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**PROTECTIVE STABILIZATION FOR  
CHILDREN AS AN ADVANCED BEHAVIOR  
MANAGEMENT TECHNIQUE IN DENTISTRY:  
UNITED ARAB EMIRATES DENTISTS' AND  
PARENTS' ACCEPTANCE**

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## ABSTRACT

### **Protective Stabilization for Children as Part of Advanced Behavior Management Technique in Dentistry: UAE United Arab Emirates Dentists' and Parents' Acceptance**

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**Background:** Behavior Management Techniques (BMTs), used by Pediatric Dentists (PDs) and some General Dental Practitioners (GDPs) for managing children's dental care, are divided into two categories: "basic behavior techniques" and "advanced behavior techniques." One method of the latter is Pediatric Protective Stabilization (PPS), which is the physical limitation of a patient's movement by a person or restrictive equipment, materials, or devices for a finite period to provide an examination, diagnosis, and/or treatment safely. Examples of PPS are Hand-Over-Mouth Exercise (HOME), Papoose board (PB), clinical holding (CH), and Lap-to-Lap examination (LLE).

**Aim:** To evaluate the acceptance of dentists and parents regarding the use of four types of PPS as a BMT during children's dental treatment in the UAE.

**Materials and Methods:** A cross-sectional survey-based study sampling dentists (GDPs and PDs) (n=125) and parents (n=126) was obtained between the 1<sup>st</sup> of March 2021 and 1<sup>st</sup> of January 2022, using Microsoft Forms® to conduct two online surveys to examine the parental acceptance and dentist's acceptance of one type of advanced BMT, which is protective stabilization. The dentists' survey was circulated to online UAE dentists' associations, societies, and clubs. In contrast, the parents' survey was distributed on social media, among parents' groups, and children attending dental institutions and facilities like Dubai Dental

Hospital (DDH) and other UAE dental clinics. The questionnaires were divided into demographic questions (i.e., age, gender, nationality, etc.) and acceptance of various BMT methods. In addition, parents and dentists were asked to rate their acceptance level on each randomly displayed PPS type using a Likert rating scale. Both questionnaires demonstrated the four PPSs using photos and a worded explanation. All data analyses were performed using IBM-SPSS for Windows version 28.0. The Chi-squared test or Fisher's exact test was used to investigate the association of categorical data. In addition, the Kolmogorov-Smirnov test was used to test the normality of continuous variables and Mann Whitney test to compare the means between the two groups. Quantitative data were analyzed and expressed in mean  $\pm$  SD, and the significance level was set at (P-value  $\leq$  0.05 level).

**Results:** 66.7% of the parents stated that their children had never received the PPS techniques in the study sample. In addition, 54% of the parents stated that they prefer their child to receive PPS over general anaesthesia. On the other hand, 53% of the dentists felt they need to use PPS. Furthermore, 67.2% of the dentists felt the need to obtain consent from the parents before resorting to PPS. In general, 54% of the parents were against the use of PPS with their children's dental treatment if it was not an emergency, compared to 28.8% of the dentists ( $p < 0.001$ ). Furthermore, 59.6% (31/125) of the dentists believe the benefits of protective stabilization outweigh its risk. PPS techniques were categorized as per their acceptance. CH technique was found to be accepted by only 18.3% of the parents, in comparison to 56% of dentists, making it their method of choice in the event of a non-pharmacological protective stabilization ( $p < 0.001$ ). HOME technique found acceptance for only 9.5% of the parents, in comparison to 8.8% for the dentists ( $p \leq 0.427$ ). The LLE technique was the most accepted technique by the parents 44.4%, compared to 41.6% for the dentists ( $p \leq 0.344$ ). PB board was the least accepted PPS technique for the parents, 6.3%, compared to 4% for the dentists ( $p \leq 0.344$ ).

**Conclusion:** PB was the least accepted PPS technique for both the parents and dentists. The LLE technique ranked as the most favorable BMT for the parents, followed by CH; Whereas for the dental practitioner, CH ranked as the most favorable, followed by the LLE technique. Almost half of the GDPs and PDs would obtain consent before carrying out PPS techniques, which is below the required international recommendations of 100%. Parents' and dentists' demographic data did not play a role in the acceptance rate of PPS techniques.

## **DEDICATION**

I am dedicating this thesis to my beloved people who have meant and continue to mean so much to me.

I dedicate this dissertation work to my family, my loving parents, Magdi Elhamadi and Nadia Seif who have always loved me unconditionally and whose good examples have taught me to work hard for the things that I aspire to achieve.

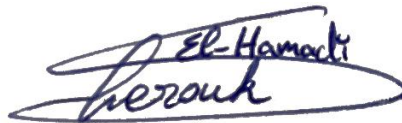
A special feeling of gratitude to my husband, Mohammed El-Gezeiry, who has been a constant source of support and encouragement during the challenges of post graduate school and life. I am truly thankful for having you in my life.

## DECLARATION

I declare that all the content of this thesis is my own work. There is no conflict of interest with any other entity or organization

Name: Sherouk Magdi Soliman Elhamadi

Signature:

A handwritten signature in blue ink, enclosed in a large, horizontal oval. The signature is written in a cursive style and includes the name "El-Hamadi" on the top line and "Sherouk" on the bottom line.

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## LIST OF ABBREVIATIONS

<b>AADMD</b>	American Academy of Developmental Medicine & Dentistry
<b>AAPD</b>	American Academy of Paediatric Dentistry
<b>Ag</b>	Agree
<b>ArAPD</b>	Arabian Academy of Pediatric Dentistry
<b>BMT</b>	Behavior Management Techniques
<b>BSPD</b>	British Society of Paediatric Dentistry
<b>BSc.</b>	Bachelor of Sciences
<b>CBT</b>	Cognitive Behavior Therapy
<b>CH</b>	Clinical Holding
<b>Dis.</b>	Disagree
<b>EAPD</b>	European Academy of Paediatric Dentistry
<b>FDA</b>	Food and Drug Administration
<b>GA</b>	General Anesthesia
<b>GCP</b>	Good Clinical Practice
<b>GDP</b>	General Dental Practitioners
<b>HOM</b>	Hand Over Mouth
<b>HOME</b>	Hand Over Mouth Exercise
<b>IRB</b>	Institutional Review Board
<b>LLE</b>	Lap-to-Lap Examination
<b>MBRU</b>	Mohammed Bin Rashid University
<b>NHS</b>	National Health Service
<b>N</b>	Neutral
<b>PB</b>	Papoose Board
<b>PD</b>	Pediatric Dentist
<b>PPS</b>	Pediatric Protective Stabilization
<b>RRN</b>	Restraint Reduction Network
<b>S. Ag</b>	Strongly Agree
<b>S. Dis</b>	Strongly Disagree
<b>STROBE</b>	Strengthening the Reporting of Observational Studies in Epidemiology
<b>UAE</b>	United Arab Emirates
<b>UNCRC</b>	United Nations Convention on the Rights of the Child
<b>UK</b>	United Kingdom
<b>US/USA</b>	United States of America

## 1. INTRODUCTION

Behavior management of pediatric dental patients is crucial to the success of dental treatment, and Pediatric Dentists (PD) use a range of behavioral and pharmacological techniques.<sup>(1)</sup> These techniques are regularly reviewed over time, and some of these techniques may be abandoned.<sup>(1, 2)</sup>

The American Academy of Paediatric Dentistry (AAPD) classifies Behavior Management Techniques (BMT) into two categories: “basic behavior techniques” and “advanced behavior techniques.”<sup>(2)</sup> The basic behavior methods incorporate communication strategies such as tell-show-do (TSD), distraction, positive reinforcement, voice control, and parental presence/absence. these techniques are usually accepted by guardians and rarely require clarification or consent.<sup>(2, 3)</sup>

A small proportion of children cannot be managed through basic BMTs, and these children require other elective strategies.<sup>(3)</sup> The AAPD recognizes the requirement for advanced BMT, which incorporates protective stabilization (active and passive restraint), sedation [e.g., with nitrous oxide (N<sub>2</sub>O)], and general anesthesia (GA).<sup>(2)</sup>

Protective stabilization is “the term utilized in dentistry for the physical limitation of a patient’s movement by a person or restrictive equipment, materials or devices for a finite period to safely provide examination, diagnosis, and/or treatment”.<sup>(4)</sup> Types of protective stabilization or physical restraint are active immobilization; which includes restriction of movement by other individuals, such as the parent, dentist, or dental supporting team [e.g., Hand Over Mouth/ Hand Over Mouth Exercise (HOM/HOME), “clinical holding”, and lap-to-lap examination].<sup>(42)</sup> In comparison, passive (mechanical) immobilization requires a restraint device (e.g., Papoose Board).

The AAPD suggests that the use of restraints must be restricted to rare, critical clinical circumstances where “no other alternatives are available” (e.g., life-threatening situations without any possibility of obtaining minimal patient cooperation) due to their inhumane and unacceptable features.<sup>(6)</sup>

Few studies in recent years have investigated why dental specialists from different nations may prefer utilizing one method over another.<sup>(7-10)</sup> Tell-show-do has been reported as the most accepted technique in most previous studies by dentists. In contrast, dentists’ protective stabilization and GA are usually reported as the least accepted techniques.<sup>(7)</sup> On the other hand, a study that focused on a Hispanic group of parents reported that HOM was unacceptable by 63 % of the parents and the Papoose board technique was unacceptable by 81%. However, parents would prefer to have had the child given GA rather than HOM in both groups.<sup>(11)</sup> A recent study in the Arabian region (Egypt, United Arab Emirates (UAE), Saudi Arabia, Jordan, Qatar, Libya, Bahrain, Oman, Lebanon, and Kuwait) showed that 53% of PD participants reported using protective stabilization.<sup>(7)</sup> A questionnaire targeting parents’ acceptance in Saudi Arabia showed that HOM and protective stabilization approaches were the least acceptable techniques for the uncooperative child.<sup>(12)</sup>

To the author’s knowledge, no study has combined and compared dentists' and parents’ acceptance rate of BMTs in dentistry in the UAE. Also, none of these studies exclusively addressed protective stabilization techniques only. With this in mind, it was deemed worthwhile to investigate dental practitioners’ acceptance rate compared to parents’ acceptance of protective stabilization in the UAE. This information would be valuable in understanding the type of protective stabilization techniques used in the UAE and whether such techniques comply with the parents’ acceptance.

