DENTAL HYGIENE IN MENTALLY DISABLED PATIENTS

DENTÁLNÍ HYGIENA U MENTÁLNĚ HENDIKEPOVANÝCH PACIENTŮ

Daniela Mošová[1]

Abstract

Tooth decay is generally perceived as a multifactorial infectious disease. Its formation is conditioned by the presence of dental plaque and poor dental hygiene. In the case of disabled patients of any age, the main responsibility in home or institutional care in the field of dental care is transferred to the parents or caregivers of the handicapped. This nursing background is a major component of controlling good oral care habits. The aim of the paper is to present the problems of the mentally handicapped in the field of dental hygiene, to identify poorly performed dental hygiene and to define its principles, correct procedures, and the possibilities of prevention.

Keywords

patient with mental disability, tooth decay, gingivitis, periodontitis, dental hygiene, prevention

Abstrakt

Zubní kaz je obecně vnímán jako multifaktoriální infekční onemocnění. Jeho vznik je podmíněn přítomností zubního plaku a špatnou dentální hygienou. V případě hendikepovaných pacientů, je hlavní zodpovědnost v domácí či v ústavní péči v oblasti péče o chrup, jakémkoliv věku, přesunuta na rodiče či pečovatele hendikepovaného. Toto pečovatelské zázemí je hlavní složkou kontroly správných návyků v péči o dutinu ústní. Cílem příspěvku, je přiblížit problémy mentálně hendikepovaných v oblasti dentální hygieny, identifikovat špatně provedenou dentální hygienu a vymezit jejich zásady a správné postupy s možnostmi prevence.

[1] Institute of Non-medical Healthcare Studies, Faculty of Public Policies in Opava, Silesian University
Psychiatric hospital in Opava

Klíčová slova

pacient s mentálním handicapem, zubní kaz, gingivitida, parodontitida, dentální hygiena, prevence

INTRODUCTION

A group of the mentally disabled is not a uniform group. The causes and severity of manifestations tend to be diverse (Kilian et. al., 1999). Although patients often do not report problems, they are sent to specialized workplaces that are equipped with adequate material and a team of specialized staff (Halačková, 2009). In our case the workplace dealing with mentally disabled and psychiatric patients is located on the premises of the Psychiatric hospital in Opava and is run by physicians specializing in periodontology and dental surgery, focusing closely on the education of patients in the field of dental hygiene. Among the problems that accompany the patients practically the whole life are problems connected with bad oral hygiene, increased tooth decay to unsolved prosthetic defects. The possibilities of dental treatment are influenced by the type and degree of the mental defect and are closely related to the possibilities and abilities of the patient, or members of his/her family, to maintain oral hygiene and ensure adequate dental care, which is generally influenced by social and economic possibilities of the disabled and their families. They are currently also influenced by an acute shortage of dentists and worsened availability of dental care. Pathological conditions can manifest in the oral cavity both acutely and chronically. In addition to hard tissue involvement (most often an increased incidence of dental caries) and periodontal involvement (presence of gingivitis or periodontitis), we find an increased degree of oral infection in these patients – candidiasis, glossitis or generalized stomatitis of various etiologies. Dental injuries and disorders of the jaw joint are also more often present, which are related not only to the course of the underlying disease, but also to the extent and method of dental rehabilitation. Mental disability often occurs in combination with general illness; one of the most common combinations is the presence of mental retardation along with epilepsy [2–4]. Due to considerable difficulties in the examination and subsequent treatment of teeth, these patients are sent mainly to specialized workplaces, which have not only adequate material equipment, but also an experienced team of specialized staff. Today, health insurance companies are trying to support the treatment of the mentally disabled and patients with autism spectrum disorders by introducing a special code that dentists can enter, upon completion of a course, to get higher benefits. This is a novelty since 2019, which is slowly starting to come into practice.

PLAQUE IDENTIFICATION PROCEDURES IN THE MENTALLY DISABLED

Visual evaluation by plaque staining and indices

The most important and crucial criterion of oral hygiene is the extent of plaque. The location and amount of plaque indicates the patient's level of dental hygiene and allows us to objectively assess how the patient cares for the oral cavity.

Plaque visualizers can be used safely in home or institutional care.

It is important to evaluate the amount and location of plaque repeatedly and with regularity and an objective method.

Plaque needs to be visualized:

1. mechanically, i. e. by removing plaque deposits with a dental probe

2. visually, i. e. by staining the plaque with a "special agent" (Kilian et. al., 1999). Color visualization of the plaque serves as an important control mechanism in the instruction of oral hygiene and its control. Dyes in the form of chewable tablets or solution color the plaque either red (erythrosin B [E127]), blue (brilliant blue [E133]), or under an adequate light source yellow (fluorescein). Two-phase detectors color the "immature" plaque pink and the "mature" plaque blue-violet (Weber, 2006).

