Universidad Europea

GRADUATION PROJECT

Degree in Dentistry

Behaviour management in the pediatric patient.

Madrid, academic year 2022/2023

Identification number: 147

ABSTRACT

Introduction: Behaviour management techniques (BMT) were researched to see the effect they have in situations with uncooperative paediatric patients and how they can be used to aid the formation of a positive trusting dentist-patient relationship. **Objectives:** The primary objective of this research was to identify the most common and effective BMT's. The secondary objective was to evaluate if the gender of the healthcare professional has an impact on the type of management technique they may select. **Methodology:** A questionnaire was constructed to ask students of the Universidad Europea de Madrid (UEM) dental clinic about BMT's. The questions involved rating certain factors on a scale and also included one open question. Additionally, searches were performed on large databases such as PubMed and Medline, using keywords to find articles that were then filtered to meet the criteria set out. All articles that were used were from the last 10 years. **Results:** The most effective and common BMT's were positive reinforcement and tell-show-do which also supported what was found in other investigations. **Conclusion:** The use of BMT's has been shown to improve the experience of the patient and improve the relationship they have with the dentist, which is key for preventing pathologies in the future. The selection of the techniques depends on the individual, as well as the stage of development they are in.

Key words: dentistry; pediatric patients; behavior management techniques; pediatric dentistry; patient-centered care; dental care for children.

RESUMEN

Introducción: Se investigaron las técnicas de manejo del comportamiento (BMT) para ver el efecto que tienen en situaciones con pacientes pediátricos que no cooperan y cómo pueden usarse para ayudar a la formación de una relación positiva de confianza entre el dentista y el paciente. **Objetivos:** El objetivo principal de esta investigación fue identificar las técnicas de manejo del comportamiento más comunes y efectivas. El objetivo secundario fue evaluar si el género del profesional de la salud tiene impacto en el tipo de técnica de manejo que puede seleccionar. **Metodología:** Se construyó un cuestionario para preguntar a los estudiantes de la clínica dental de la UEM sobre los TMO. Las preguntas consistían en calificar ciertos factores en una escala y también incluían una pregunta abierta. Además, se realizaron búsquedas en grandes bases de datos como PubMed y Medline, utilizando palabras clave para encontrar artículos que luego se filtraron para cumplir con los criterios establecidos. Todos los artículos que se utilizaron eran de los últimos 10 años. **Resultados:** Los BMT más efectivos y comunes fueron el refuerzo positivo y decir-mostrar-hacer, que también respaldaron lo encontrado en otras investigaciones. **Conclusión:** Se ha demostrado que el uso de técnicas de manejo conductual mejora la experiencia del paciente y mejora la relación que tiene con el odontólogo, lo cual es clave para prevenir patologías en el futuro. La selección de las técnicas depende del individuo, así como de la etapa de desarrollo en la que se encuentre.

Palabras clave: odontología; pacientes pediátricos; técnicas de manejo del comportamiento; Odontología Pediatrica; atención centrada en el paciente; cuidado dental para niños.

Table of Contents

INTRODUCTION

One of the key factors when caring for paediatric patients is behavioural management. In order to ensure the best quality of care for the patient it is imperative to have all the different types of techniques at our fingertips in order to be able to select the best for each individual patient and thus facilitating the best outcome of treatment. It's also important to note that when selecting any type of approach that it is done with the wellbeing and happiness of each child being at the forefront of our minds. It is also important for dentists to be able to integrate behavioural management strategies into practice as well. Using these management techniques allows dental professionals to not only establish an effective line of communication but also it allows the dentist to gain the child's confidence and trust in the dental treatment process and they therefore are more accepting of it. Both of these allows the dental team to be able to work in a comfortable and productive environment. (1)

Another factor to consider is dental anxiety. Although now, dental treatments have improved dramatically compared to the past, it still remains an issue in society and is still fairly prevalent amongst children. When dealing with a paediatric patient who has dental anxiety it is of utmost importance to remember that if maintenance of this condition is needed, the early experiences that children are exposed to are absolutely fundamental in order to minimize it as their life progresses. Using BMT's and excellent communication skills in turn promotes a positive attitude towards oral health and treatment. This will also help the individual in the future and since they have built a positive relationship with the dentist, it will make sure they maintain good oral hygiene and slow down problems that can be prevented. (2)

Behaviour management has been a universally accepted pivotal variable that dictates the process of care in children amongst professionals within the area of paediatric dentistry. They are aimed at improving a child's coping skills and achieve total willing and acceptance of dental care. Since it encompasses a large range of behaviours, it is helpful to have many different techniques, both pharmalogical and non-pharmacological at the professional's disposal. This way it allows the dentist to assess the child on an individual basis, taking into account important factors such as age,

parental influence and the type of procedure being carried out. Another variable to look at is the types of behaviours being exhibited by the child, for example, depending on their development sometimes younger children may carry out physical behaviours as they aren't able to articulate themselves using words, while older children may use language to articulate themselves. As a result, each patient needs to be assessed in terms of their development in order to communicate effectively with them and ultimately end up with a comfortable situation where the patient is happy and understands which in turn allows the dentist to treat the patient giving the best possible treatment to the patient in a timely manner. Some of the main BMT's that are very often used in many countries are very effective when having to deal with particularly difficult children. One of these techniques is called 'Tell-show-do'. This technique can be used with many different types of patients in numerous scenarios. In this technique the professional can first 'tell' the patient what we are going to do. The dentist can tell them about some instruments that will be used with them for example, the dental mirror or the air/water syringe. This can also be used when educating the patient about oral hygiene techniques and how they should properly brush their teeth. Then 'show' the patient the instruments and get them accustomed to the sensation of air/water for example. In the case of educating, the child can be shown how it is correctly done so they can see for themselves while answering any questions if they have any. After the child is invited the child to 'do' it. Whether it's starting to look at the teeth in the child's mouth with the instruments that have just been shown or invite the child to show the dentist how they should brush their teeth after learning the correct technique. Often, the dentist will also make sure a parent or guardian is present because they may need to help the child to make sure it is being done correctly. In a study that was conducted, this technique was used in over 50% of the patients who were 3 to 6 years old since it was deemed appropriate for this age group. (3) (4)

