураном благодаря её безопасности и эффективности. Несмотря на положительные результаты применения дексметомидина, пероральной седации мидазоламом и внутривенной седации пропофолом, данные методы требуют более тщательного наблюдения. Для совершенствования методов седации и повышения удовлетворённости пациентов и родителей необходимы дальнейшие исследования.

Ключевые слова: закись азота, внутривенная седация, детская стоматология, седативное лечение, ингаляционная седация, пероральная седация, безопасность, эффективность.

INTRODUCTION

Dental anxiety and fear remain significant barriers to oral healthcare in the pediatric population. Despite advancements in modern dental techniques, a substantial number of children experience intense distress during clinical visits. This “dental phobia” not only complicates the delivery of necessary treatment but often leads to avoidant behavior, resulting in a progressive deterioration of oral health that can persist into adulthood.

The primary challenge for pediatric dentists is to create a clinical environment that ensures both patient safety and psychological comfort. Traditional behavioral management techniques are sometimes insufficient, particularly for very young patients, those with extensive treatment needs, or children with developmental disabilities. Consequently, the integration of sedative treatment has become an indispensable component of contemporary pediatric practice.

REVIEW OF LITERATURE ON THE SUBJECT

A crucial part of modern pediatric dentistry is sedative treatment. This is mostly due to children's common fear and anxiety during dental procedures, which may hinder the delivery of necessary care and lead to a deterioration in oral health. Children often feel anxious and tense during dental operations, which emphasizes the need for techniques to lessen negative emotions and increase comfort.

In dentistry, sedation creates a state of controlled calm in children, reducing anxiety and enabling successful dental procedures. This is particularly important for younger patients, including as children with special needs or dental anxiety. Sedation therapies may range from mild inhalation sedation with nitrous oxide or sevoflurane to more severe methods like oral sedation with midazolam or intravenous sedation with propofol, depending on the child's age and psychological state.

Research on many aspects of sedation in pediatric dentistry has increased in the last several years. This trend emphasizes the need of ensuring the effectiveness and safety of sedative methods in addition to figuring out appropriate dosages and delivery schedules. Dentists can choose the best treatments while reducing potential hazards and negative outcomes according to the findings of these studies [3].

In order to maximize patient comfort and the effectiveness and quality of dental operations, sedation is essential. The dentist can work in more favorable conditions when the patient is calm and collected, which increases accuracy and precision. For complex and prolonged procedures like caries treatment, tooth extraction, or orthodontic device placement, this is especially important [1].

When it comes to kid dental sedation, safety is a major issue. Strict procedures and guidelines have been put in place to reduce risks and provide the best possible patient safety. Modern patient monitoring systems enable the early detection and prevention of any sedation-related issues [5].

Children's psychological reactions to sedation are crucial. Reducing stress and anxiety promotes a positive attitude toward dental care, which has long-term benefits and may prevent dental phobia from developing. Children who have positive anesthesia experiences are more likely to maintain dental health throughout their lives and regularly attend dentist checkups [4].

RESEARCH METHODOLOGY

This review of the literature followed a systematic procedure that was in line with international standards. The Cochrane Library, Google Scholar, and PubMed served as the primary data sources. Papers spanning 2000 to 2023 were included in the search, ensuring that both recent and earlier studies would be included for a comprehensive review. Research that replicated previously published data, articles without sufficient evidence, and non-peer-reviewed literature were also excluded.

Pediatric dentistry, sedative treatment, inhalation sedation, oral sedation, intravenous sedation, nitrous oxide, psychological effect, sevoflurane, safety, and efficacy were among the search phrases that were combined. Titles and abstracts were used for the first screening, and then the full texts of publications that met the eligibility requirements were thoroughly examined.

Out of the 347 articles that were found, 86 met the requirements for inclusion. Each study was given a thorough methodological evaluation that included study design, sample size, sedation methods, pharmacological agents and dosages, outcomes, and conclusions. The Cochrane Risk of Bias Tool for randomized controlled trials and the Newcastle–Ottawa Scale for non-randomized studies were used to assess the research' quality. Statistical measures such as the Higgins-Thompson test and the I² index were used to evaluate data heterogeneity.

ANALYSIS AND RESULTS

Several sedative methods were investigated, such as intravenous sedation with propofol, oral sedation with midazolam, and inhalation sedation with nitrous gas. Their effectiveness, safety, impact on patient comfort and anxiety, and parental satisfaction were given particular attention.

Nitrous oxide inhalation sedation. In pediatric dentistry, this method is the most extensively studied and often reported. Nitrous oxide significantly improves dental procedures by providing sedation with a rapid onset and easy management. It is a great choice for young patients because of its main advantages, which include minimal side effects and a quick recovery period [12]. Due to the safety and quick recovery associated with this approach, high parental satisfaction has been demonstrated [16].

Sedation brought on by sevoflurane. Because of its excellent safety record, quick induction, and easy depth control, sevoflurane is a commonly used inhalation anesthetic in pediatric dentistry. It has mild side effects, such as nausea or vomiting, and speeds up recovery [10]. Its effectiveness in reducing anxiety and improving cooperation during dental procedures has been confirmed by research [18].

Oral sedation caused by midazolam. When administered at a dose of 0.5 mg/kg, midazolam has shown significant safety and effectiveness, substantially reducing anxiety and improving cooperation. The necessity for careful dosage management and monitoring is highlighted by the variety of patient reactions [11,13].

IV sedation with propofol. Propofol is suitable for complex and prolonged procedures since it provides rapid and deep sedation. Its pharmacokinetic properties enable precise dosing; nevertheless, due to potential side effects such as hypotension or respiratory depression, its administration necessitates qualified personnel and specialized equipment [14,15].

Sedation caused by dexmedetomidine. A highly selective α_2 -adrenergic agonist, dexmedetomidine minimizes respiratory depression while providing drowsiness, anxiolysis, and analgesia. It has been shown to be effective in reducing anxiety and improving cooperation, although it requires careful administration [19,20].

CONCLUSIONS AND SUGGESTIONS

According to a comparison study, the safest and most popular option for children with mild to moderate anxiety is inhalation sedation with nitrous oxide and sevoflurane. While intravenous sedation with propofol and oral sedation with midazolam are effective, they require closer observation.

For children with mild anxiety, inhalation sedation with nitrous oxide and sevoflurane is the best option due to its effectiveness and safety. Both intravenous propofol sedation and oral midazolam sedation are effective; however, they require careful monitoring. Dexmedetomidine is a potent sedative that requires medical personnel with appropriate training. Further research is needed to enhance sedation methods and increase patient and caregiver satisfaction among pediatric patients.

List of used literature:

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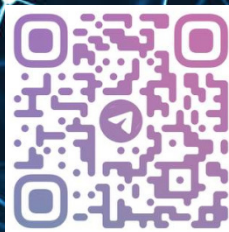
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