## 2. REVIEW OF LITERATURE

### 2.1 Introduction

#### 2.1.1. Dental Anxiety

Dental fear is the reaction to the known discomforts associated with the dental setting (hospital). It is often characterized by a fight-or-flight reaction triggered by needles, drills, and handpieces.<sup>(13)</sup> On the other hand, dental anxiety is a global public health concern and is described as the fear or stress associated with an unknown danger in the dental setting; ideally, dental anxiety is heightened dental fear.<sup>(3)</sup> Conversely, severe dental anxiety that leads to irrational fear and avoidance of visits to the dentist is classified as dental phobia.<sup>(14)</sup> In cases of dental phobia, the fight-or-flight reaction can be prompted just by the thought or reminder of a dentist's appointment. While dental anxiety is less severe than dental phobia, it is more prevalent. Statistics show that the prevalence of dental anxiety in adults ranges between 1% and 53%<sup>(15)</sup> while in children, it is between 5% and 61%.<sup>(16)</sup> In contrast, the incidence of dental phobia is below 3% and 16% among adults and children, respectively.<sup>(15)</sup> The factors associated with fear, anxiety, and phobia in a dental setting include genetic vulnerability, negative affectivity, cognitive preparedness, operant conditioning, cognitive content, cognitive biases, demographics, and culture.<sup>(14)</sup> Genetic vulnerability suggests that individuals possibly inherited factors that predispose their dental anxiety. However, it is also noted that since people do not directly inherit dental phobia, the phobia may develop from the interaction of their genetic vulnerability factors with various other etiological elements.<sup>(17)</sup> Some individuals suffer extreme degrees of dental phobia such that their normal life is impaired, the consequence of which is the development of avoidance behavior and clinically significant levels of distress.<sup>(18)</sup> Patients with avoidance behavior do not keep dental appointments only aggravate their oral and overall health. While dental phobia may become ingrained, it may be treatable using cognitive behavior therapy (CBT) methods.<sup>(43)</sup>

## Children's Perception of Dental Anxiety

While dental anxiety is a common factor that affects oral health and clinical management across all ages, it is acknowledged that it typically develops in childhood.<sup>(15)</sup> There is evidence among researchers<sup>(19, 20, 21)</sup> that younger children and girls report more dental anxiety than older children and boys, whereby the leading cause of their anxiety is usually dental extractions, drills, and the use of needles.<sup>(44)</sup> Specifically, children aged between three and five years have demonstrated their preference for noninvasive procedures.<sup>(21)</sup> However, contrasting results<sup>(22, 23)</sup> show that boys aged between six and eight have the highest prevalence of dental anxiety. While the factors associated with dental anxiety among children and adults are generally the same,<sup>(22)</sup> previous negative dental experiences and preparedness are also commonly cited among children. It is noted that children who visit dentists with anxiety are more likely to resist conditioning mechanisms.<sup>(22)</sup> The elements of fear are divided into the subjective category, which includes cognitions and emotions, and the objective category, which includes physiological reactions and behavior.<sup>(24)</sup> In children, one of the most critical channels for behavior is their subjective experience of dental treatment to either accept or avoid treatment. The implication is that PDs must understand the children's subjective rather than objective dental anxiety.<sup>(25)</sup> The significance of the subjective approach is that no standard model of a child's dental anxiety has been developed yet; instead, it is a function of an individual child's previous traumatic experiences, how they were prepared for the appointment, negative attitudes in the family, and perceptions of a painful encounter.<sup>(12)</sup>

## **2.2 Behavior Management**

### 2.2.1 Classification and Description of Children's Behavior

The literature<sup>(14, 17, 18)</sup> on human personality, identifies four general behavior types: optimistic, trusting, pessimistic, and envious. These types of behavior are also found among children and can be contextualized within the subject matter of their behavior in the dental chair. More



specifically, the three classifications of children's behavior in the dental chair are cooperative, lacking cooperative ability, and potentially cooperative.<sup>(12)</sup> Children who exhibit cooperative behavior are appreciably relaxed and have less detectable levels of anxiety. According to the types of human behavior, they are trusting and optimistic; hence, they tend to accept treatment more readily.<sup>(9)</sup> The class that lacks cooperative ability includes children below three years and those with specific incapacitating conditions such that useful communication cannot be established.<sup>(24)</sup> Treating this class is difficult, especially if the procedure is urgent or an emergency.<sup>(13)</sup> While the children who lack cooperative ability are neither trusting nor optimistic, they do not fit perfectly in the pessimistic or envious behavior. Children with potentially cooperative behavior can behave acceptably but face identifiable barriers.<sup>(16)</sup> The most crucial aspect of this class is that their behavior is positively adaptable, and they also fit into the optimistic type of human behavior.

## 2.2.2 Definition of Behavioral Management

Behavior management is defined as the technique(s) through which the dental team administers treatment effectively and efficiently, approaching the procedure with a positive dental attitude and the child's best and long-term interests at heart.<sup>(20)</sup> Studies have reported that a positive dental attitude is the primary goal of behavioral management.<sup>(20,21,22,23)</sup> Another study provided a refined definition of behavioral management not simply implies the behavior needed to complete a particular task but also improves a child's long-term interest in understanding the significance of suitable dental health.<sup>(23)</sup> This implies that a dentist needs to create relationships founded on trust to ensure compliance with preventive measures and allow the dentist to administer treatment.

### 2.2.3 Importance of Behavior Management Techniques

A child's behavior reflects what she/he feels. After identifying their behavior, the next challenge is managing it to administer treatment; hence, the concept of behavior management techniques (BMT). The importance of behavior management techniques goes beyond mere completion of the task; they are founded on relationships of trust designed to include long-term interests in children's oral health. Other descriptions of behavior management techniques emphasize effective communication to raise awareness about the importance of pediatric oral health.

### 2.2.4 Pharmacological Behavior Management Techniques

- BMTs are classified into pharmacological and non-pharmacological methods. Pharmacological BMT includes general anesthesia and conscious sedation.<sup>(1)</sup> General anesthesia sends the patient into complete unconsciousness and is recommended for extremely anxious and uncooperative, medically compromised, or very young children and those with special needs that do not respond positively to conscious sedation. Besides the dentist performing the dental procedure, general anesthesia also requires the expertise and presence of an anesthesiologist or anesthesiologist. The indications for general anesthesia include emergency surgery, procedures that take significantly longer duration, and those that result in excessive blood loss.<sup>(26)</sup> G.A may pose an additional risk for patients who suffer from seizures, diabetes, obesity, high blood pressure, drug allergies, and a history of adverse reactions to anesthesia<sup>(26)</sup>. In the sedation type, medicines help the child cope with anxiety and cooperate with the dental team during treatment and are recommended for patients who cannot cooperate due to a lack of psychological or emotional maturity and/or mental, physical, or medical conditions; and patients for whom the use of sedation may protect the developing psyche and/or reduce medical risk.<sup>(26)</sup> It makes them drowsy and sleepy, although, unlike general

anesthesia, it does not cause complete unconsciousness. Indications for sedation include relatively long and painful procedures that require a certain degree of immobility. In contrast, contraindications include abnormal airway, depressed conscious level, respiratory failure, bowel obstruction, cardiac failure, history of sleep apnea, and raised intracranial pressure.<sup>(14)</sup>

- Inhalation sedation (or relative analgesia) through nitrous oxide is administered via a breathing mask and used to relax patients to undergoing a dental procedure. It is odorless, mild, easy to titrate, and reversible; through these qualities, the AAPD recognizes it as an effective and safe pharmacological BMT for children.<sup>(2)</sup> Nitrous oxide allows patients to relax as they breathe via the nose and stay fully conscious.<sup>(4)</sup> The significance is that all reflexes are kept intact and quickly recover. Indications are procedures that require a certain degree of relaxation and immobility, while contraindications include critically ill patients, severe cardiac disease, patients taking bleomycin sulfate, and severe psychiatric disorders.<sup>(5)</sup>
- The (EAPD) recommends that when identifying children in need of conscious sedation, it is essential that health practitioners make a combined judgment of the following two groups of factors, including children with low coping ability and children with treatment needs.<sup>(33)</sup> According to the EAPD, children with low coping abilities include behavior management problems, mental retardation, dental fear and anxiety (odontophobia), and those with general disorders or psychiatric conditions. Children with treatment needs include those who require emergency treatment, moderate to large and complicated treatment needs.<sup>(33)</sup> The European policy recommendation body states that sedation of children below one year is considered contraindication and is never relevant in a dental setting.

### 2.2.5 Non-Pharmacological Behavior Management Techniques

Non-pharmacological techniques include tell-show-do, nonverbal communication, protective restraint, and positive reinforcement. <sup>(14)</sup> Protective restraints are used when the treatment is essential and are often justified by the fact that the child is already sedated. <sup>(17)</sup> It can be active (involving dental personnel or parents to restrain a child) or passive (using devices such as straps and papoose boards). Tell-show-do entails verbal descriptions of the planned procedure in a language appropriate to the child. The “tell” and “show” phases involve demonstrations of the procedure that the child can see, touch, hear, and smell in a non-threatening setting, while the “do” phase is the actual administration and completion of the treatment. <sup>(26)</sup> The objectives are to teach the child important and beneficial aspects of the visit and familiarize them with the setting, equipment, and apparatus. <sup>(26)</sup> Tell-show-do also prefigures the patient’s response to the prescribed treatment by desensitizing and explicitly describing the expectations. <sup>(26)</sup> Concerning indications, tell-show-do can be used with any patient as it has no contraindications. Positive reinforcement is used to reward and strengthen the required behavior whenever it is exhibited, thereby increasing the probability of it being exhibited again in the future. <sup>(6)</sup> The technique uses social reinforcers such as verbal praise, positive voice modulation, facial expression, and nonsocial reinforcers such as toys and tokens. <sup>(16)</sup> Positive reinforcement has no contraindications and can be used with any patient. Nonverbal communication is the guidance and reinforcement of behavior through body language, posture, appropriate contact, and facial expression, aiming to increase the effectiveness of other BMT and obtain to increase different BMTs' effectiveness and acquire and maintain the patient’s prolonged attention and cooperation. <sup>(21)</sup> Nonverbal communication has no contraindication and can be used with any patient.

## **2.3 Protective Stabilization**

### **2.3.1 Definition and Objectives by the AAPD**

The AAPD (2021) defined protective stabilization as the physical limitation of a patient's movement, which can be achieved using people or restrictive equipment, devices, or materials for a finite duration. The objectives are to eliminate or minimize disruptive movement, protect the patient, dentist, parent, or staff from injury, and facilitate safe diagnosis and the delivery of safe treatment. <sup>(26)</sup>

### **2.3.2 Types of Protective Stabilization**

There are several types of accepted protective stabilization, depending on how they are implemented. When protective stabilization is implemented using people, it is termed as active, and, conversely, when implemented using restrictive equipment, devices, or materials, it is referred to as passive. <sup>(5)</sup>

### **2.3.3 Indications and Contraindications of Protective Stabilization**

According to AAPD guidelines<sup>(26)</sup>, protective restraints are indicated for patients who need immediate diagnosis but are uncooperative; patients who need urgent procedures, but their uncontrolled movements place them, dentist, staff, and parents at risk; patients who were previously cooperative but suddenly and unexpectedly become uncooperative; and uncooperative patients who only require minimal sedation or general anesthesia and minimal procedure.