Another technique that has been proven to be effective is voice control. This is implemented when the child begins to misbehave and the dentist wants to direct the focus. The volume is increased and the tone is changed to allow the professional to

assert more authority into the situation. This was found to have been most frequently implemented in the age bracket of 6 to 12 years old. (3)

Another technique that can be used is negative reinforcement. It was found that this technique was used and most suitable for children aged 6 to 12 and all patients over 12 years old. Negative reinforcement is removing a negative stimulus after the desired behaviour is displayed by the patient. Before using a technique such as voice control it is important to explain the concept to the parents to avoid any miscommunications. (3) (5)

On the other hand, positive reinforcement is where a patient may exhibit a positive behaviour and so it should be rewarded to let the patient know that this is a good desirable behaviour. In a study that looked at different BMT's, this was seen to be used in patients aged 3 to 6 years old the most. It is important for the dental practitioner to be educated in principles associated with this management technique to be able to effectively use it. One principle that was highlighted in a study is the resistance to extinction. This is how long a behaviour is carried out after the reinforcement of this behaviour has ceased. The schedule of reinforcement of said behaviour can affect the 'resistance' of the behaviour and if it is variable, it tends to have a more resistant behaviour. In other words, it takes a longer time for the behaviour to stop being carried out after reinforcement has stopped which ultimately in this scenario is an ideal outcome. (3) (6)

For many paediatric patients fear can stem from them not being able to communicate with the dentist to tell them if they are in pain or if something is wrong. For these situations 'stop signals' were created. The dentist and patient agree on a signal to use that is safe and doesn't put the dentist or patient in harm, for example, if the patient moved suddenly while the dentist is using a rotatory instrument could be extremely detrimental. In an investigation carried out, the most common sign that the children picked is 'to raise their left hand' or 'wave left hand' to signal they want to stop the treatment. Some other more unusual options picked were 'Shake my feet' or 'click my fingers'. Usually, dentists are right handed so the left hand of the patient doesn't interfere with the tray of the dental table where the instruments usually are and

therefore the patient evades being punctured by such sharp instruments. It's a clear way to communicate and once it is agreed between the professional and patient it can alay any fear that the child may have. (3) (7)

Non-verbal communication was predominantly used in children aged 0 to 3 years old since they do not have the capacity to be able to communicate verbally with the dentist. This communication usually consists of : different facial expressions for example smiling and eye contact. One study identified that non verbal communication is important right from the first point of contact. When both verbal and non-verbal communication was used in the same scenario, the messages passed on non-verbally resonated more with the patient than verbal messages, highlighting the importance of facial expressions, physical appearance and gestures. (3) (8)

The HOM technique is hand-over-mouth technique. It is where a dentist places their hand over the child's mouth while explaining the type of acceptable behaviour that should be exhibited in a dental clinic. Then the hand will only be removed once the child begins to respond. If negative behaviour is then shown the process is repeated. It has huge ethical limitations and the use is absolutely prohibited in disabled patients or patients with learning difficulties or domestically abused children. This technique is arguably one of the most controversial techniques and since 2006 has been rejected as it is not an acceptable technique to use with paediatric patients. It is no longer included in the American Academy of Pediatric Dentistry (AAPD) and has never been a favourable technique in some countries within Europe. (3) (9)

Physical restriction has been defined by the AAPD to be "Any type of manual method, physical or mechanical device, material or equipment that immobilizes or reduces the ability of the patient to move their limbs (arms, legs, head) freely". Similarly to the HOM technique it is not a commonly used technique and research shows that 73% of students from a survey were instructed how to use a Papoose board however, only 11% observed it being used in a clinical setting and only 2% used it on a patient. (10)

The characteristics of a dental surgery could also be factors in causing uncertainty amongst younger pediatric patients. The potentially new environment to them could be seen as strange and unknown such as the smell, or the way the dentist and the

dental nurses look. On the other hand it could be very easy to relate this environmental situation to a potentially traumatizing or unenjoyable prior experience at a hospital that could evoke similar feelings and thus uncooperation from the patient. Another factor to consider is when communicating with paediatric patients using age appropriate vocabulary has been proven to help them understand and therefore aid in communication. For example, instead of using the term 'fissure sealant' instead it can be called 'tooth paint' and when explaining, simple language should be implemented. (11)

The AAPD have recognized that from the moment the parent makes contact with the dental practice this will be important and govern how the treatment of the paediatric patient progresses. From the first phone call to arrange an appointment to the paediatric patient meeting the dentist and their team it is important for the professional to outline the boundaries. This can come down to simpler things such as body language or communication skills of the dentist. Specific behaviours that have been identified to reduce anxiety as well as maximizing cooperation from the patient are: giving clear and specific instructions, offering reassurance in a verbal way and having an empathetic communication style. The essential parts of communication were divided into 4: The sender, the receiver, the message which involved both body language and facial expression and the context that the message was sent in. It was said that if all of these parts were present it would enable successful bi-directional communication. (12)

On the contrary, behaviors that were correlated with low patient satisfaction were identified. These factors usually relate to rushed appointments, not allowing the parents into the room, being impatient and not taking the time to explain the procedures. The gender of the healthcare provider may have also been a factor in satisfaction of a consultation but it was found that both genders treat parents and patients in a similar way. (5)

Pain assessment is a variable that directly impacts behaviour and thus the outcome of the treatment. If the practitioner can prevent any pain it will help to build trust between the dentist and patient as well as helping to reduce anxiety and stress. It

helps to build a positive trusting relationship where the patient is relaxed and the dentist can work time effectively. It can sometimes be helpful to note the child's behaviour in previous appointments to be able to prepare for it in future appointments. A reliable way to rate behaviour is through a Frankl scale. They can also write a word that describes the child's type of communication to be able to plan better for future visits. (5) (13)

While there are many options to explore within non-pharmacological management, in more advanced cases sometimes pharmacological methods may be more suitable. One option is nitrous oxide or oxygen inhalation. It is aimed to reduce the anxiety of the patient as well as improving communication. It should be noted that it works best with children who are mild to moderately anxious. It should be used in conjunction with behavioural techniques. The effects are reversible and the recovery of the patient is fast. It also provides some analgesia and can be used in patients with a very active gag reflex since it works to reduce it. (5) (14)

