

Original Research Article

Alternatives of Management of Patients with Intellectual Disability in the Dental Consultation Dental Management of Intellectual Disability

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Abstract: Intellectual Disabilities (ID), involves impairment of cognition and adaptive/functional skills. There are three criteria that must be present for diagnosis of ID: Intellectual functioning deficit, significant limitations in adaptive functioning and evidence that the limitations became apparent during the developmental period. ID patients comprise 2-3% of the general population. Some studies show that people with ID have worse oral hygiene, increased tooth decay and also a worse periodontal condition than the general population. The techniques that allow the management and clinical dental treatment of patients with ID are: behavioral management, which is more used in patients with mild or Moderate ID in which a minimum degree of communication can be established. The physical restriction is used in any degree of ID that requires it to avoid injuries during dental treatment. Sedation is used in patients with Severe ID unable to cooperate and finally general anesthesia, which should be used when all the previous techniques have failed, either in the case of a long and complex treatment or in patients with Profound ID. As a result presents the alternatives to the professional can address individually patient, taking into account the degree of ID, thus able to improve their quality of life.

Keywords: Intellectual Disability, behavior management, oral premedication, sedation, general anesthesia.

INTRODUCTION

Intellectual Disability (ID) involves impairment of cognition and adaptive/functional skills. According to the fifth edition of the Diagnostic and Statistical Manual of Mental Disorders, three criteria must be met for diagnosis of ID:

- Intellectual functioning deficit
- Significant limitations in adaptive functioning
- Evidence that the limitations became apparent during the developmental period (childhood or adolescence) [1].

The World Health Organization's [2] International Classification of Functioning, Disability and Health (ICF) (WHO 2001) uses disability as an umbrella term for limitations in human functioning; that is, all life activities in which one would typically engage. Disability can result from any problem in one or more of three dimensions of human functioning: body structures and functions, personal activities and participation.

ID patients comprise 2%–3% of the general population. Among children, the cause is unknown for one-third to one-half of cases. About a quarter of cases are caused by a genetic disorder. The three most common inborn causes associated are Down syndrome, velocardiofacial syndrome, and fetal alcohol syndrome[3].

MATERIAL AND METHODS

To carry out this bibliographic review, about the Dental management of patients with intellectual disability, an electronic search was performed PUBMED and Scholar Google with the words "dental management of patients with intellectual disability". Initially they were obtained 85 results in PUBMED and 34,500 in academic google. From which

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the framed between the dates 2003-2018, by means of reading summaries and words key, thus reducing the results. Of this group, all articles were excluded that were not related to "alternatives of management of patients with intellectual disability in pediatric dentistry "or they did not have available the abstract, or the full article or the original language was not defined, finally reaching a total of 45 articles. To although the search was originally framed in the last 5 years, the citation was necessary of specific items that contributed to make important contributions mainly in the definition of each of the techniques.

Characteristics of Patients with Intellectual Disability

With regard to the characteristics of children and adolescents with ID, it has been recognized that there is a great variability in attitudes and behaviors. Therefore, delay levels have been established generally based on the Intellectual Coefficient (IQ). Four degrees of intensity can be specified: mild, moderate, severe and deep [4]. (TABLE 1)

Table-1: Characteristics of intellectual disability

VARIABLE	Mild	Moderate	Severe	Profound
IQ	50-55 to 70	35-40 to 50-55	20-25 to 35-40	Less than 20
% Population	89%	7%	3%	1%
Development	Slower than typical in all developmental areas	Notice able developmental delays (i.e. speech, motor skills)	Considerable delays in development	Significant developmental delays in all areas
Education	Able to learn practical life skills	Able to learn basic health and safety skills	Able to learn daily routines	Requires attendant to help in self-care activities
Independence	Functions in daily life	Can travel alone to nearby, familiar places	Needs direct supervision in social situations	No capable of independent living

Most people with disabilities live in low-income countries and represent nearly a quarter of the world’s poorest people [5,6]. Against this backdrop, approximately 200 million people live with intellectual disability (ID), making it the world’s most prevalent disability [7].

People with ID often have complex health care needs and factors affecting their health that can vary in kind, manifestation, or severity from others in the community. They require approaches to care and interventions that are adapted to their needs. Infact, they are among the most disadvantaged and underserved groups of dental patients. Considerable health care disparities for this population have been identified, particularly oral and dental health as well as access to dental care services [8,9].

Oral Characteristics

According to previous research, intellectually disabled patients are very likely to have poor oral hygiene status and to be affected by periodontal diseases [10,11]. Although there are no typical or exclusive oral alterations in children and adolescents with ID, they are more exposed to develop oral pathologies more frequently than the rest of the population. This is because poor oral hygiene, a high intake of carbohydrates and medications that promotes the development of caries and periodontal disease. On the other hand, behavior management makes dental treatment difficult, which is why it is often not carried out, due to the lack of knowledge of the specialist in the appropriate techniques [12]. For those reasons, the oral health of the handicapped may be neglected because of their disability, a demanding disease or their limited access to oral health care [10].

