

## RESEARCH ARTICLE

### MANAGEMENT OF PEDIATRIC PATIENTS: DENTAL APPROACH INCLUDING THE NEW PERSPECTIVE OF THE COVID-19 PANDEMIC

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#### ABSTRACT

In the field of medicine, doctors must master the art of communication since the relationship is between two parties, not one, the doctor and the patient. Therefore, achieving proper communication is a must. In many cases, miscommunication and misunderstanding occur because of the patient's fear or anxiety. These feelings are normal to be expected from a grown-up patient; however, the situation will become even more complicated when dealing with a young patient or a child, especially when the medical procedure is dental, the fear increases more for children and the mission of controlling them becomes very challenging. Therefore, it is essential to learn the language of communication between the doctor and the child and manage them to reach the most accurate diagnosis and the safest way of treatment. Many researches have been devoted to identifying different types of management methods and determining the most appropriate methods for children; therefore, having a survey summarizing all of these results will be very useful and time-saving for everyone who researches, and this is the main aim for this paper.

**Key words:** Pediatric, Management, Pharmacological Management, Non-Pharmacological Management, Behavioral Management, General Anesthesia, Sedation.

#### INTRODUCTION

One of the challenging aspects of the medical and dental practice is working with the difficult, challenging, or uncooperative patient. During these times, the doctor or the dentist's clinical skills and patient management skills are most thoroughly tested. Success requires personal knowledge of the patient and an understanding of human behavior, development, and cultural diversity [1]. For such situations, the American Academy of Pediatric Dentistry has put some guidelines for children management either pharmacologically or non-pharmacologically. However, since children's behaviors change over the decades, so will management methods, which may vary from one child to another and from one Doctor to another[2]. This paper aims to compile the methods presented for child management and conclude the results of this topic with their advantages and disadvantages. The paper is divided into five segments; the first is the introduction, while the second section is this related works, followed by the third section, the background. The fourth section is the discussion, and finally, the conclusion is the fifth section.

#### RELATED WORKS

Many previous works were done on such topic:

- ) Some papers discussed child management [1], [2], but it was from a different perspective related to the doctor rather than the patient. The study of [1] was done on the students to see if they can practically apply in the clinics what they have learned and studied in the lectures concerning the pediatric patient's pharmacological management.

This study was different and showed another aspect of management; however, it didn't provide accurate results concerning the success/ failure/ pros or cons of the various methods for child management.

- ) Another paper [2] was done based on the same idea; however, it was concerned with the Non-pharmacological methods.
- Although these studies were very useful and beneficial, it must be taken into consideration that they were limited to certain schools, and sometimes the sample sizes were very small.
- ) It was also noticed that most articles regarding pharmacological management have written about the sedation, but with a much less extent about general anesthesia [GA][2]–[7].
- ) Some papers discussed the topic elegantly; however, they didn't provide enough sources to support their study.
- ) Also, there were some useful articles about covid19 and its effect on the dental field. However, not all aspects were covered, and new proposals need to be suggested to professionally perform within such a pandemic with the least risks possible.

**BACKGROUND:** Child management is the basis and the essential part of pediatrics' dentistry. If we control the child, any procedure after that will be easy. However, child management has several types; pharmacological and non-pharmacological. The pediatric dental patient's pharmacological management is considered to be a subcategory of a border collection of professional mediated activities, whereas the pharmacological techniques are divided generally into either: various levels of sedation, or general anesthesia, while the Non-Pharmacological management is related to the behavioral management of the children and their

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psychology[2]. The situation becomes very challenging when the child has a medical condition; thus, more precautions must be taken. Also, a new aspect that has recently shown up which is the covid-19 epidemic, and it is crucial to discuss how to control the virus with precautions to prevent the spread of the epidemic through dental clinics.

## DISCUSSION

Commonly, pediatric patients provide the biggest challenge in behavior management. Therefore, the American Academy of Pediatric Dentistry [AAPD] provided guidelines concerning the pediatric dental patient's behavior guidance to guide dentists working with children[8]. These guidelines provide proper identification regarding both the basic and the advanced management techniques, where the basic techniques include communication management, non-verbal communication, voice control, tell-show-do, distractions, parental absence or presence, and several other techniques. Nitrous oxide conscious sedation and GA are other forms of management that can also be performed but with certain precautions and noted contraindications.