Other pharmacological ways of management are the use of benzodiazepines. This group of drugs offers an anxiolytic, anticonvulsive, muscular relaxant and an amnesic effect. Benzodiazepines can be used both for pre-medication and also conscious sedation to help relieve anxiety. It is also important to note that candidates who are to receive this type of treatment should be carefully selected, adhering to the American Society of Anesthesiologists (ASA) classification. ASA Class I and II patients can be given this treatment as outpatients however patients that are Class III and IV have to have conscious sedation in a hospital setting with consultation from their primary medical doctor. (15)

General anesthesia or deep sedation has been proposed as another way to manage slightly more challenging paediatric patients who have either physical or mental disabilities. It is not a common method to use since it is quite expensive as other trained staff need to be available both during but also after treatment and requires the use of a hospital so is only reserved for very severe cases. Situations when this might be used are when a child has a severe disability and requires many treatments that would normally be very stressful for the patient or very uncooperative children. (16)

When comparing general anesthesia to the use of benzodiazepines, specifically Midazolam, it is evident that the working time is much less only 20-30 minutes. This could lead to the treatment only partially being completed or much worse, ineffective. In this instance it seems more appropriate to choose general anaesthesia, which has a much longer working time and would allow for many treatments to be done at once and for all to be completed within the time. (15)(16)

Another more innovative technique that has been developed from distraction techniques such as audiovisual stimulation is the use of virtual reality. It acts as a distraction technique by limiting the input of stimuli in the actual environment and enhance the stimuli from the virtual environment. Then the idea is for the patient to be in an environment that is more pleasant for them. The user can interact with stimuli in the virtual world they are in which allows them to escape from reality, thus, providing a more real experience and better distraction from what is actually happening around them. (17)

When conducting this research the aim of it was to find out the most common and most effective behavioural management techniques used by students of the 5th year in Dentistry at Universidad Europea de Madrid.

It will look into the techniques that students, specifically those that were in the 5th year, use when faced with a slightly more difficult paediatric patient. As well as carrying out research investigating this, there is a review of articles that were published surrounding this topic. After finding and sourcing as much information as possible, it is important to be able to determine the most successful techniques that worked.

OBJECTIVES

The principal objective:

1. To determine the most common and most effective behavioral management techniques used with pediatric patients.

The second objective:

2. To be able to see if the gender of the healthcare professional (dentist) affects the type of behavior management technique used with pediatric patients.

MATERIALS AND METHODS

This research was an investigation as well as compounding information from other studies that had been conducted in this field of interest. For the investigation part of this research, a questionnaire was constructed. The questionnaire was made on google forms to make it more accessible to the target population and therefore allow for more participants to be able to answer the questionnaire. The questionnaire was sent to a forum space, targeting 5th year dental students who work in the clinic of UEM who treat paediatric patients and have knowledge of all of the BMT's available to them. This questionnaire first requested the consent of the participant taking the questionnaire, then asking the age gender and country of birth of the participant. The questionnaire then had an array of questions with different styles, some questions requiring a written answer while others required the participant to rate on a Likert scale for example, frequency of use of BMT's. The Likert scales used in this questionnaire had 4-5 options so it allowed the participant to have a decent number of options when deciding on their answer. In this questionnaire there was a total of 5 questions, 4 of which contained Likert scales and the other questions required a written answer.

When selecting articles, each one that was found was checked to make sure it was published within the last 10 years which was part of the exclusion criteria. To find these articles the database of the CRAI library from Universidad Europea De Madrid as well as other platforms such as Pubmed and Medline. The exclusion criteria also made

sure that all articles were specifically about paediatric patients with an age range of 5 to 18 where possible. This ensured that there was a large variety of ages to be able to cater for all paediatric patients within this research.

RESULTS

The total number of responses was 38, providing the questionnaire in both English and Spanish. 97.3% (37 responses) were from the English questionnaire while 2.7% (1 response) was from the Spanish questionnaire. If all of the data is compounded together, 11 of the participants were male accounting for 28.9% whereas 71.1% (27 participants) were female.

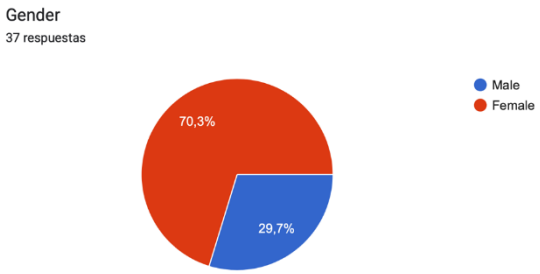

Figure 1 – Percentages of females and males who took part in this study from the English questionnaire. (26)

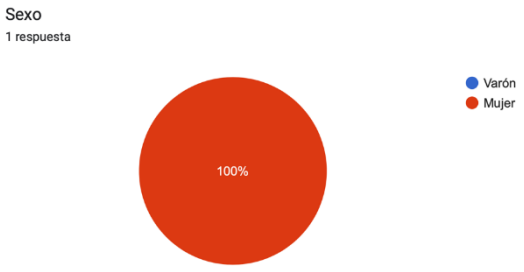

Figure 2 – Percentage of females and males who answered the Spanish questionnaire. (27)

The ages of the participants varied, ranging from 22-40. The most common ages were 23 and 25 however 2 participants chose not to disclose their age.