International organizations such as the EAPD and the American Academy of Developmental Medicine & Dentistry (AADMD) have also specified indications and contraindications of protective stabilization. One thing that was noticed missing during the literature review is how such nationally recognized bodies as the National Health Service (NHS), Restraint Reduction Network (RRN), Royal College of Nursing, Arabian Academy of Pediatric Dentistry, and

National Clinical Guideline Centre among others have not specified the indications and contraindications of protective stabilization

As per AADMD guidelines, protective stabilization should only be applied in appointments or assessments of short duration and/or urgent procedures with uncooperative patients.<sup>(34)</sup> The techniques ought to limit untoward movement of the limbs, body, and head during treatment to facilitate the completion of treatment and prevent harm to patients and the care team. Furthermore, protective stabilization needs to be tolerable by the patients without harming them. The AADMD advises health practitioners always to note the difference between general patient discomfort and infliction of physiological and physical harm or trauma when applying protective stabilization in accordance with the limited cooperativity provision.<sup>(34)</sup> Doctors are also allowed to apply protective stabilization as a means of sedation to improve a patient's comfort and safety, provided that it does not negatively affect their recovery. In pediatric dentistry, protective stabilization should be considered for children with special healthcare needs to facilitate the safe and effective completion of invasive procedures. The indications and contraindications procedures specified by AAPD<sup>(26)</sup>, AADMD<sup>(34)</sup>, and the EAPD<sup>(33)</sup> are somewhat different.

#### 2.3.4 Global Guidelines for Protective Stabilization

From the review that was carried out, it was noted that some of the most sought after organizations by dentists who want to understand the global guidelines for protective stabilization include the AAPD and the British Society of Paediatric Dentistry (BSPD).<sup>(26,33,41)</sup>

According to the AAPD and the BSPD, PDs receive formal education and training to acquire knowledge and skills needed to control the various physical challenges, age-defining characteristics, and cognitive capabilities of their patients. Dentists who deal with children should be in a position to evaluate each child's dental attitudes, developmental level, and

temper tantrum, as well as also be in a position to recognize the likely barriers to effective care delivery, e.g., painful dental or medical experience, and/or previous unpleasant experiences to predict a child's receptive behavior toward treatment. A continuum of pharmacological and non-pharmacological behavior guidance methods, e.g., protective stabilization, can be used to provide oral health care for children, including those with special health care needs. <sup>(41)</sup> Behavior guidance methods for every patient who cannot cooperate ought to be customized to their individual needs while also considering the parents' desires; these include protective stabilization, sedation, referral to another dentist, or general anesthesia. Dentists are also recommended to consult the AAPD and BSPD guidelines for additional information about the spectrum of behavior guidance methods.

### 2.3.5 Guidelines of Arabian Academy of Pediatric Dentistry (ArAPD)

A literature search on different databases failed to produce official documents from Arab countries on their guidelines on protective stabilization in dentistry. Nonetheless, one of the retrieved studies <sup>(7)</sup> reported that the guidelines used in Arab countries were somewhat adapted from the AAPD and BSPD guidelines earlier discussed. Instead of stating that dentists need formal education, this study states that oral health practitioners are required to obtain structured training, e.g., graduate programs, residency programs, and extensive continuing education courses.<sup>(7)</sup> Arab countries also encourage self-training with basic techniques, e.g., tell-show-do, but not advanced techniques. Obtaining informed consent from the child's parents before applying protective stabilization is mandatory. Dentists are also required to give pre-treatment explanations in order to ensure parental cooperation during the treatment and decrease post-treatment complaints. Sedation, e.g., nitrous oxide sedation, is also widely applied in Arabian countries, aside from Qatar, which prohibits its use. The lack of HOME training has widely been reported in Saudi Arabia and Jordan, but other Arab countries recommend the use of HOME as a protective stabilization technique.<sup>(7)</sup>

### 2.3.6 The Effect of Protective Stabilization on Child Psychology

The use of protective stabilization in pediatric dentistry raises ethical questions in light of the United Nations Convention on the Rights of the Child (UNCRC).<sup>(27)</sup> On the one hand, the UNCRC emphasizes the significance of children participating in healthcare decisions that affect them. On the other hand, however, research findings<sup>(24,25)</sup> report that their participation is suboptimal. The forced use of protective stabilization causes fears, resistance, discomfort, demoralization, humiliation, and anger, among them, more importantly, has long-term psychological effects. As already noted,<sup>(22)</sup> in the introductory section of this literature review chapter, it was mentioned that some children are more vulnerable to developing dental anxiety than others, which can be exacerbated depending on their first experience with protective stabilization. There are always negative psychological impacts when protective stabilization is forcibly imposed on potentially cooperative children. Article 12 of the UNCRC<sup>(27)</sup> explicitly addresses respect for children's views on matters that affect them, while Article 24 emphasizes their right to the best possible healthcare. It follows, therefore, that forcibly using protective stabilization even where it is indicated degrades and dehumanizes children. The cyclic relationship between protective stabilization, dental anxiety, negative psychological impacts, and social and developmental burdens among children.<sup>(28)</sup>

### **2.4 The Acceptance rate of Protective Stabilization Techniques by Parents Globally**

Protective stabilization generates emotional discomfort among parents globally. In a study conducted in Brazil, female parents reported discomfort more than their male counterparts.<sup>(30)</sup> However, both mothers and fathers demonstrate appreciable acceptance of the techniques in acknowledging the oral health consequences of no treatment for their children. Equally importantly, it is noted that although there is a general acceptance of the techniques, there is a global inclination toward active rather than passive protective stabilization; mothers, in particular, are opposed to sedation and general anesthesia.<sup>(30)</sup> Therefore, while parents around



the world admit that they have negative feelings about protective stabilization, they acknowledge its benefits and, in turn, propose recommendations (such as the involvement of a parent in active protective stabilization rather than devices in passive protective stabilization) for its use. A notable theme derived from studies done in Norway and Brazil<sup>(28,30)</sup> is that the parents' gender plays a significant role in accepting protective stabilization techniques.

Parents generally accept protective stabilization and express the need to establish a bond between the dentists and themselves to understand better the need for the practice and how it affects their children's overall well-being.<sup>(30)</sup> However, some parents also express strict reservations about methods such as the papoose board. On the one hand, others acknowledge that it calms their children and allows the procedure to be administered. On the other hand, a study in Canada argues that it is a traumatizing experience for their children and a cause of feelings of guilt for them as the parents who approved it.<sup>(32)</sup> The latter group of parents blame dentists for not allowing them sufficient time to make decisions and vow never to accept it in the future. However, it is also reported that this group does not have the statistical significance to render the global parental acceptance of protective stabilization as low.<sup>(32)</sup> It is hereby noted that reporting a definitive status of the acceptability of protective stabilization in pediatric dentistry remains elusive because of the parents' subjectivity and the specific protective stabilization methods they have problems with. Generally, despite the research gaps, it is acknowledged that the practice is acceptable with variation from country to country. For example, the study carried out in Malaysia<sup>(38)</sup> also reported a positive reception by parents toward protective stabilization. Of the 70 questionnaires that were analyzed, the researchers reported that the average level of parental satisfaction was high; a majority of the parents were mainly satisfied with the health professional's interpersonal communication. It should be noted that, nonetheless, the researchers found a statistically significant difference in the level of satisfaction when they compared male and female parents. In essence, more female parents

were satisfied with the protective stabilization technique applied compared to male parents. The researchers attributed this to perhaps the communication technique applied by the health professional to females compared to men.

Furthermore, in a previous study in India, <sup>(39)</sup> parents of children absent from the operatory room exhibited higher heart rates (translated as anxiety) than those present in the operatory room. This implies that parents are overall more satisfied by being present during the procedures to ensure that protective stabilization is correctly offered. In these studies, the dentists mainly used basic behavior guidance techniques, e.g., verbal communication, voice control, and tell-show-do, to assure the parents and the children. It should be noted that, nonetheless, parents' satisfaction is complex and, at times, related to different personalities per parent.

## **2.5 The Acceptance rate of Protective Stabilization Techniques by Parents in Middle Eastern Countries**

Parents in Arab countries generally accept protective stabilization in pediatric dentistry, although there are variations in the specific method. For instance, there were significant discrepancies between educated/informed and uneducated/uninformed parents regarding protective stabilization and hand-over-mouth. The former group is largely receptive to protective stabilization than the latter group.<sup>(35-36)</sup> Research on the acceptance level of protective stabilization techniques by parents in middle east countries is scarce; this research managed to retrieve only three studies carried out in the region, including Sabbagh and Sijini<sup>(37)</sup>, carried out in Saudi Arabia, Harun et al.<sup>(38)</sup>, and Salem et al.<sup>(39)</sup>, carried out in Iran

Nonetheless, little or no research on parent satisfaction concerning these techniques has been conducted. In a study in Saudi Arabia, out of the 283 parents, 89.7% stated that they were satisfied with the communication and communicative guidance applied toward protective

stabilization.<sup>(37)</sup> Only 24% of the parents preferred to be separated from their children during the protective stabilization. The main reason a majority of the parents thought it was better to be present during the protective stabilization was due to safety and protection issues. Still, those who deemed it unnecessary to be present thought it would help improve the children's behavior.<sup>(37)</sup>

## **2.6 The Perception of Protective Stabilization by Dentists Globally**

In contrast to parents, dentists' acceptance of protective stabilization across the world is determined by other social, setting, and economic factors besides gender. For example, in a study done in the United States, dentists handling patient populations with lower socioeconomic statuses reported higher acceptance of protective stabilization than their counterparts practicing in areas with patients with high socioeconomic status.<sup>(29)</sup> Nonetheless, dentists in areas where the parents' acceptance of protective stabilization is high also tend to be more accepting of the practice.<sup>(29)</sup> Viewed from the perspective of the general acceptance of the practice by parents worldwide, it is inferred that dentists also accept the practice appreciably. It is also noted that protective stabilization is more acceptable among dentists in hospitals that receive fewer patients than extremely busy ones. While the report<sup>(29)</sup> does not quantify or indicate what a "busy" hospital is, it points out that female dentists who work in public hospitals and also run a private practice (in jurisdictions that allow dual practice) are more accepting of protective stabilization than those strictly in public or private practice alone. Generally, however, dentists widely accept protective stabilization, especially when it is indicated by necessary treatment. The common factors related to this acceptance include region, practice setting, socioeconomic status of patient base, perceptions of parental acceptance, and the dentist's gender.