### **Non- pharmacological management of pediatric patients:**

Behavior management techniques are numerous, and sometimes they're controversial; also, they are likely as varied in terms of style of delivery as the number of practitioners who use the techniques[2]–[4], [9]–[11]. Several methods fall under the non-pharmacological management, where the behavioral guidance educational techniques such as the tell-show-do, positive reinforcements, the distractive technique, the competitive stimuli [taking advantage of the children's imagination or distraction with videos or music], supportive techniques and modeling, all of those were evidenced by increasing acceptability and frequencies of the application by operating dentists[12].

However, there are other controversial behavioral management methods such as protective stabilization [immobilization] and the Hand-Over-Mouth technique [HOM]. Several studies aggressively refused the immobilization technique claiming that they are inappropriate, inhumane, and barbaric[2]. In contrast, other studies provided results claiming that active and passive immobilization was acceptable by 69% to 85% of their programs[13] and that they have a relatively high acceptability score and frequency of use[1], [9], [12], [14]–[17]. Some other studies mentioned that pediatric patients' parents rated the passive immobilization techniques as less acceptable than the tell-show-do and the sedation[1], [18]. On the other hand, there was a strong consensus about the HOM technique, where almost all the studies denied such technique. It was taught as unacceptable by 62% of the programs in a behavioral management survey [13].

The use of the HOM technique began to lose favor in the clinical practice even before its removal from the guidelines of the AAPD[1], [2], [12], [13]. Only 24% of pediatric dentists were reported in a previous study to have a plan on continuing the usage of this technique[1], [19]. Based on the controversial nature of this technique and the risks associated with its use, this change was reflective of an overall beginning movement toward more behaviorally based, less restrictive patient management techniques; also, it reflects the fact that the UF Department of Pediatric Dentistry emphasizes that this

technique is no longer acceptable and that it has been eliminated from the AAPD clinical guidelines [20].

### **Pharmacological Management of Pediatric Patients:**

Pharmacological management is divided into two general categories: sedation and general anesthesia [GA]. Although the technical and pharmacological context of sedation and GA vary, each has its advantage regarding the patient and the professional needs. In deciding whether or not to use pharmacological management, several outstanding factors must be put into consideration, where each of which is intrinsically complex when considered in the context of the pediatric dental setting[2], [5], [7], [21]. Some of these factors are the risks involved with pharmacological management rather than with the routine communicative techniques, the extent of the patient's dental needs, history and past safety records of the patient regarding the pharmacological management, monitoring, Parental expectations, as well as the cost.

And although sedation can be very useful and beneficial during dental operations, it has some risks that must be considered before deciding on such a choice. There are many risks involved with child sedation for dental procedures. Brain damage and death are the most paralyzing outcomes for the patient, family, practitioner, and staff. However, these tragic consequences are caused primarily by respiratory and airway compromise in sedated children [22], [23]. Whereas minor risks could involve vomiting, extremes in physiological parameters such as a sustained high heart rate in a lightly sedated toddler, and irrational and paradoxical behaviors. Several researches did the statistics about morbidity and mortality related to sedation. The conclusion was that there is no doubt that sedation deaths occurred; however, there is no evidence that any of those situations had occurred when the operator properly followed the sedation guidelines of the AAPD and was within limits of the professional care parameters[23], [24]. Thus, any unhealthy child or a child with a medical condition will have significant risk when using a sedative procedure. Therefore, for optimal sedation outcomes, only healthy children or children with minor health conditions can be sedated following the exact guidelines by a certified operator to do such procedures.

One of the most significant factors which affect the choice of sedation over the GA is the cost and the reimbursements required for providing GA. And although cost-wise, GA can be more costly, it could provide more safety and fewer risks to the patients. Also, other researches opposed the proposed premise concerning the cost mentioning that in literature, the extent of dental care will require not less than two sedation appointments or maybe more, knowing that the cost of two or more sedations is more than a single GA procedure considering the quality of safety and care delivered. In the long run, GA has been of the best results for both the profession and the patient, and it is regularly used for medical surgical specialties with excellent outcomes, then why wouldn't it be useful for the dental field. And although sedation is considered a potential alternative to GA, GA would be a better candidate in case of a healthy child with multiple dental concerns[2], [21], [25].