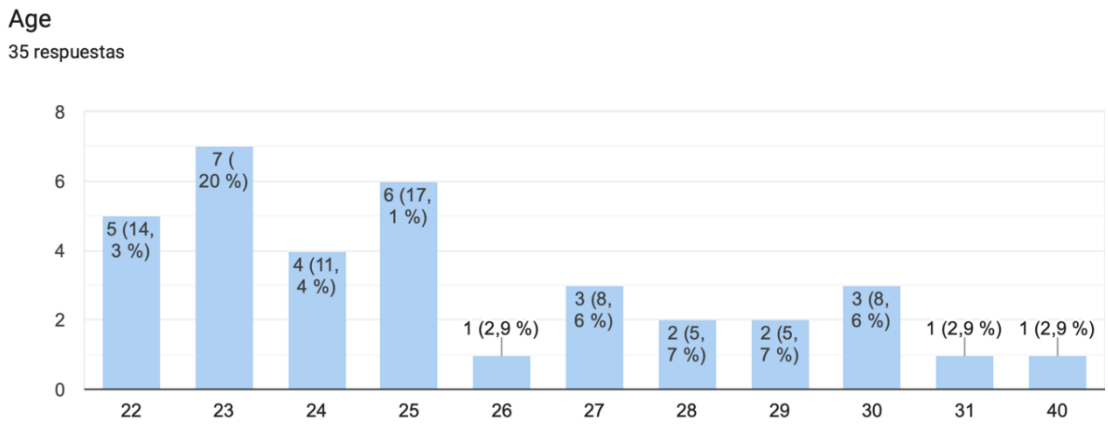

Figure 3 – Bar chart representing the ages of the students who took part in this investigation. (28)

9 of the 38 participants were from France, making it the most common country followed behind Italy which was the second most common with 5 out of 38 participants.

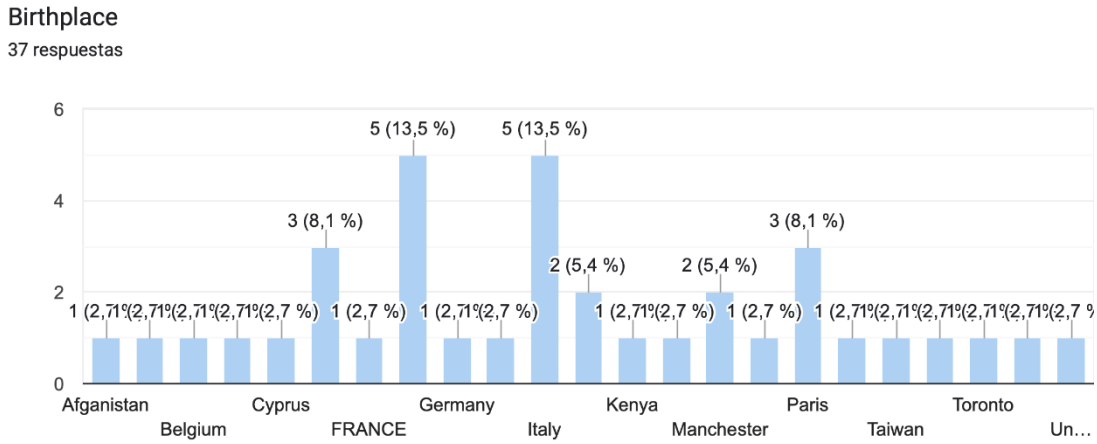

Figure 4 – Bar chart to represent the number of people and percentage of each country. (29)

When asked what is the nature of the behaviour of the paediatric patient at the time of the appointment, on a Likert scale ranging from 'definitely negative' to 'definitely positive' with 2 choices in between, the most popular option chosen was 'positive' by 78.4% of people and this was the response chosen from the Spanish questionnaire.

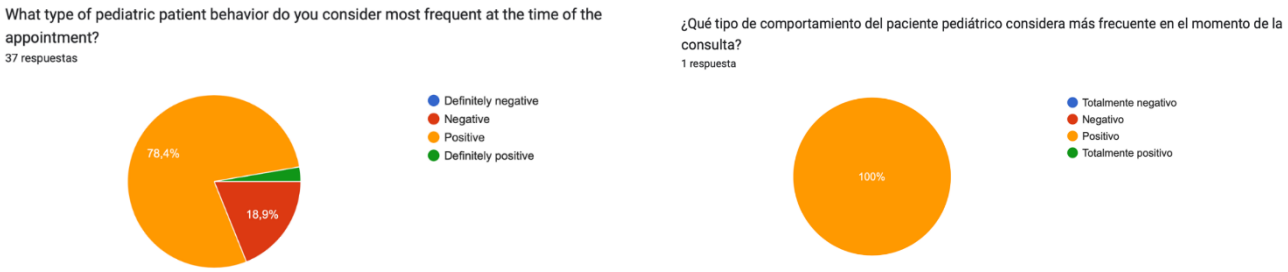

Figure 5 and 6 – A pie chart to represent the most frequent behaviour at the time of appointment in the English and Spanish questionnaire respectively. (30) (31)

Then taking each behaviour management technique, the participants were asked to rate the frequency they use each one in the clinic.

Pediatric language

When rating the frequency of use of paediatric language, 'very frequent' was the most chosen option with 16 participants choosing this option followed by 15 people choosing 'frequent'.

Direct observation

The frequency of use for direct observation was 'very frequent' with 13 responses. Similar numbers of participants chose 'frequent' (12 responses) and 'more or less frequent' (10 responses).

Tell-show-do

The most common response with 17 responses was 'very frequent'. 11 responses corresponded to 'frequent' and 9 responses for 'more or less frequent'

Voice control

The most popular response was very frequent equating to 11 responses.

Positive reinforcement

By far the most popular frequency chosen was 'very frequent' which was 22 of the responses.

Distraction

The most popular response was 'frequent' with 13 responses. And the other 11 responses corresponding to 'very frequent'.

Desensitization

'Frequent' was also the most popular choice with 12 responses.

Physical restriction and premedication

Both physical restriction and premedication were both rated 'infrequent' and the least used of all the techniques.

An overwhelming 31 participants said they used premedication infrequently.

24 responses were the majority that used physical restriction 'infrequently' while 9 participants said they used physical restriction with 'little frequency'.