PDs often have to care for uncooperative patients who are in need of urgent attention. Thus, a study done in France showed that a significant majority of dentists who accept protective stabilization justify it because it is a necessary BMT in some situations.<sup>(31)</sup> Additionally, although the dentists also report psychological impacts on themselves besides the patients and feelings of professional failure, they also report that they accept protective stabilization because it is always chosen in the child's best interests and has parental consent.<sup>(31)</sup> Another approach toward justifying and, therefore, accepting protective stabilization is the reason why it is necessary. These include the child's age, behavior, setting (including dental team and parents), and the number of procedures.<sup>(31)</sup> The justifications are inferred to mean that dentists tend to accept protective stabilization globally when necessary circumstances occasion it.

## **2.7 The Acceptance of Protective Stabilization by Dentists in Arab Countries**

Similar to how research on the acceptance level of protective stabilization techniques by parents in Arab countries has been insufficient, research on dentists in Arab countries regarding their acceptance level of this approach has noticeably been inadequately investigated. Our literature review managed to retrieve only one study that focused on Arab countries, by Nazzal et al.<sup>(7)</sup> In a study conducted in several Arab countries (UAE, Egypt, Saudi Arabia, Jordan, Qatar, Libya, Bahrain, Oman, Lebanon, and Kuwait),<sup>(7)</sup> 95% of the respondents reported they applied the tell-show-do technique, 89% applied the positive reinforcement technique, 83% used the voice control technique, and 68% involved the parental separation technique. Only 24% of the respondents accepted the hand-over-mouth exercise (HOME) mainly because it is generally viewed as a restraint toward protective stabilization. In this study,<sup>(7)</sup> the researchers found a significant association between the country of practice, country of obtaining pediatric dental training, specialty status, and advanced protective stabilization methods. For example, HOME and sedation were preferred more in less developed countries. Nonetheless, the acceptance and application of protective stabilization were generally high amongst dentists in

Arab countries. However, lack of training in the different techniques was a major concern.<sup>(7)</sup> To the authors' knowledge, this aspect has not been studied explicitly in the UAE. As it is known that both General Dental Practitioners (GDPs) and PDs see and manage child patients in the UAE,<sup>(46)</sup> research regarding the level of use and confidence in using protective stabilization and parents' perceptions in the UAE was deemed necessary and thus warranted the development of this project.

### **3. AIM**

To evaluate the acceptance of dentists and parents regarding the use of pediatric protective stabilization as a behavior management technique during children's dental treatment in the UAE.

#### **3.1 Specific objectives**

1. Determine and compare the dentists' and parents' acceptance of pediatric protective stabilization as a behavior management technique in the UAE.
2. Identify the relationship between demographic variables of the parents and their acceptance of protective stabilization of their children during dental treatment in the UAE.
3. Identify the relationship between the practitioner's demographic variables and specialty [i.e., GDP vs. PD] and the acceptance of the protective stabilization behavior management technique.
4. To investigate whether dentists obtain written consent from the parents before using the protective stabilization behavior management technique.

#### **3.2 Research questions**

1. Is protective stabilization behavior management technique accepted among dentists and parents in UAE?
2. Do the parents' demographic factors (gender, age, and education) affect their acceptance of protective stabilization?
3. Does the practitioner's specialty (i.e., GDP vs. PD) or country of qualification affect their acceptance of the protective stabilization behavior management technique?

4. Is there a correlation between dentists and parental acceptance of protective stabilization?
5. Is written consent obtained before using protective stabilization?

### **3.3 Null hypothesis**

Protective stabilization is not accepted among dentists and parents in the UAE, and there is no correlation between both groups' acceptance rate.

## 4. MATERIALS AND METHODS

### 4.1. Study Design:

A cross-sectional survey-based study followed the guidelines published “Strengthening the Reporting of Observational Studies in Epidemiology (STROBE) statement,” 2007. <sup>(47)</sup> Population. A sample of dentists (GDPs and PDs) and parents was obtained between the 1<sup>st</sup> of March 2021 and 31<sup>st</sup> of January 2022.

### 4.2. Sample size calculation:

The formula giving Cochran sample size for simple random sampling: <sup>(7, 12)</sup>

$$n = z_{\alpha/2}^2 \frac{p(1-p)}{d^2}$$

Where p is the proportion of acceptance, d is the precision of the estimate and  $z_{\alpha/2}$  and is the quantile of the 95% confidence interval was used. Considering a relative precision of 25% for “p.” Assuming a maximum permissible limit of 25% for p. Supposing we are to estimate the proportion p of acceptance within five percentage points with 95% probability. Supposing the maximum value of p is thought to be 77%. <sup>(7,12)</sup> Then the formula gives the value for n as the number of **parents** is:  $1.96*1.96*0.77*(1-0.77)/(0.05*0.05) = 272$  **Parents**. The number of the **dentists** is:  $1.96*1.96*0.89*(1-0.89)/(0.05*0.05) = 150$  **Dentists**.

### 4.3. Study design: (see the survey sample in Appendix 1 and 2)

Microsoft Forms® was used to conduct two online surveys to examine the parental acceptance and dentist’s acceptance of one type of advanced BMT, which is “protective stabilization.” The dentist’s survey was circulated to online UAE dentists’ associations, societies, and clubs. In contrast, the parent’s survey was distributed on social media among parent groups and children attending dental institutions and facilities like Dubai Dental Hospital (DDH) and other



UAE dental clinics. In addition, both surveys were also circulated through personal contacts. However, due to the anonymity of the questionnaire, no individual follow-up was carried out. The parents' questionnaire was written in English and Arabic (appendix 1) using validated and double-translated methods, while the dentists' questionnaire was written in English only (appendix 2). Both questionnaires were divided into two parts; the first part of the survey included demographic questions:

- Age
- Gender
- Nationality/Country
- Education
- Emirate of residency (parents) / practice (dentists).
- Medical insurance presence (parents).
- The number of children the parents have and whether they were treated under protective stabilization techniques.
- The country of qualification in the dentist's questionnaire and whether they practice in a private or governmental clinic.

In the second part of the survey, the parents and dentists were asked to rate their acceptance level on each protective stabilization type (HOME, papoose board, clinical holding, and lap-to-lap examination) based on a Likert Scale. Each of the four protective stabilization techniques was demonstrated in both questionnaires with a worded explanation adopted from Medical Dictionary and randomly displayed. Permission was granted to use the pictures of protective stabilization in this study from the authors of two published papers (Appendix 6). The dentists and the parent's surveys were piloted amongst ten dentists and ten parents, respectively, to assess usability, clarity of the pictures, and ease of completion. These responses were excluded from the final survey.

#### 4.4. Eligibility criteria

DENTISTS	
Inclusion Criteria	Exclusion Criteria
GDPs who see pediatric patients and PDs currently practicing in UAE.	GDPs who do not see pediatric patients, PDs who are not practicing, or dentists from other specialties.
PARENTS	
Inclusion Criteria	Exclusion Criteria
Parents of all children aged 0-12 years who have seen a dentist.	Parents of children older than 12 years.
All nationalities residing in UAE.	Parents not living in UAE or only a visitor.
Parents of children without any psychiatric disorders or special needs.	Parents of children with a known diagnosed psychiatric disorder or special needs.

#### 4.5. Outcomes and outcome measures:

This study has the following outcome: to have evidence-based information about the perception level among dentists and the acceptance rate of parents towards protective stabilization as a behavior management technique in UAE.

The outcome measure is a score based on the four photographs presented in both questionnaires. Secondary outcomes are the effect of the parent's demographics on their acceptance of protective stabilization of their children during dental treatment in UAE and if the practitioner's demographics affected their acceptance of protective stabilization.

#### 4.6. Data analysis:

Data was entered into the computer using IBM-SPSS for windows version 28.0 (SPSS Inc., Chicago, IL). Frequency tables' lines graph and measure of percentage and tendency and dispersion were performed as descriptive. Categorical variables were cross-tabulated to

examine the independency between variables. For such variables, logistic regression, the  $\chi^2$ -square test or Fisher's exact test as appropriate was used. Kolmogorov-Smirnov was used to test the normality of continuous variables. The Mann-Whitney test was used to compare the continuous variables between the two. The score of acceptance was calculated by summing all the questions. The higher acceptance was associated with the highest score. The mean percentage from the possible mean was used to categorize the items by the Likert scale of 5-points. A P-value of less than 0.05 was considered significant in all statistical analyses.

#### **4.7. Ethical consideration**

This study was conducted in full conformance with principles of the "Declaration of Helsinki", Good Clinical Practice (GCP), and within the laws and regulations of the UAE/DHCC. The ethical approval reference MBRU IRB-2021-50 (Appendix 3) was obtained from the Research Ethics Review Committee in Hamdan Bin Mohammed College of Dental Medicine and the IRB of Mohammed Bin Rashid University of Medicines and Health Sciences.

## 5. RESULTS

### 5.1 Parents Demographic Data

Surveys were returned by 137, out of these 7 were excluded and the final was 126 respondents. This was below the power calculation. The response rate was not calculated, as the questionnaires were partly posted on online public platforms. The gender was almost equally distributed 1.2:1 as male respondents were 54% and female respondents 46%. Half of the participants (parents) were between the ages of 31-40 (50%). The majority of the parents were expatriates, 77.8% (98/126), and 22.2% were UAE nationals (28/126).

Parents were from all of the seven UAE emirates. The geographic distribution was more concentrated in Dubai, where almost one-quarter of the respondents resided [23.8% (30/126)], followed by Fujairah at 17.5% (22/126), Sharjah 15.9% (20/126), Ajman 15.1% (19/126), Ras Al Khaimah 14.3% (18/126), Abu Dhabi 8.7% (11/126), and finally Um Al Quwain at 4.8% (6/126).

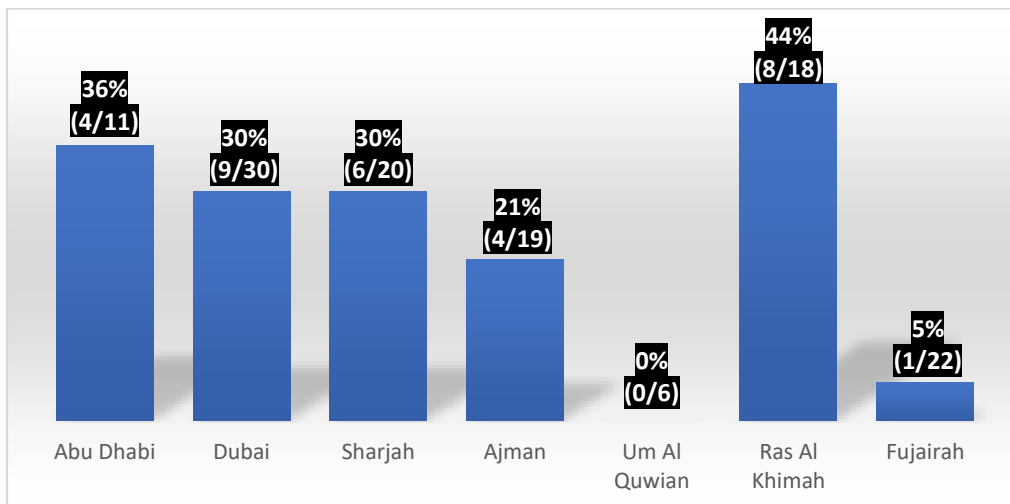
The academic qualifications of the parents also varied where more than half of them were Diploma and BSc holders (60.3%), followed by those with MSc and higher education (27.8%), and those with high school education (11.9%). Furthermore, the highest proportion of the parents had two children at 31% (39/126), followed by three children at 27.8% (35/126), one child at 24.6% (31/126), and the least were parents with four or more children 16.6% (21/126). Regarding medical insurance, the majority of the patients have medical insurance, 73.8% (93/126). Demographic data of parents are presented in Table 1.