**Dental Management and the New Pandemic:** The COVID-19 pandemic has a serious and huge impact on dentistry.

Therefore, recommendations have been revised in response to this pandemic to provide unique changes for dental settings. The studies inform about the resumption of non-emergency dental treatments during COVID-19, also sterilization and disinfection protocols, facility and equipment, providing care to both COVID-19 positive and negative patients as well as recommendations on pediatric dentistry to minimize risk as much as possible to the patient and the dental healthcare personals[26]–[29]. A Dental health care provider is placed in the very high exposure risk category by OSHA via the high potential for exposure to known or suspected viral sources for COVID-19 during specific dental procedures[30]–[32]. Also, the risk of infection in a dental setting and the exposure to the biological risk is a hazard to the patients, the doctors, the assistants, and anyone else in the same room; therefore, it is vital to reduce the risk of infections in a dental setting by Infection control measures since unrecognized asymptomatic and pre-symptomatic infections have a likelihood of transmission in healthcare settings. Since patients undergo procedures with ultrasonic and high-speed instruments or air-water syringes, which results in aerosol, droplets, the spattering of the salivary secretions, debris, or blood, the spatter travels over a short distance, quickly settle down and contaminates everything in the room, starting from the air, the floor, the operatory surface, the devices, the medical supplies, equipment and of course, the dentist and the patient himself.

A salivary gland could be a significant viral source enabling the transmission of COVID-19 by asymptomatic infections originating from infected saliva. That's why protective aids and supplies are mandatory to prevent disease transmission[33]. Surgical Masks provide around 80% filtration rate and adequate protection for elective dentistry in normal healthy patients. However, the COVID19 virus measures around 120 nm [0.12 µm], and aerosol particle sizes range from 3 to 100 nm; hence FFP3 respirator offers a filtration rate of 99% of all particles measuring up to 0.6 µm [31], [34], [35]. Also, studies showed that SARS-CoV2 is sensitive to heat and ultra-violet rays. It is inactivated at 56 °C for 30 min and by lipid solvents ethanol, 75% ether, disinfectants containing peracetic acid, chloroform, and chlorine but not by Chlorhexidine [30], [36]. Therefore, for a dentist to operate or provide a dental treatment safely to patients, these infection control measures and protocols must be applied as well as the mandatory use of personal protective equipment such as gowns, gloves, FFP3 masks, and eye protection, with high-volume aspiration and other measures to reduce or avoid the production of droplets, splatter, and aerosols by dental drills and saliva. Also, the pandemic's significant impact on dentistry obliges the pediatric dentists to continually stay up to date with the guidelines for safely providing dental health care for children[37]. As well as patients treated for COVID-19 in ICU will require care since they are at a high risk of deterioration of oral health [38]–[41].

## Conclusion

A significant amount of pediatric dental patients can't have the dental treatments successfully performed for them without using management techniques, either pharmacological or behavior management [21]. Regarding pharmacological management, researchers had different opinions regarding whether to perform conscious sedation or General Anesthesia [GA] and which was of lower risks and better outcomes. Through the many papers that discussed this topic, we concluded that general anesthesia is better than sedation, and

although it may turn out to be more expensive, but compared to the cost of multiple sedation sessions, and also treating all dental problems in one session of GA, it's evident that GA is saving both time and money, and also with lower risks on children. However, regarding the non-pharmacological management, there was a total consensus that the HOM is totally rejected and not to be performed anymore on children for behavior management. While Protective stabilization/medical immobilization, sedation, and general anesthesia were listed as advanced behavioral management techniques by the AAPD[8], their use is recommended only to those dentists who have completed commensurate advanced postdoctoral training [i.e., residency or continuing education][1], [42], therefore, not any dental operator can perform those techniques for child management, and the best way for any operator will always be the psychological aspect of behavior management [tell-show-do][43], [44]. Medical factors and the patient's history must definitely be put into consideration. According to the gathered data, the treatment plan will vary; thus, medical history should never be ignored or forgotten. Also, new extra precautions should be taken nowadays due to the pandemic the world is facing, which imposed new infection control measures for the patient's safety, the dental team, and the patient's escorts.

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