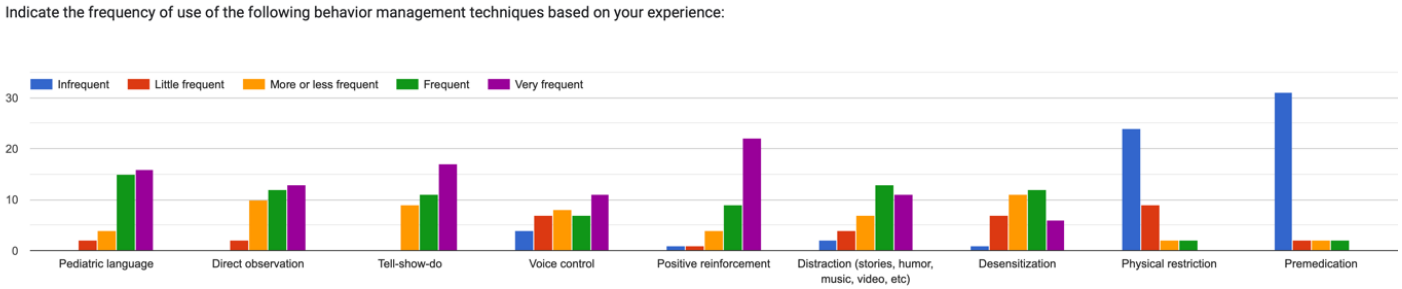

Figure 7 – Bar charts for each BMT to identify the frequency of use. (32)

When asked an open question about the types of elements, the most common responses were:

Making a balloon with gloves, music, talk to them to try to engage with them, Clips on Youtube or cartoons, tell them a story.

Talk to them
Play with glove turn into balloon
Phone
Tales, drawings, music, asking about interests
typodont
Videos, typodont,
Describing something to the patient and talking
Talking , singing
Pegatinas, espejo
Verbal stories, questions regarding their life
music: children's songs that the patient choose, funny stories, cartoons
Singing to the patient, putting the light into their eyes.
Stories and Music
Game, air spray
Gloves
tell them a story or ask questions
Music, conversations
Typodont, ipad, stickers
Video
Cartoons, Ipad
Music, games on phone, stories about school
Music
cartoons on tv, doll
Stories
Musique
YouTube clips
Music or mirror to show to the children what we are doing without showing blood or complicated treatments
Balloon with gloves

En el caso de la distracción, enumere los elementos empleados (Ej.: dibujos animados en el teléfono móvil)
Historias y preguntas

Figure 8 – The written answers given when asked about the most common elements used from the English and Spanish questionnaire. (33)

Then the next question took each behaviour in turn and asked the participants to rate from ‘very negative’ to ‘very positive’ with 4 options on a Likert scale.

Paediatric language

19 out of 37 responses chose definitely positive followed closely behind by 15 choosing ‘positive’. Overall, the use of paediatric language was used quite frequently while the remaining said they wouldn’t use it.

Direct observation

20 of the people said they would use direct observation by selecting ‘positive’.

Tell-show-do

21 responses showed that they would use tell-show-do ‘very positively’.

Voice control

17 responses rated voice control ‘positively’ and they would quite frequently use it.

Positive reinforcement

19 responses selected ‘very positively’ when using positive reinforcement.

Distraction

18 people said they would use distraction ‘positively’. Such as tell stories, play music or show them a video.

Desensitisation

16 people used desensitisation ‘positively’.

Physical restriction

This management technique was by far the most negatively viewed. 25 participants said that they see physical restriction ‘definitely negative’

Premedication

20 responses corresponded to ‘definitely negative’ when asked about premedication.

Physical restriction and premedication were by far the most negatively viewed and used within all of the behaviour management techniques.

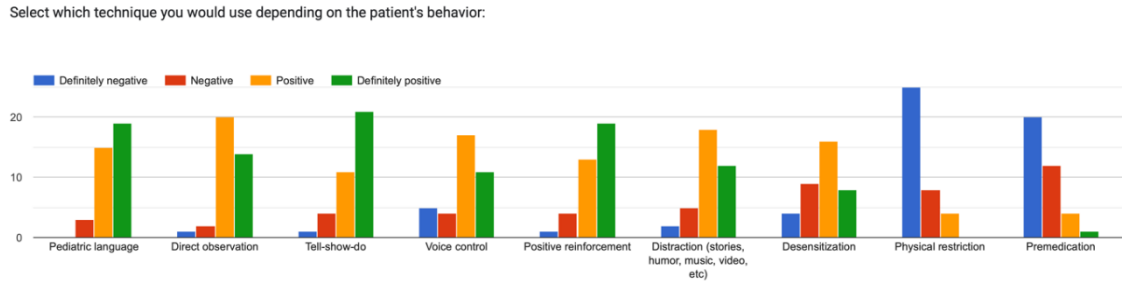

Figure 9 – A bar chart taking each behaviour management technique and asking which technique would be more commonly selected. (34)

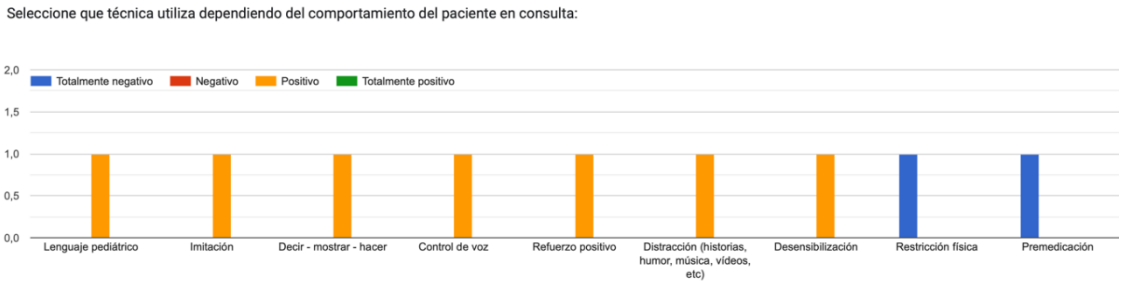

Figure 10 - A bar chart taking each behaviour management technique and asking which technique would be more commonly selected from the Spanish questionnaire (35)

Then the participants were asked to rate the level of satisfaction relating to when they use the behaviour management techniques that have been asked about in the previous questions. The scale given was from 1 to 5, 1 being ‘very unsatisfactory’ and 5 being ‘very satisfactory’. 22 out of the 37 responses (59.5%) chose a rating of 4, meaning that they were generally quite satisfied. The other responses spanned over 2,3 and 5.