#### 5.1.1. Overall Parents' Acceptance Rate of Protective Stabilization Techniques Based on Their Demographic Data

Education was not a factor affecting the acceptance rate of parents of protective stabilization techniques, as it was almost equal amongst parents with different levels of education, where

those holding a Diploma/bachelor’s degree had an acceptance rate of 25% (19/76), Master’s Degree/Higher Education 25.7% (9/35), High School Diploma 26.7% (4/15). Parents in Ras Al Khaimah had the highest acceptance rate of protective stabilization techniques, with 44.4% (8/18) of the overall acceptance rate. Abu Dhabi followed this at 36.4% (4/11), Dubai at 30% (9/30), and Sharjah at 30% (6/20), where they had equal acceptance rates, then Ajman at 21.1% (4/19), and Fujairah at 4.5% (1/22). In Umm Al Quwain, none of the parents found protective stabilization techniques acceptable (0/6), as presented in Figure 1.

**Figure 1. Overall acceptance of the parents to protective stabilization in relation to residing emirates.**



*N.B. Percentage Values were rounded up to the nearest tenth.*

In addition to this, insurance did not play a role in parents’ acceptance of protective stabilization; were parents with no medical insurance coverage [24.2% (8/33)] found protective stabilization techniques acceptable, whereas those who had medical insurance reported a similar acceptance rate of 25.8% (24/93).

Among males, the acceptance rate was 27.9% (19/68), and for females at 22.4% (13/58).

Among expatriates, 24.5% (24/98) found the technique acceptable, whereas, for UAE

Nationals, the acceptance rate was 28.6% (8/28). None of the above differences in demographic data were statistically significant.

## **5.2 Dentists' Demographic Data**

Surveys were returned by 125 respondents. This was below the power calculation. The response rate was not calculated, as the questionnaires were distributed on online public platforms. More than half, 66.4% (83/125), categorized themselves as GDPs, and 33.6% (42/125) as PDs. The majority of the respondents were female, 73.6% (92/125), outnumbering males at 26.4% (33/125) by 3:1. Moreover, the majority of the dentists were expatriates, 70.4% (88/125).

The geographic distribution was inclined more towards Dubai, where almost half of the respondents were from Dubai at 49.6% (62/125), followed by Abu Dhabi at 22.4% (28/125), Fujairah at 8% (10/125), Sharjah 7.2% (9/125), Ajman 4.8% (6/125), Ras Al Khaimah 4.8% (6/125), and Um Al Quwain 3.2% (4/125).

The years of practice in the UAE also varied, where more than half the dentists were practicing for less than five years at 56% (70/125) in comparison to those practicing more than five years at 44% (55/125).

Furthermore, almost half (49.6%) of the respondents practiced in private dental clinics (62/125), followed by those in governmental dental clinics 40.8% (51/125), and only 9.6% (12/125) practiced in both governmental and private clinics.

As for the country of qualification, majority 65.6% (82/125) of the respondents received their professional qualifications from the UAE, followed by those who received them from other Arab countries 17.6% (22/125), Western countries 15.2% (19/125), and India 1.6% (2/125), as presented in Table 1.

**Table 1: Demographic Data**

Items	Parents n (%)	Dentists n (%)
<b>Gender</b>		
Male	68 (54)	33 (26.4)
Female	58 (46)	92 (73.6)
<b>Age</b>		
23-30	33 (26.2)	61 (48.8)
31-40	63 (50)	42 (33.6)
41-50	24 (19)	17 (13.6)
+51	6 (4.8)	5 (4)
<b>Nationality</b>		
Expatriate	98 (77.8)	88 (70.4)
UAE	28 (22.2)	37 (29.3)
<b>Emirate of living</b>		
Abu Dhabi	11 (8.7)	28 (22.4)
Dubai	30 (23.8)	62 (49.6)
Sharjah	20 (15.9)	9 (7.2)
Ajman	19 (15.1)	6 (4.8)
Um Al Quwain	6 (4.8)	4 (3.2)
Ras Al Khaimah	18 (14.3)	6 (4.8)
Fujairah	22 (17.5)	10 (8)
<b>Education</b>		
MSc. & Higher	35 (27.8)	N/A
Diploma & BSc.	76 (60.3)	
High School	15 (11.9)	
<b>Number of children</b>		
One child	31 (24.6)	N/A
Two children	39 (31)	
Three children	35 (27.8)	
Four or more	21 (16.6)	
<b>Medical Insurance</b>		
No	33 (26.2)	N/A
Yes	93 (73.8)	
<b>Dentists' practice experience in UAE</b>		
< 5 years	N/A	70 (56)
≥ 5 years		55 (44)
<b>Dental Specialty</b>		
GDP	N/A	83 (66.4)
PD		42 (33.6)
<b>Place of work</b>		
Governmental dental clinic	N/A	51 (40.8)
Private dental clinic		62 (49.6)
Governmental and private		12 (9.6)
<b>Country of qualification</b>		
UAE	N/A	82 (65.6)
Other Arab country		22 (17.6)
Western countries		19 (15.2)
India		2 (1.6)

N/A: Not Applicable

N.B. Percentage Values were rounded up to the nearest tenth.

### **5.2.1. Overall Dentists' Acceptance Rate of Protective Stabilization Techniques Based on Their Demographic Data**

When compared the overall acceptance with the dentists' demographics, none were statistically significant. GDPs' acceptance rate was 48.1% (39/81), whereas, for PDs, it was 50% (21/42). The acceptance rate was more than half, 51.5% (17/33) for males and 46.7% (43/92) for females.

The majority of respondents were between the ages of 23 -30 at 48.8% (60/123) acceptance rate was 45% (27/60). Whereas for those aged 31-40, their acceptance rate was more than half at 51.2% (21/41), for those aged 41-50, the acceptance rate was also more than half at 52.9% (9/17), and for those aged 51-60, the acceptance rate was more than half at 60% (3/5). More than half the dentists practicing in the emirate of Fujairah found acceptance for protective stabilization techniques at 66.7% (6/9), followed by Dubai at 52% (32/61), Ras Al Khaimah at 50% (3/6), Umm Al Quwain at 50% (2/4), Abu Dhabi at 46.4% (13/28), Sharjah at 44% (4/9), and Ajman where none of the dentists participating the survey accepted the protective stabilization techniques (0/6) and rated the technique as poor acceptance.

According to the years of practice in UAE, those who have practiced for less than five years have an acceptance rate of 43.5% (30/70), in comparison to those practicing for more than five years, where more than half of them found acceptance for the use of protective stabilization techniques at 55.6% (30/55).

In addition, 45.1% (23/51) found the method accepted amongst those who worked in Governmental dental clinics. In contrast, more than half, 54.1% (33/62) of those working in private dental clinics and 36.4% (4/12) who work in both private and government accept stabilization techniques as a behavior management technique.



### 5.2.2. Comparison between GDPs and PDs answers

A question of concern regarding obtaining a written consent form from the parents before carrying out protective stabilization on the patient showed that more than half (67.5%) of GDP (56/83) obtained consent from the parents before administering any form of protective stabilization, which was relatively similar to the percentage of PDs where (66.7%) of them (28/42) stated that they would consent.

In addition, another question addressed whether the dentists believe that the benefits of PPS outweigh the risks or not. Almost half (50.6%) of GDPs (42/83) believed that the benefits outweigh the risks. Whereas, for PDs, 73.8% (31/42) thought that the benefits of PPS outweigh the risks.

Moreover, 39.8% (33/83) of GDPs were against the use of PPS if it was not an emergency treatment. On the other hand, only 7.1% (3/42) of the PDs were against its use if the condition did not require emergency intervention. Due to the low sample size, the above data were not analyzed to evaluate the p-value. In addition, the lap-to-lap technique was the most accepted technique for GDPs and PDs with an acceptance rate of [(2.23/5) ( $\pm 1.05$ )] and [(1.64/5) ( $\pm 0.93$ )] while Papoose board and HOM were the least accepted by GDPs with an acceptance rate of [(3.4/5) ( $\pm 1.32$ )] on the other hand, HOM was the least accepted by PDs [(4.02/5) ( $\pm 1.1$ )] as presented in Table 2.

**Table 2: Acceptance rate of Protective Stabilization Techniques for GDPs vs. PDs**

	Technique	Papoose board	Hand over mouth	Lap-to-Lap	Clinical holding
GDP	n	83	83	83	83
	Mean	3.4 ( $\pm 1.32$ )	3.4 ( $\pm 1.2$ )	2.23 ( $\pm 1.05$ )	2.54 ( $\pm 1.01$ )
	Category	N-Dis A	N-Dis A	A	A-N
PD	n	42	42	42	42
	Mean	2.7 ( $\pm 1.17$ )	4.02 ( $\pm 1.1$ )	1.64 ( $\pm 0.93$ )	2.21 ( $\pm 1.16$ )
	Category	N-Dis A	Dis A	S.A -A	A-N

S. Dis= Strongly Disagree, Dis= Disagree, N= Neutral, Ag=Agree, S. Ag= Strongly Agree

### **5.3 Comparison of the acceptance of protective stabilization techniques by parents and dentists**

The next series of questions dealt with protective stabilization acceptance during dental treatment for parents and dentists. The majority (66.7%) of the parents (81/126) stated that their children have never received any of the protective stabilization techniques. In addition to this, more than half (54%) of the parents (68/126) stated that they prefer their child to receive protective stabilization over GA, as stated in Figure 2. On the other hand, more than half (53.6%) of the dentists (67/125) felt they need to use protective stabilization. Furthermore, more than half (67.2%) of the dentists (67/126) felt the need to obtain consent from the parents before resorting to protective stabilization, as stated in Table 4.

Moreover, parents mostly agreed to Lap-to-Lap [(2.48/5) ( $\pm 1.18$ )] and clinical holding [(2.87/5) ( $\pm 1.17$ )] over other techniques. In contrast, the Hand-Over-Mouth technique received the least acceptance [(3.89/5) ( $\pm 1.08$ )], as presented in Table 3.