Other studies evidentiate that people with intellectual disabilities have worse oral hygiene, increased tooth decay and also a worse periodontal condition than the general population [13-18]. One of the conditions which favor the appearance of the periodontal disease is the presence of some kind of disability or a medical condition in patients. This makes the disease progress without any apparent cause, or maintains or increases the severity of an already determined condition. The main factors involved are the alterations in the immunologic system, the hormonal system, or in the connective tissue, together with a lack of hygiene [19,20].

According to Dávila *et al.* [21], dental problems are among the top ten causes that limit the activity of people with ID, the most frequent being dental caries and periodontal disease, which in many cases it leads to tooth loss. A study carried out by Pirela *et al.* [22]. concluded that 71.33% of the sample evaluated had dental caries and 52.63% changed the color of the gum. Coinciding with these results, Dávila *et al.* studied 4 different populations with ID where it was determined that 64.7% of patients with mild ID had caries, as well as 64.5% of those diagnosed with moderate ID [18]. On the other hand, according to Whelton, the prevalence of dental caries in children with ID is similar to those of the general population Górski *et al.* [12]. affirm after carrying out a study with 41 patients with ID between the ages of 15 and 18 that there is a low incidence of dental treatments performed but a higher rate of dental loss. In the same order of

ideas, Morgan and Oliveira [13,24] concluded that there are more untreated dental caries, more missing teeth, and fewer restorations found in adults with ID than in the general population.

During dental treatment, people with intellectual disabilities often encounter various psychological and social problems [25], which cause stress and significant limitations on quality of life. Such stress can be connected to a traumatic experience, which can cause the individual to refuse to visit the dentist and allow progression of dental diseases. Also, due to their specific needs and characteristics, people with ID are sometimes not able to use regular dental services and they need an individual approach. "Oral treatment of patients with intellectual disabilities requires empathy, patience and a high level of knowledge and skill" [26].

The techniques that allow the management and clinical dental treatment of patients with ID are: behavioral management, which is more used in patients with mild ID or Moderate ID in which a minimum degree of communication can be established. The physical restriction is used in any degree of ID that requires it to avoid injuries during dental treatment. Sedation is used in patients with Severe ID unable to cooperate and finally general anesthesia, which should be used when all the previous techniques have failed, either in the case of a long and complex treatment or in patients with Profound ID.

Techniques used for the Behavior Management in Patients with ID

Tell, Show, Do: This technique teaches the child, step by step, what is expected of him in the consultation. The patient is explained, with understandable language according to their IQ, what they are going to do (Tell), then a demonstration of the elements that will be used (Show), and finally proceeds to carry out the explained (Do) [27].

When there is Moderate or Severe ID one of the main problems is the poor response to instructions, it is not possible to have a verbal communication, they can learn in a better way by visual means [9].

Positive reinforcement: It consists of the strengthening of a pattern of behavior that increases the possibility that, in the future, such behavior will be exhibited. The specialist must reward the good behavior of the child in the dental consultation, showing approval of the procedures performed [28]. Anything that the child finds pleasant or gratifying can act as a positive reinforcer, stickers or badges are often used at the end of a successful appointment. However, the most powerful reinforcers are social stimuli, such as, facial expression, positive voice modulation, verbal praise, approval by hugging [29].

Modeling: it consists of behavior modification. For example, assessing another parallel aged child or elder siblings having dental treatment fruitfully can have an encouraging influence [30].

Molding: This technique is the systematic and immediate reinforcement of approaches to white behavior (behavior that you want to establish) until it appears in the repertoire of behavior that is to install [31].

Systematic desensitization: This technique is used to reduce the patient's fears and tension. Systematic desensitization consists of training the patient to face gradually stimuli or situations that create anxiety. A hierarchy of fear-producing stimuli is constructed, and the patient is exposed to them in an ordered manner, starting with the stimulus posing the lowest threat. The exposure takes place after the patient is taught how to relax, and the next stimulus is called in once the patient feels he/she is ready. At the end of each session, the patient is invited to face the reality of the situations for which the desensitization has been performed. Systematic desensitization method lasts 5-10 sessions, until the patient believes that the anxiogenic representations are tolerable [32, 33].

Physical restraint: involves any manual, physical or mechanical method applied to the patient with disability to immobilize him, partially or totally, in order to protect him, the specialist and his team while providing dental care. The informed consent of the parents or those responsible for the patient must be obtained before starting the treatment, specifying the type of immobilization that will be carried out. It is indicated in patients unable to cooperate due to their young age, emotional immaturity or physical or mental disability and contraindicated in cooperative patients or those where there is no possibility of making a secure immobilization due to their medical, psychological or physical development conditions. It should never be applied as punishment, nor exclusively as personal convenience [34].