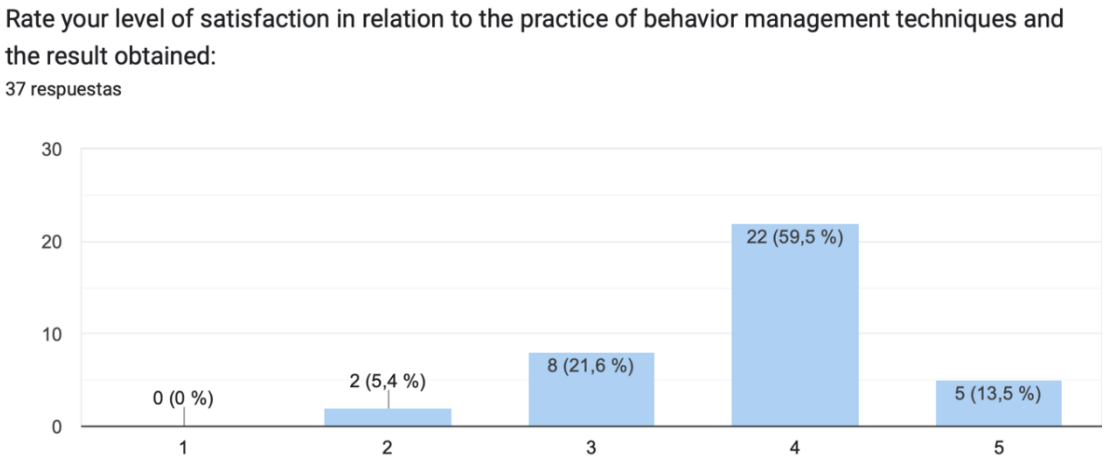

Figure 11 – A bar chart representing the level of satisfaction from a scale of 1-5 when implementing behavioural management techniques. (36)

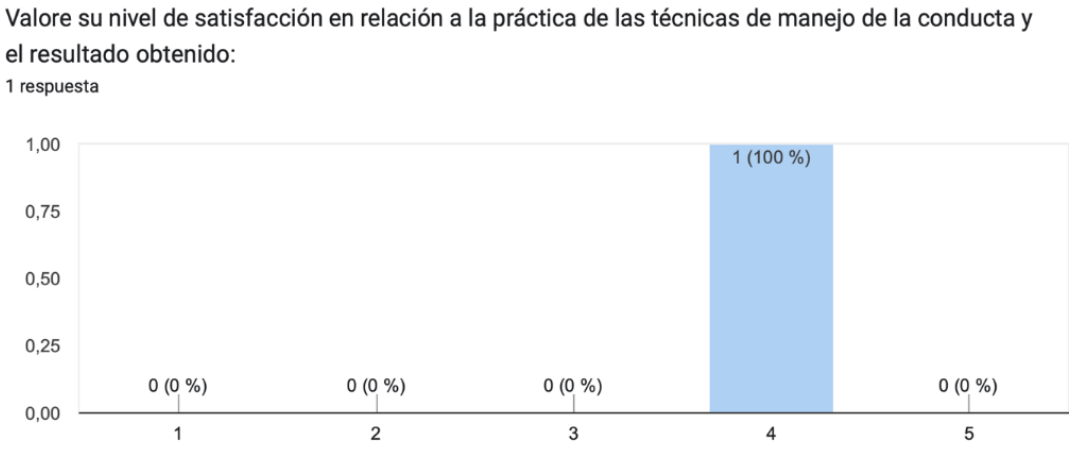

Figure 12 – A bar chart representing the level of satisfaction from a scale of 1-5 when implementing behavioural management techniques from the Spanish questionnaire. (37)

DISCUSSION

Overall, the questionnaire contained a good variety of styles of questions. For example, one open question to allow the responder to express themselves and 4 questions rating a variable on a scale. As it was a questionnaire that was accessible online, it allowed for a high response rate as it was made very accessible to the target audience. There was no need to set up a meeting in person to be able to collect the data. This is one aspect that is positive of this research, however there are limitations to this style of data collection. As the participants knew the data would be analysed, they may have answered the questions falsely or inaccurately to make their answers seem more desirable leading to response bias. This is a similar format to other questionnaires for example researchers were looking at dental fear and they also used a 5 point scale only with numbers that related to different stimuli that could cause anxiety. (18)

When asked about the type of paediatric patient behaviour, the majority of responses said 'positive'. This means that in general the majority of paediatric patients in the UEM clinic have positive behaviours. This means that potentially most of the students in the clinic may have not needed to use BMT's with patients, and even if they did, most likely they used slightly less aggressive techniques to control the behaviour of the paediatric patient. This would support the most frequently used behavioural management techniques being Positive reinforcement and tell-show-do. It also supports physical restriction and premedication being the most infrequently used however this could be due to other factors. For example, in the UEM clinic, there is no protocol to use medication both before and during the appointment in paediatric patients. Physical restriction in some countries now is completely banned from being used as it is contraindicated in so many cases and can cause psychological harm, especially with children that have disabilities. For this reason, there is also no protocol for physical restriction in the clinic and therefore there is a possibility that some students may have had experience in other clinics which could explain why 2 responses were selected for 'frequent'. Another reason could be that someone's definition of physical restriction is different from another. It could be that someone had to refrain the child while local anaesthesia was given to make sure both the child

and dentist were safe as well as ensuring the anaesthesia was put correctly, whereas someone else's definition could be refraining the child with a papoose board or other apparatus. This is a flaw in this type of research without defining each technique or providing more information. Another flaw that can be identified is that each person will have different measurements of a Likert scale. While in this question the scale was words, there wasn't explanations in the questionnaire to fully define each point on the scale. The AAPD recommends dentists should be educated on how to restrict a child so they can use this information to know when to use it. Examples of appropriate situations that deem it necessary are: A patient who cannot cooperate due to emotional levels or physical conditions and needs immediate treatment and a patient who, before, was cooperative and quickly becomes uncooperative and cooperation cannot be re-established by BMT's. (10)

In general, when asking about the frequency of use of each BM, the most infrequently used techniques were physical restriction and premedication. On the contrary, the most frequently used behaviour management technique is positive reinforcement followed by tell-show-do and paediatric language. This shows that these were not only the most frequently used but the most reliable because it yielded the best results. Both physical restriction and premedication were by far the most controversial and therefore the most infrequently used. One article found that in some cases, physical restriction calmed the patient and so overall the whole experience was relatively less stressful both for the patient and parent. (19)