Protective stabilization techniques in case of non-emergency were categorized as per participants' acceptance level. Lap-to-Lap technique was found to be accepted by parents and dentists with an acceptance rate of [(2.48/5) ( $\pm 1.18$ )] and [(2.03/5) ( $\pm 1.05$ )] respectively, making it their method of choice in the event of non-pharmacological protective stabilization ( $p < 0.001$ ). HOME was the least accepted technique for the parents and dentists with an acceptance rate of [(3.89/5) ( $\pm 1.08$ )] and [(3.61/5) ( $\pm 1.91$ )] respectively, making it the least accepted protective stabilization technique for the parents and dentists ( $p = 0.069$ ).

In general, more than half (54%) of the parents (68/126) were against the use of protective stabilization for their children's dental treatment if it is not an emergency, in comparison to 28.8% (36/126) of the dentists ( $p < 0.001$ ) as presented in Table 5.

Furthermore, 59.6% (31/52) of the dentists believed the benefits of protective stabilization outweigh its risk.

**Table 3: Comparison of the acceptance of protective stabilization techniques by parents and dentists**

Technique	Parents		Dentists		P-value
	Mean (SD)	Category	Mean (SD)	Category	
<b>Papoose Board</b>	3.71(±1.14)	N	3.38(±1.27)	N to Dis	<b>0.038*</b>
<b>Hand Over Mouth</b>	3.89(±1.08)	N to Dis	3.61(±1.91)	N to Dis	0.069
<b>Lap-to-Lap</b>	2.48(±1.18)	Ag to N	2.03(±1.05)	Ag	<b>&lt;0.001*</b>
<b>Clinical Holding</b>	2.87(±1.17)	S. Ag to Ag	2.43(±1.24)	Ag to N	<b>0.002*</b>
<b>Total</b>	12.96(3.31)	N	11.45(3.6)	Ag to N	<b>&lt;0.001</b>

S. Dis= Strongly Disagree, Dis= Disagree, N= Neutral, Ag=Agree, S. Ag= Strongly Agree

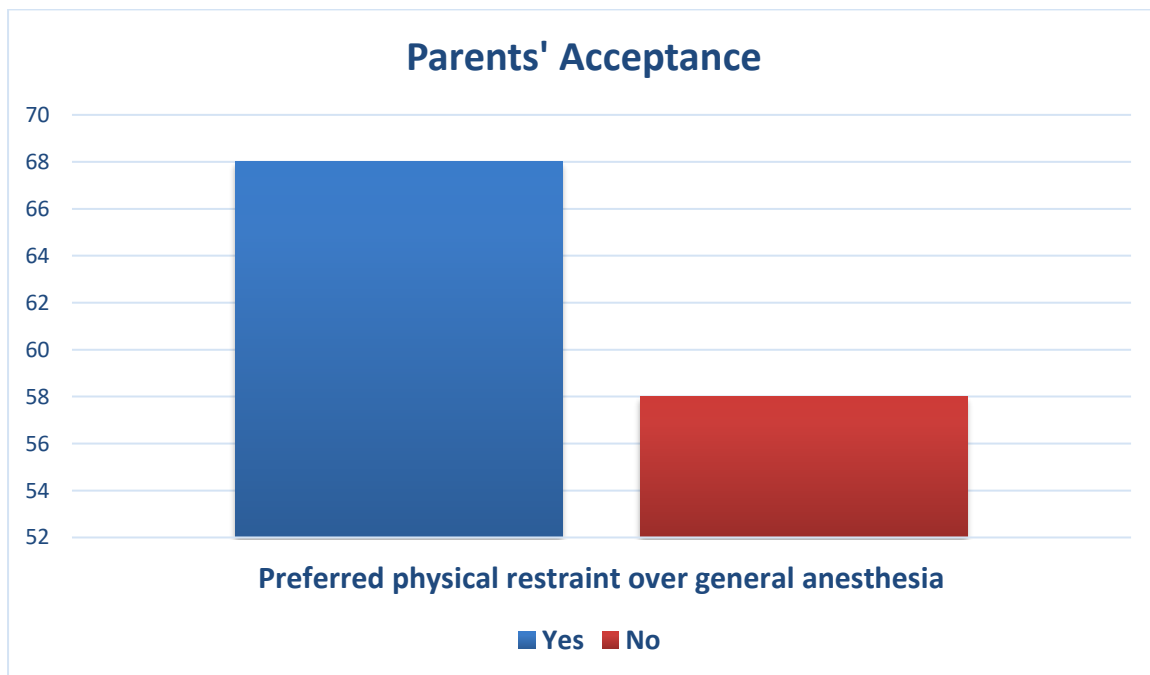
**Table 4: Protective stabilization during dental treatment for parents and dentists**

Technique	Parents n (%)	Dentists n (%)
<i>Has your child ever received any protective stabilization techniques?</i>		
No	84 (66.7)	N/A
Yes	42 (33.3)	N/A
<i>Do you prefer protective stabilization over general anesthesia?</i>		
No	58 (46)	N/A
Yes	68 (54)	N/A
<i>Have you ever felt the need to use protective stabilization techniques?</i>		
No	N/A	58 (46.4)
Yes	N/A	67 (53.6)
<i>Do you obtain consent from the parent for protective stabilization?</i>		
No	N/A	41 (32.8)
Yes	N/A	67 (67.2)

**Table 5: Protective Stabilization Techniques acceptance rate in case of routine (non-emergency) dental treatment**

Technique	Parents	Dentists	P-value
<b><i>Papoose board</i></b>			
Not chosen	118 (93.7)	120 (96)	0.296
Chosen	8 (6.3)	5 (4)	
<b><i>Hand over mouth</i></b>			
No chosen	114 (90.5)	114 (91.2)	0.427
Chosen	12 (9.5)	11 (8.8)	
<b><i>Lap to Lap</i></b>			
No chosen	70 (55.6)	73 (58.4)	0.344
Chosen	56 (44.4)	52 (41.6)	
<b><i>Clinical holding</i></b>			
No chosen	103 (81.7)	55 (44)	<0.001*
Chosen	23 (18.3)	70 (56)	
<b><i>Against protective stabilization, if it's not emergency</i></b>			
Not chosen	58 (46)	89 (71.2)	<0.001*
Chosen	68 (54)	36 (28.8)	

**Figure 2. Parents' acceptance of Protective Stabilization over GA**



## 6. DISCUSSION

At least one child in ten presents some degree of dental fear and anxiety that prevents their ability to cooperate to receive dental treatment.<sup>(17)</sup> The “United Nation’s convention on Children's rights underpins each child’s entitlement to be treated safely and with dignity ”<sup>(27)</sup> This is especially important when BMTs come into play to manage those who exhibit challenging behavior or suffer from fear or anxiety. However, while the use of BMTs is standard in pediatric dentistry, the use of protective stabilization, like the Papoose board, is not universally accepted.<sup>(60)</sup> To the best of the authors’ knowledge, this study was the first to survey and compare the acceptance of GDPs and PDs, and the parents towards protective stabilization techniques in the UAE.

This study showed that parents and dentists in the UAE have different perceptions about BMTs and did not rank them the same. However, PB was the least accepted PPS technique for both the parents and dentists.

Based on the participants’ responses, the majority of respondents were from Dubai, as this Emirate is the largest in population in the UAE, with a population of 3.5 million<sup>(76)</sup> contributing to more than 35% of the total population in the UAE,<sup>(77)</sup> hence having the largest number of dentists and parents than the other less populated Emirates. Moreover, the parents’ questionnaire was also distributed at Dubai Dental Hospital in Dubai, which might also explain the higher number of participants from Dubai.

The highest acceptance rate of protective stabilization techniques among dentists was from Dubai. In contrast, the least acceptance for protective stabilization techniques was from the Emirate of Ajman, where none of the dentists preferred using protective stabilization techniques in their practice. This could be because Dubai is considered the business capital of the UAE, with a diverse range of citizens and dentists. In addition, the number of dentists

participating from Ajman was small and might not have been representative enough of the dentists practicing in Ajman (6/125).

When it came to the parents' acceptance of protective stabilization for children in UAE, Ras Al Khaimah had the highest acceptance rate. This might be explained by the fact that in Ras Al Khaimah, patients have less access to other pharmacological behavior management techniques by PDs and access to other neighboring emirates' facilities that might, in turn, make the option of protective stabilization the most feasible option. On the other hand, Um Al Quwain had a staggering 100% disagreement, which may be attributed to the fact that there were a small number of participants between the residents of Um Al Quwain and other emirates. A similar explanation was reported in other studies. They considered the use of protective stabilization alone due to limited access to other pharmacological BMTs such as nitrous oxide sedation, particularly for dentists treating children in remote areas.<sup>(14,17)</sup>

Among the advanced behavior management techniques, protective stabilization is recognized by dentists and parents as a method that is deemed safer. It requires little to no intervention when treating uncooperative pediatric patients. Protective stabilization sets aside the pharmacological or hospitalization measures of intervention, which might be perceived as a safer alternative with a much lower cost of treatment. A study conducted in Brazil<sup>(30)</sup> showed that parents could accept protective stabilization even though it may cause emotional discomfort for them, as they realize how it is essential for dental treatment, where the only remaining alternatives are either sedation or GA. However, other studies have shown that Protective Stabilization and GA are among the BMTs available that are least favorable to the parents.<sup>(48, 49, 50, 51)</sup> Our study addressed the acceptance rate for protective stabilization and its preference over GA. Although the majority of the parents (66.7%) have stated that their children have never received any form of protective stabilization during dental treatment, more

than half (54%) of the parents stated they would prefer to use it over GA. This is despite the fact that pediatric restorative dental GA in the UAE<sup>(45)</sup>, had been found to be acceptable by parents and has improved the quality of life in children. The present study showed an aversion to GA. This may be attributed to the concern regarding risks associated with such procedures by parents, the very high cost of the procedure, which is usually not covered by medical insurance in UAE, along with the lack of abundance of facilities that provide such specialized healthcare services options, especially with the infamous increased incidence of the adverse event “failure to rescue” which has historically been associated with undergoing GA and sedation in a non-hospital environment because they usually lack the immediately available back-up in case of emergency.<sup>(52, 53)</sup> Despite the GA being highly safe, it is still very costly for families getting treatment in private hospitals when appropriately administered in a proper setting.<sup>(54, 55)</sup> In addition to this, the US Food and Drug Administration (FDA) does not recommend the repeated or prolonged use (>3 hours) of GA for those under the age of three years since they are more vulnerable to cerebral development issues, or respiratory complications which may be accompanied by GA postoperatively.<sup>(56, 78)</sup> Above reasons might justify the use of protective stabilization techniques by dentists and parents. Moreover, in children with special needs or with cognitive impairments, protective stabilization provokes emotional discomfort in dental professionals and families; however, it is tolerated as it allows the child’s dental treatment.<sup>(31)</sup>