Oral Sedation

In addition to the psychological management of the behavior of children and adolescents, and even with the help of physical restraint, the treatment of a large number of patients with ID cannot be performed optimally, since many of them show great emotional resistance and/or physical and limited comprehension and communication skills, as well as a limited degree of collaboration. This makes them frequent candidates for the use of drugs, such as benzodiazepines, which allow the patient to relax [35]. Benzodiazepines are the class of drugs most often used in dentistry to induce a state

of anxiolysis and are the drugs of choice for oral sedation in several countries [36]. Oral sedation is a relatively accessible means for dentists to address patient anxiety when chairside manner alone is insufficient. Nevertheless, this kind of sedation does not guarantee that a patient with ID will achieve a state of anxiolysis or will not drift into deeper levels of sedation [37]. Since sedation is a continuum, it is not always possible to predict how an individual will respond [38].

Sedation

In many cases, when the degree of disability at the cognitive level is high and there is a lack of communication or inability to control involuntary movements, it will be necessary to resort to pharmacological help to perform dental treatment in the best conditions. This is the alternative of dental care in children and adolescents with Severe ID or Moderate ID unable to cooperate [39].

In patients with serious intellectual disability who display extremely uncooperative behavior during dental treatment, sedation can be used as a way to control this behavior. In these circumstances, since patients often display denial behavior as long as they are conscious, deep sedation is a method of rendering the patient less prone to being uncooperative for a certain period of time [40].

According to the American Academy of Pediatric Dentistry (AAPD), the objectives of sedation in pediatric patients are: to provide, facilitate and increase good patient care; minimize extremely disruptive behavior; promote a positive response to dental treatment; promote the welfare and safety of the patient; ensure that the patient returns to the physiological state that presented before sedation [35].

Intravenous sedation is the second technique more comfortable, effective and safe after the inhalation sedation. Inside of intravenous administration is the infusion, which consists of administration constant small doses of the sedative, where the patient maintains the same level of sedation from the beginning to the end of the process. This has the advantage that maintains a means for the administration of medications if needed [35,41].

During conscious sedation, patients maintain their own airway and can respond to physical stimuli and verbal instructions. Senel et al. reported that conscious sedation equivalent to a RSS score of 2 has a low incidence of complications of 1.4% [42].

The disadvantage of this technique is that it requires use of needles, to administer the medication so the children and some adults, they do not accept it easily. This technique It has as disadvantages that: it requires more monitoring, personnel trained in access venous, many of the agents used do not It has reverter available, and it is more expensive. It is important to take into account that this type of sedation can only be administered by anesthesiologists [35].

General Anesthesia

The general anesthesia (GA) is a state of loss of consciousness induced by drugs during which the patient cannot be awakened even with painful stimuli. It is a transient, reversible state of depression of the central nervous system induced by specific drugs and characterized by loss of consciousness, sensitivity, motility and reflexes. In this state there is analgesia, amnesia, inhibition of sensory and autonomic reflexes, and relaxation of striated muscle and loss of consciousness. There is usually an inability to maintain breathing independently since the drug induces respiratory depression, requiring assistance to maintain patency of the airway and positive pressure to allow breathing [35]. GA is utilized for pediatric dental patients to provide comprehensive and high quality dental care when conventional dental treatment is not an option [43].

Dental treatment under GA can also be completed during one single visit and minimize distress to the patient, parent, and dentist.

In cases of profound intellectual disability, dental treatment under general anesthesia is usually required [44]. Anesthetizing an intellectually disabled patient is a challenge due to lack of cognition and communication which makes perioperative evaluation difficult. The presence of associated medical problems and lack of cooperation further complicates the anesthetic technique.

About 30%–40% ID patients may present to anesthesiologist for various diagnostic and therapeutic outpatient procedures or for surgical in-patient procedures. Majority of the literature relates to diagnostic, dental and corrective surgeries.

Most children have immature cognitive abilities, and cannot make legal decisions on their own; therefore, informed consent must be given by their legal representatives before the treatment under GA [44]. In the same order of ideas, to address parents' concern about the safety and postoperative morbidity related to general anesthesia, dentists

should inform parents of the postoperative symptoms that may occur immediately and days after the operation under general anesthesia. Every effort must also be exerted to minimize the morbidity and ensure that both parents and children are comfortable with the procedures [45].

CONCLUSIONS

The dental care of patients with ID has many deficiencies because there are very few trained specialists with the vocation to care for this type of patients. Based on the characteristics of children and adolescents with ID and according to their IQ, treatment alternatives can be established for each one of them.

There are several alternatives for the behavioral management of patients such as the adaptation techniques Tell, show and do; Modeling, Molding and Systematic desensitization. In many patients the use of physical restraint will also be necessary.

In the most complex cases, where the ID is greater, patients should undergo sedation or general anesthesia in order to be treated and provide them with an adequate oral health that improves their quality of life.

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