Due to the way males and females are different, it is possible to believe that maybe some behavioural management techniques are more common among men than women. It is well known that both males and females opt to approach a situation very differently and so potentially the choice of technique could differ. In this investigation, when looking at the gender of the student, there were no differences in frequency of use in any one behavioural management technique. There was a study conducted to see whether a dentist's attitude affected what type of management technique they chose. They found there was no significant association between gender and any one

BMT. In another study it was found that young females were more likely to use communication techniques than males. (20) (21)

In a study conducted with pre-clinical and clinical students the most accepted behavioural management techniques were non-verbal communication, Stop signals, Positive reinforcement and Tell-Show-Do. The methodology of this research brings some problems since the students were given a questionnaire and the 'acceptability rate' was rated on a Likert scale from 1-5. There is absolutely no guarantee that each student views each number in the same way. Also using values for a scale is extremely arbitrary and doesn't give the student that much information about each number. In turn this assumes each point on the scale has equal distance between them. Overall this will not measure the true responses of the person. When using a Likert scale, this automatically yields ordinal data, since the options are 'ordered' in a certain way. This therefore means that we cannot begin to interpret the data as if it was interval data, i.e calculating a mean or standard deviation nor can statistical models be applied. (1) (12)

Another study conducted in the UK took 9 – 11 year olds and also used a Likert scale to rank the acceptability of behavioural management techniques. After this was followed by an interview. This study found that while there was no statistical difference in age, gender or dental anxiety on acceptability of behavioural management techniques, stop signals were the most acceptable technique. The children in this study also commented on the nature of the dentists communication and utilising BMT's, saying it was positive. Following each child up with an interview after they ranked BMT's allowed the children to clarify their answers and this therefore meant that any misunderstandings could be eliminated. Also, it gives the children much more freedom to express themselves and therefore the researchers were able to collect more data. There are limitations to this methodology however as it will have been time consuming to interview each child after completing the Likert scale. If they had multiple interviewers there criteria for recording useful information and disregarding unimportant information must have had to have been cross checked to ensure all interviewers were working in the same way. (2)

By far the most common techniques used are positive reinforcement and the tell-show-do technique. It's important to also note the general factors that were used when deciding which management technique to use. The factor that influenced the choice of BMT's was the child's emotional state during the time of the appointment. It was an influencing factor for just over 82% of cases. Another factor that was taken into account was if the child had had a past dental experience or not. It was an influencing factor for nearly 78% of cases. (3)

Nowadays, technology can be implemented to help reduce anxiety within the dental office. A study was conducted where a behaviour management programme was built where a well known cartoon character explained the process, the devices used during treatment and the method as well as what to expect during treatment. The cartoon character was initially anxious but then the treatment was successfully carried out. Another video used was one applying positive reinforcement where the heart rate was monitored and when it was high, the cartoon character gave encouragement. One video used systematic desensitization and explained the sounds and sensations based on the progress of the treatment. This programme was effective at lowering uncooperative behaviour as well as relieving anxiety and fear. (22)

Distraction is another commonly used technique found both in this investigation and other studies. The aim is to distract the child away from the stimulus causing unsatisfactory behaviour. An advantage of this technique is that it's easy to implement in the dental clinic and doesn't need any training of the health care provider to be able to carry out. It also can be done in tandem with the treatment so no time is lost and the appointments are kept short to minimise any emotional stress the patient may have. Research shows that it is more effective when the distraction involves multiple senses for example, visual and audio. This audiovisual distraction has also been suggested to provide benefits to uncooperative children in the dental clinic. (5) (23)

Using Virtual reality (VR) as a distraction technique has been found to reduce anxiety as well as increase cooperative behaviour in one study. They used a frankl scale to quantify the childs behaviour before and after treatment and found 100% of the patients had positive behviour after using the VR headset. In another study their

results highlighted the importance of using a VR headset to significantly reduce uncooperative behaviour and this in turn improves the relationship the patient has with the dentist. (17) (24)

In this research it found that overall the level of satisfaction when using these behavioural management techniques was 59.5% who chose a level 4 out of 5, while 13.5% chose a 5 out of 5. This means 73% of dental students found it beneficial to use these techniques with patients. This was similar to a study conducted in a dental school where the acceptance of these students for techniques named 'reinforcement techniques' were the highest. This category of techniques encompassed positive reinforcement and pediatric language. Desensitissation techniques were the second most frequent (6) (25)

CONCLUSION

To answer the principal objective, non-pharmacological methods are significantly more common in terms of use than pharmacological methods. More specifically, tell-show-do, positive reinforcement and the use of pediatric language were the most commonly used and most effective techniques.

The second objective in relation to differences between genders saw that after analysing the data it became evident that there is no difference in the types of management techniques depending on the gender of the dentist however female dentists were more likely to use communication techniques than male dentists.

To conclude, each patient should be given care on an individual basis, taking into account many factors to be able to provide the best care for each patient. Details to do with their family life as well as information about the pediatric patient themselves should be noted to be able to plan well for future appointments and select the most beneficial BMT's. Implementing these techniques is key to be able to grow a positive and trusting relationship between the patient and dental practitioner.

BIBLIOGRAPHY

1. Shindova M. Attitudes of dental students towards paediatric dental behaviour guidance. 2022;21:1–8.

2. Davies EB, Buchanan H. An exploratory study investigating children's perceptions of dental behavioural management techniques. Int J Paediatr Dent. 2013;23(4):297–309.

3. Shindova M. Use of Behavior Management Techniques by Dental Practitioners During the Treatment of Pediatric Patients from Different Age Groups. Euras J Heal. 2020;2(1):49–60.

4. Kawia HM, Mbawalla HS, Kahabuka FK. Application of Behavior Management Techniques for Paediatric Dental Patients by Tanzanian Dental Practitioners. Open Dent J [Internet]. 2015;9(1):455–61. Available from: http://benthamopen.com/FULLTEXT/TODENTJ-9-455

5. Nazzal H, El Shahawy OI, Al-Jundi S, Hussein I, Tahmassebi JF. The use of behaviour management techniques amongst paediatric dentists working in the Arabian region: a cross-sectional survey study. Eur Arch Paediatr Dent [Internet]. 2021;22(3):375–85. Available from: https://doi.org/10.1007/s40368-020-00560-8

6. Coxon J, Hosey MT, Newton JT. Knowledge of behavioural management principles amongst specialist paediatric dental practitioners in the United Kingdom. Behav Cogn Psychother. 2017;45(2):185–92.