Previous studies<sup>(12, 57)</sup> have stated that education can play an essential role in the acceptance rate of parents towards protective stabilization carried out by the dentist, whereas parents with a Diploma and/or BSc. and higher would be less accepting of such techniques. In addition, the parents' age and the number of children played an essential role in these studies<sup>(12, 57)</sup>, where newer parents were more likely to accept protective stabilization techniques than older parents. However, the findings of our study did not show those relations. This study did not find a

statistically significant relationship between the acceptance rate of parents towards protective stabilization techniques and the demographics (i.e., age, gender, number of children, the Emirate of living, medical insurance coverage, etc.). This could be attributed to the influence of parental emotional feelings, affecting the parent's acceptance of certain treatment regardless of their age and level of education. Previous research has reported that those decisions about healthcare treatment can be intimately connected with parental personal perceptions and interpretations of information, communication, and emotions.<sup>(12, 31, 57)</sup> Another study<sup>(31)</sup> found that sometimes the way the dentists share information regarding restraint techniques can influence the parent's behavior towards the use of protective stabilization. On the other hand, sometimes, the practitioner can be under the pressure of an insistent family, which can add an extra burden to the provision of dental services under protective stabilization. The acceptability of the technique is directly associated with the bond and relationship of trust between the parents and care providers.<sup>(62)</sup>

As for the dentists, there was a good representation of practitioners from different clinical sectors in the current study. The respondents were divided almost evenly among private and governmental sectors in the UAE. However, dentists working in the private sector showed more acceptance as the GA facility comes with high fees, with insurance covering only the dental aspect of the procedure (excluding the operation room, anesthesia, preparations, consultations with the anesthesiologist, etc.), adding a burden to have the parents accept GA and not use the protective stabilization.

A recent study<sup>(7)</sup> found a correlation between the dentists' education and the country of practice and the acceptance rate of protective stabilization techniques, attributed to cultural differences and ease of access to GA. For example, in some countries where GA is readily available and fully funded by the government for patients, like UK, the need for utilizing protective stabilization techniques is less.<sup>(7)</sup> For example, using the Papoose board in the UK is considered



unacceptable and banned for ethical reasons.<sup>(8, 79)</sup> Another study<sup>(31)</sup> found that the environment in which the child has grown, along with the social, economic, and geographic exposure, affects the decision of protective stabilization by the dentist. The dentists' personal lives also played a part, where being a parent influenced the dentist's perception and acceptance of protective stabilization. On the other hand, some countries like Kuwait, Qatar, and UAE, do not have access to free GA for all patients, especially the expatriates who are not eligible for government-funded dental services.

On the other hand, there were studies<sup>(28, 58, 59)</sup> that found that regardless of the dentists' and other health care providers' demographics, dentists mostly had negative feelings and emotional challenges in using protective stabilization techniques, irrespective of the gender, they have reported there is personal stress when it comes to the use of protective stabilization. This stress may affect the ability of the dentist to make good decisions, along with the quality of the treatment provided. These findings were in line with our study, which found no significant correlation between the dentists' demographics and the acceptance rate of protective stabilization techniques which might be attributed to their emotions and empathy. In addition, two studies<sup>(31, 65)</sup> have discussed managing the psychological impact on children resulting from protective stabilization, stating that those negative psychological impacts on the caregivers can be controlled by some measures such as "rationalization,"- which involves being convinced that protective stabilization is used for good reasons, or "compensation" which involved spending disproportionate time with the person after having contained it, in addition to sharing with colleagues these experiences.

In our study, more than half of the dentists felt the need to use protective stabilization at one point. They believed that its benefits outweighed the risks, mainly because the dental treatment involves the use of instruments that may injure the patient in the event of sudden unexpected

movements, which starts from the beginning of therapy by administering local anesthesia, with the ongoing use of rotary dental instruments, which can hurt not only the child but also the dentist and the medical care team as well. In such cases, protective stabilization protects both the child and the dental team.<sup>(31)</sup>

Moreover, 39.8% of the GDPs were against protective stabilization techniques in non-emergency situations. In contrast, only 7.1% of PDs were against using it if it was not an emergency. This may be due to the fact that they believe it is an important BMT that should be available for use in lieu of more costly pharmacological interventions such as GA. Interestingly, when we compared the responses of GDPs vs. PDs, we found for this specific question that the majority (73.8%) of PDs believed that the benefits outweigh the risks of using protective stabilization, which was much higher than the GDPs, where almost only half of them expressed their acceptance. Again, this may be attributed to the fact that GDPs usually deal with generally compliant patients.

In contrast, non-compliant or pre-cooperative patients are usually referred to PDs, where they use different BMTs to carry out the treatment as needed as they have no options to refer like GDPs. On the other hand, studies<sup>(63, 64)</sup> in the USA have shown that there has been a decrease in the acceptance of protective stabilization by American PDs in favor of pharmacological management, such as sedation. Another study in Norway<sup>(28)</sup> has shown that GDPs believed that protective stabilization techniques for children could pose a moral dilemma in pediatric dentistry and might be acceptable when it is essential to a conscious sedation procedure.

Another reason for this may be, as mentioned earlier, the role of emotional factors in the medical decision of parents for their children that GA is not easily accessible in all settings and may present an economic burden on the parents who have no alternative other than resorting

to protective stabilization to compensate for the absence of GA, as mentioned in some studies.

(7, 48, 49, 50, 51)

Protective stabilization can be used in certain procedures in pediatric dentistry<sup>(66, 67)</sup>. Still, it bears unavoidable risks to the patients, their families, and the dental team if not properly indicated and carried out. <sup>(67, 69, 70, 71, 72, 73)</sup> Accordingly, the decision regarding the use of protective stabilization should be made by both the family and the dentist together, as it will involve the child's well-being, with special attention to the alternative measures and the values involved. It is recommended to obtain written consent before using any BMT, specifically protective stabilizations, which can be stressful and traumatic for both the child and the parents. <sup>(7, 26 60, 61)</sup> This will need the dentist to have the scientific knowledge and training to perform the protective stabilization techniques and consider the legal and ethical aspects of communicating with the parents and explaining what kind of protective stabilization measure will occur. Such communication before the treatment can increase parental cooperation, reduce their objections, and reduce post-treatment complaints. <sup>(7, 12)</sup> In our study, both GDPs and PDs showed similar results regarding obtaining informed consent. Almost half of the GDPs and PDs obtain consent before carrying out protective stabilization techniques, which is below the international recommendations<sup>(61)</sup> of 100%. This might be due to either dentist being not aware of the process or not adhering to it. <sup>(7)</sup>

The majority of the parents with previous protective stabilization experience for their child have stated that they disagreed with the use of protective stabilization techniques, which may be attributed to the fact that these techniques, when used, may have left a traumatic experience for the parents and their children during the first time, <sup>(26, 32)</sup> which is in correlation with the AAPD warning stating that protective stabilization can be psychologically harmful, and can be a factor in developing “dental phobia.” <sup>(66)</sup>

Moreover, as for the acceptance rate of protective stabilization, studies found that the least acceptable technique by the parents <sup>(12, 30, 62, 63)</sup> and the dentists <sup>(7, 8, 12, 62)</sup> was the Papoose board technique as it was perceived as dehumanizing where the child is restrained with no form of physical touch to the child. These findings correlate with our current study, where the Papoose board technique was the least accepted by parents and dentists, that may be attributed to emotional feelings. However, besides the reasons mentioned above, another factor for the UAE dentists may be that they are not familiar with the technique since it is not used widely in the UAE as per the authors' experience. In addition, some licensure regulatory bodies in the UAE prohibit using the papoose board by dentists while treating their patients.

Previous studies found that parents prefer the addition of human touch and being present during their child's treatment. <sup>(12, 30)</sup> This correlates with our findings where the parents have found the most acceptable technique of PPS to be the lap-to-lap Technique, where the child is experiencing human touch, and the parents are present, providing psychological and emotional comfort for themselves and the child. Moreover, considering the nature of this technique, it is widely used and suitable for small size children, usually below the age of three, and used for quick procedures such as examinations which increases its acceptance over other pharmacological and non-pharmacological techniques.

Dentists have the duty to promote the well-being of their patients through practice that is deemed responsible. The quality of care given to dental patients can be measured by the frequency at which protective stabilization is applied. The frequent and repeated use of such traumatic techniques can be related to abusive attitudes by professionals, who should be charged for abusing the use of these methods.<sup>(69)</sup> There are no guidelines to specify the minimum or maximum allowed usage of protective stabilization. There must be a recommendation or a guideline to specifically indicate a minimum level of protective

stabilization usage to serve as a threshold to ensure that the service given to the patient is considered beneficial, appropriate, and adheres to the ethical principles.

Finally, children who do not have a full capacity are usually subject to heteronomy, mainly because they are not of legal age, allowing them to have full autonomy, making them unable to have full power to make decisions regarding their lives.<sup>(74)</sup> Considering this, when a child rejects cooperation with dental treatment, the decision on whether or not to use such techniques that may be deemed harsh and cruel to manage a child's behavior should be guided based on the principle of beneficence. This means that guardians and dentists should cooperate to make a unanimous decision in the child's best interest while protecting the child and assessing the potential systemic risk involved and considering the potential systemic risk involved and considering the dental benefit.<sup>(75)</sup>

This observational study has limitations. The sample of parents and dentists chosen was a convenience sample. Although it had representation from all regions of the UAE, it was not randomly chosen nor precisely represented the distribution of dentists and population in the UAE. Furthermore, the study results may have been limited by the inherent limitations of any self-administered questionnaire survey design. The cultural and demographic differences between local communities that might have affected the participants' perceptions of the use of protective stabilization techniques were not studied. Another limitation could be that pediatric dentists typically have to deal with younger patients and more patients with behavioral challenges, which might have affected their perception of the use of protective stabilization. Additionally, we have used pictures with a definition of each PPS technique. However, visual demonstration in the form of video would give a better demonstration as to the full picture of the technique including how it is carried out from the start to finish, in addition to the child's reactions involving their body language and vocal tone. As for the PPS techniques overall

acceptance rate, we have included all the techniques in the calculations. However, techniques such as Lap-to-Lap technique which is widely used and accepted in the field of pediatric dentistry might skew the overall acceptance rate calculated.

## **7. CONCLUSIONS AND RECOMMENDATIONS**

### **7.1 Conclusions**

In the sample of UAE parents and dentists, and within the aforementioned limitations, it can be concluded that:

- Dental practitioners' views were neutrally divided evenly between acceptance and non-acceptance of protective stabilization techniques.
- Parents' demographic data did not play a role in the acceptance rate of protective stabilization techniques. The dental practitioner's specialty and country of practice also did not affect the acceptance rate of protective stabilization techniques.
- The lap-to-lap Technique ranked as the most favorable for the parents, and dentists followed by clinical holding. On the other hand, HOME was the least accepted protective stabilization technique for both the parents and the dentists.
- Almost half of the GDPs and PDs would obtain consent before carrying out protective stabilization techniques, which is below the required international recommendations of 100%.