7. Rodd H, Timms L, Noble F, Bux S, Porritt J, Marshman Z. 'Message to dentist': Facilitating communication with dentally anxious children. Dent J. 2019;7(3):1–10.

8. Eigobo J, Etim S. Non Verbal Communication in Paediatric Dental Practice: A Study of Children's Preferences for Dentist's Attire and Appearance. J Dent Med Sci [Internet]. 2020;19(3):33–9. Available from:

https://www.researchgate.net/profile/Joycelyn-Eigbobo/publication/343862956_Non_Verbal_Communication_In_Paediatric_Dental_Practice_A_Study_Of_Children's_Preferences_For_Dentists'_Attire_And_Appearance/links/5f462817458515b729572b94/Non-Verbal-Communicatio

9. Boka V, Arapostathis K, Vretos N, Kotsanos N. Parental acceptance of behaviour-management techniques used in paediatric dentistry and its relation to parental dental anxiety and experience. Eur Arch Paediatr Dent. 2014;15(5):333–9.

10. American Academy of Pediatric Dentistry. Use of Protective Stabilization for Pediatric Dental Patients. Ref Man Pediatr Dent Chicago, Ill Am Acad Pediatr Dent. 2020;311–7.

11. Gupta A, Marya CM, Bhatia HP a., Dahiya V. Behaviour management of an anxious child. Stomatologija. 2014;16(1):3–6.

12. American Academy of Pediatric Dentistry. Behavior Guidance for The Pediatric Dental Patient. Ref Man Pediatr Dent Chicago,Ill Am Acad Pediatr Dent. 2021;306–24.

13. Anand A, Aggarwal N, Sharma A, Mittal V, Singh A. Factors predicting Behavior Management Problems during Initial Dental Examination in Children Aged 2 to 8 Years. Int J Clin Pediatr Dent. 2017;10(1):5–9.

14. Ibraheem M. International Journal of Dentistry and Oral Science (IJDOS) ISSN : 2377-8075 Behavior Guidance in Pediatric Dentistry - A Review Basic Behavior Guidance Techniques. 2021;08(5):2454–7.

15. Bagheri M. The Use of Midazolam in Paediatric Dentistry: A Review of the Literature. Razavi Int J Med. 2014;2(3):1–6.

16. Campbell RL, Shetty NS, Shetty KS, Pope HL, Campbell JR. Pediatric dental surgery under general anesthesia: Uncooperative children. Anesth Prog. 2018;65(4):225–30.

17. Gómez-Polo C, Vilches AA, Ribas D, Castaño-Séiquer A, Montero J. Behaviour

and anxiety management of paediatric dental patients through virtual reality: A randomised clinical trial. J Clin Med. 2021;10(14).

18. Gopalasamy K, Gurunathan D, Kanthaswamy AC, Panchal V, Lakshmi T. Dental fear and their effect on their behaviour during the dental treatment among children. Int J Pharm Res [Internet]. 2020;12(4):4643–9. Available from: https://www.embase.com/search/results?subaction=viewrecord&id=L2005971726&from=export%0Ahttp://dx.doi.org/10.31838/ijpr/2020.12.04.631

19. Malik P, Ferraz dos Santos B, Girard F, Hovey R, Bedos C. Physical Constraint in Pediatric Dentistry: The Lived Experience of Parents. JDR Clin Transl Res. 2022;7(4):371–8.

20. Strøm K, Rønneberg A, Skaare AB, Espelid I, Willumsen T. Dentists' use of behavioural management techniques and their attitudes towards treating paediatric patients with dental anxiety. Eur Arch Paediatr Dent [Internet]. 2015;16(4):349–55. Available from: http://dx.doi.org/10.1007/s40368-014-0169-1

21. Shindova M, Belcheva-Krivorova A. Influence of Dentists' Age, Gender, Working Experience, and Practitioner Type on the Use of Behaviour Management Techniques in Dental Treatment of Children. Folia Med (Plovdiv). 2022;64(2):314–20.

22. Song JS, Chung HC, Sohn S, Kim YJ. Effects of psychological behaviour management programme on dental fear and anxiety in children: A randomised controlled clinical trial. Eur J Paediatr Dent. 2020;21(4):287–91.

23. Allani DS, V Setty DJ. Effectiveness of Distraction Techniques in The Management of Anxious Children in the Dental Operatory. IOSR J Dent Med Sci. 2016;15(10):69–73.

24. Al-Halabi MN, Bshara N, AlNerabieah Z. Effectiveness of audio visual distraction using virtual reality eyeglasses versus tablet device in child behavioral management during inferior alveolar nerve block. Anaesthesia, Pain Intensive

Care. 2018;22(1):55–61.

25. Ali NM, Husin IN, Ahmad MS, Hamzah SH. Perceptions of behavioural guidance techniques for paediatric patients amongst students in a Malaysian dental school. Eur J Dent Educ. 2021;25(1):18–27.

FIGURES

All figures have been obtained from the research of this investigation, relating to the questionnaire that was designed for students at the UEM dental clinic.

Figure 5 and 6 – A pie chart to represent the most frequent behaviour at the time of appointment in the English and Spanish questionnaire respectively. (30) (31)
Figure 7 – Bar charts for each BMT to identify the frequency of use. (32)
Figure 8 – The written answers given when asked about the most common elements used from the English and Spanish questionnaire. (33)
Figure 9 – A bar chart taking each behaviour management technique and asking which technique would be more commonly selected. (34)
Figure 10 - A bar chart taking each behaviour management technique and asking which technique would be more commonly selected from the Spanish questionnaire (35)
Figure 11 – A bar chart representing the level of satisfaction from a scale of 1-5 when implementing behavioural management techniques. (36)
Figure 12 – A bar chart representing the level of satisfaction from a scale of 1-5 when implementing behavioural management techniques from the Spanish questionnaire. (37)