### **7.2 Recommendations**

All dental practitioners should follow the international and regional guidelines of protective stabilization (i.e., training, obtaining written consent, and restricting the use of these techniques only to emergencies).

Our study revealed that parents' attitude was the main factor affecting their acceptance of protective stabilization. However, future research is needed to address the dental participants' perception of protective stabilization, considering their parenthood status.

To date, there are no guidelines to specify the minimum allowed usage or maximum permitted use of protective stabilization. Therefore, there must be a commitment or a policy to precisely determine the indications for the use of protective stabilization, emphasizing the importance of a minimal level of use to serve as a threshold to ensure that the service given to the patient is considered beneficial, appropriate, and adhering to the ethical principles.



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[safety-and-availability/fda-drug-safety-communication-fda-approves-label-changes-use-general-anesthetic-and-sedation-drugs](#)

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## 9. APPENDICES

### 9.1 APPENDIX 1

The parents' questionnaire was written in English and Arabic on Microsoft Forms® using validated and double translated methods

English (United States) ▾

#### Parents Questionnaire

\* Required

##### Demographics

1

إذا كانت لغتك المفضلة هي اللغة العربية يرجى الضغط على أعلى يمين الصفحة لتغيير اللغة

You are invited to take part in a research questionnaire about the 'Protective stabilization for children as part of advanced behavior management techniques in dentistry: dentists' perceptions and parents' acceptance in UAE'. Your participation in this research study is entirely voluntary. You may choose not to participate. If you decide to participate in this research survey, you may withdraw at any time without any negative repercussions. If you wish to participate, you will be asked to answer a series of questions which will take approximately 3 minutes. You will be asked questions regarding your demographic data. You will then be asked to address your opinion regarding different Protective Stabilization types displayed in pictures. Your responses will be kept confidential and you will remain anonymous as the study does not collect any personal information such as name or email address. All information obtained from this study will be used strictly for research purposes only. If the study information is to be used in any subsequent investigation, your consent will be taken.

If you have any questions about the research study, please contact [sherouk.elhamadi@residents.mbru.ac.ae](mailto:sherouk.elhamadi@residents.mbru.ac.ae) (<mailto:sherouk.elhamadi@residents.mbru.ac.ae>)

Clicking "I agree" indicates that you have read the information, that you are a parent of a child who is 0-12 years old, living in UAE, a parent of a child without a special need or psychiatric disorder and that you give your consent to participate in this survey. \*

I agree

2

Do you have a child between the age of 0-12? \*

Yes

No

3

My gender: \*

Female

Male

4

My age: \*

- 20-30
- 31-40
- 41-50
- 51-60
- 60+

5

I am a UAE : \*

- National
- Resident

6

Nationality: \*

7

I live in ? \*

- Abu-Dhabi
- Dubai
- Sharjah
- Ajman
- Um Al Quwain
- Ras Al Khimah
- Fujairah

8

Education : \*

- Master's degree or higher education
- diploma or bachelor
- High school graduate

9

Number of Children in the family \*

- 1
- 2
- 3
- More than 3

10

Do you have a child with a special need or behavior disorder (eg. Autism)? \*

- Yes
- No

11

Do you have a medical insurance? \*

- Yes
- No

Physical restraint techniques:

You will now be seeing four pictures demonstrating four types of Physical Restraint each with its description. Kindly rate your acceptance level of each technique when its used in case of dental emergency treatment of your child and you do not have access to treatment under general anesthesia.

12

1-Papoose board technique

Using a restraint device designed to immobilize a child, during dental work. \*



	Strongly Disagree	Disagree	Neither Agree Nor Disagree	Agree	Strongly Agree
Agreement	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

2- Hand over mouth technique :

When the dentist gently places a hand over the child's mouth and tells the child that his hand will be removed as soon as the child is quiet and can listen without being loud and disruptive. \*



	Strongly Disagree	Disagree	Neither Agree Nor Disagree	Agree	Strongly Agree
Agreement	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>



3- Lap-To-Lap technique:

Is a technique when a child will partially lay on one of his/her parents lap looking towards him/her during their examination, while the child's head will be in the dentist's lap. \*



	Strongly Disagree	Disagree	Neither Agree Nor Disagree	Agree	Strongly Agree
Agreement	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

15

4- Clinical holding technique:

A type of physical restraint when dentist, parents and or dental assistants physically immobilizes or reduces the ability of a patient to move by holding his or her arms, legs, body, or head. \*



	Strongly Disagree	Disagree	Neither Agree Nor Disagree	Agree	Strongly Agree
Agreement	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

16

Has your child ever received any of the above mentioned physical restraint during dental treatment? \*

- Yes
- No

4/21/2022

17

would you prefer to use above mentioned physical restraint techniques over treatment under general anesthesia (complete sleep)? \*

- Yes
- No

18

Which of above mentioned physical restraint techniques would you accept in case of routine (not emergency) dental treatment. (You can select more than one answer) \*

- Hand over mouth
- Clinical holding
- Lap to lap
- Papoose board
- I am against physical restraint if its not emergency treatment

---

This content is neither created nor endorsed by Microsoft. The data you submit will be sent to the form owner.

 Microsoft Forms

## 9.2 APPENDIX 2

Dentists' questionnaire on Microsoft Forms® was written in English only.

English (United States) ▾

### Dentists' Questionnaire



\* Required

Consent form

1

You are invited to take part in a research questionnaire about the 'Protective stabilization for children as part of advanced behavior management techniques in dentistry: dentists' perceptions and parents' acceptance in UAE'. Your participation in this research study is entirely voluntary. You may choose not to participate. If you decide to participate in this research survey, you may withdraw at any time without any negative repercussions. If you wish to participate, you will be asked to answer a series of questions which will take approximately 3 minutes. You will be asked questions regarding your demographic data. You will then be asked to address your opinion regarding different Protective Stabilization types displayed in pictures. Your responses will be kept confidential and you will remain anonymous as the study does not collect any personal information such as name or email address. All information obtained from this study will be used strictly for research purposes only. If the study information is to be used in any subsequent investigation, your consent will be taken.

If you have any questions about the research study, please contact [sherouk.elhamadi@residents.mbru.ac.ae](mailto:sherouk.elhamadi@residents.mbru.ac.ae) (<mailto:sherouk.elhamadi@residents.mbru.ac.ae>)

Clicking "I agree" indicates that you have read the information, that you are a Pediatric dentist or a general dentist who is practicing in UAE. \*

I agree

## Demographics

2

Gender is : \*

- Male
- Female

3

Age: \*

- 23-30
- 31-40
- 41-50
- 51-60
- 60 +

4

I am a : \*

- UAE national
- Resident

5

nationality: \*

6

How many years I have been practicing in UAE? \*

- less than 5 years
- 5 years or more

7

Emirate of practice ? \*

- Abu Dhabi
- Dubai
- Sharjah
- Ajman
- Umm Al Quwain
- Ras Al Khimah
- Fujairah

8

Specialty: \*

- General Dentist
- Paediatric Dentist

9

State the countries where you got your latest qualification : \*

10

Where do you work ? \*

- Governmental dental clinic
- Private dental clinic
- Private and Governmental dental clinic

11

Do you treat Paediatric Patients ? \*

- Yes
- No

12

Have you ever felt the need to use Physical Restraint? \*

- Yes
- No

4/21/2022

13

Do you obtain a consent from the parents before performing Physical Restraint Techniques? \*

- Yes
- No

14

Do you believe that the benefits of Physical Restraint outweigh its risks? \*

- Yes
- No

4/21/2022

Physical restraint techniques :

You will now be seeing four pictures demonstrating four types of Physical Restraint each with its description. Kindly rate your acceptance level of each technique when its used in case of emergency dental treatment of a child and you do not have access to treatment under general anesthesia.

15

1-Papoose board technique:

Is a restraint device designed to immobilize a child, during dental work. \*



	Strongly Disagree	Disagree	Neutral	Agree	Strongly agree
Agreement	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

4/21/2022



2- Hand over mouth technique :

when the dentist gently places a hand over the child's mouth and tells the child that his hand will be removed as soon as the child is quiet and can listen without being loud and disruptive. \*



	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
Agreement	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

3- Lap-To-Lap technique:

Is a technique when a child will partially lay on one of his\her parents lap looking towards him\her during their examination, while the child's head will be in the dentist's lap. \*



	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
Agreement	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

4- Clinical holding technique:

A type of physical restraint when dentist ,parents and or dental assistance's physically immobilizes or reduces the ability of a patient to move by holding his or her arms, legs, body,or head . \*



	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
Agreement	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>


19

5- Which Physical Restraint Technique/s are you mostly using? (You can select more than one answer) \*

- Papoose Board
- Clinical Holding
- Lap to Lap
- Hand Over Mouth
- I do not use any of the physical restraint techniques.

---

This content is neither created nor endorsed by Microsoft. The data you submit will be sent to the form owner.

 Microsoft Forms

4/21/2022

### 9.3 APPENDIX 3

The ethical approval from the Research Ethics Review Committee at Mohammed Bin Rashid University of Medicine and Health Sciences.



Dec 15, 2021 2:17:56 PM SGT

Sherouk Elhamadi  
Pediatric Dentistry, HBMCDM - Dean Office

Re: Initial Review- MBRU IRB-2021-50  
Initial Protective stabilization for children as part of advanced behavior management techniques in dentistry: Dentists' perceptions and parents' acceptance in the United Arab Emirates

Dear Sherouk Elhamadi:

Thank you for submitting clarifications to the observations raised by the IRB on the above-referenced study. The Board has reviewed the same and has agreed to approve it.

The approval is valid from December 14, 2021 for a period of one year. The project can now commence.

Any change in protocol should be notified to the Board through the system.

Sincerely,

Essa Kazim  
Chair






MBRU Institutional Review Board







## 9.6 APPENDIX 6 (Permission to use the pictures)

Re: Research Project Inquiry

 McTigue, Dennis <mctigue.1@osu.edu>  
To:  Anas AlSalami  
Cc:  Sherouk Elhamadi D19

[Reply](#) [Reply All](#) [Forward](#)  

Tue 16/02/2021 00:44

This message is from an external sender. Please take care when responding, clicking links or opening attachments.

Dear Dr. AlSalami,

I think you are referring to my chapter in Dental Clinics of North America. While it is certainly fine with me if your graduate student uses those images in his/her dissertation, only the publisher can grant permission. I am confident that they will so please contact them at the address in the front of the book. I wish you & your student the best.

Dennis

Dennis J. McTigue, DDS, MS  
Professor Emeritus, Division of Pediatric Dentistry  
Ohio State University  
305 W. 12th Ave.  
Columbus, OH 43210