Hygienic indices (oral hygiene indices) are used to optimize the level of oral hygiene, the most used being OHI, QHI, PI, etc. "According to the relevant convention, the amount and location of plaque on each tooth, resp. its flat, express the appropriate score and the resulting index value is obtained by calculation according to the appropriate formula. In general, the higher the positive number, the worse the oral hygiene level" (Kilian et. al., 1999).

Mouthwash, which is primarily intended for children, is excellent for home and institutional visualization of dental plaque, but we successfully use it for mentally disabled patients who rinse with mouthwash before and after brushing their teeth, which has the effect of precipitating impurities. When the patient spits out this mouthwash after rinsing, he sees how many colored particles have precipitated in the washbasin. This mouthwash is produced in several colored provenances and our patients, who we instructed how to use it, liked this. Caregivers and nurses were satisfied with the simplicity of use of this visualization and the objectification of the quality of dental hygiene.

Prevention programs for disabled patients

Oral health prevention programs are an integral part of overall dental care and can be implemented at the national, regional or local level. They can be targeted at the entire population or just a specific group. In disabled patients, we must always focus on the degree of disability (Kilian et. al., 1999).

In patients with mental disorders, mainly in patients with mental retardation, it is crucial whether the individual is in institutional care or family care (Nováková et. al., 2008).

In our medical facility, which is located in the Psychiatric Hospital in Opava, we implemented the project "Education of caregivers for mentally disabled individuals in the field of dental hygiene." During the implementation of the project, we educated nurses, caregivers, head nurses, ward sisters, who were acquainted with the principles

of dental hygiene, aids, means of identification of plaque and coatings. They participated in the treatment of a disabled patient in a dental hygiene office. During the project, we have educated 150 patients, set up oral care for them, and their visits are repeated. The project will continue in the future and we intend to continue in similar educational and preventive activities.

Educational programs have been set up for disabled patients according to handicap groups, but it should be borne in mind that each patient who is included in the group has a degree of individuality and this should be approached in this way. If prevention is properly applied and adhered to, the results of preventive examinations and programs are as effective in disabled patients as in the general population without disability (Nováková et. al., 2008).

An important criterion for enrolling a patient in a prevention program is the degree of tooth decay. Accordingly, we distinguish three types of prevention programs for low, medium and high level of caries (Table 1).

Tab. 1 Prevention programs for disabled patients (Nováková et. al., 2008)

LEVEL OF CARIES	**PREVENTION PROGRAM**		
	Check-ups	F application	Oral care
Low	2 times a year, every 6 months	Fluoride varnishes	Good oral hygiene
Medium	4 times a year, every 3 months	Toothpastes with higher concentration of F, fluoride varnishes, mouthwash with F once a week, mouthwash with chlorhexidine once every two weeks	Professional plaque removal by dental hygienist
High	4 times a year, every 3 months	Toothpaste with F in the morning and in the evening, quarterly fluoride varnishes, once a month gel with F in an application spoon, rinsing chlorhexidine 0.1% daily for a week then a week break	Check-up every 2 weeks, until the improvement of oral hygiene, under the responsibility of a dental hygienist

Use of fluoride preparations as a part of prevention in the disabled

"An appropriate fluoride prevention program is implemented individually, after assessing the overall health status, at the youngest possible age" (Pilinová et. Al., 2001).

Fluoride toothpastes are the most common form of daily local fluoridation. Their use 2 times a day will ensure the necessary prophylactic effect in the prevention of tooth decay. In patients with a major mental disability, they should be supervised to ensure that the toothpaste is not overused or swallowed and that they rinse their mouths sufficiently after use.

"Fluoride toothpastes when applied twice a day are considered to be very effective means of caries prophylaxis" (Kilian et. al., 1999).

According to the fluorine content, we divide toothpastes:

- for preschoolers (with–500 ppm F content)
- for schoolchildren (with–1000 ppm F)
- common toothpastes for adults (with–1450 F ppm)
- therapeutic toothpaste (1800–2500 ppm F)

For mentally disabled patients, we usually choose toothpastes with a content of 1000–1500 ppm fluorine. In a patient where it is obvious that he/she is unable to rinse the paste properly or is able to swallow it, a paste with a lower fluorine concentration is used. Supervision of the patient while cleaning the teeth is a matter of course. If the patient already has appropriate habits, supervision can be reduced. Everything is individual.

"It is advisable to control the patient's exposure to fluoride by determining the concentrations of fluoride in the urine to prevent excessive intake of fluoride, which can be ingested from local sources. This is important when fluoride preparations are swallowed if the patient is unable to rinse properly" (Pilinová et al., 2001).

Other forms of local fluoridation include rinsing solutions, fluoride gels and fluoride varnishes. The patient performs all these methods only on the recommendation of a dentist. The rinsing solutions include chlorhexidine in the most common concentration of 0.12% or 0.2%. However, we must again pay close attention to the person taking care of the disabled so that he/she does not swallow the solution. However, staff or parents most often use toothpaste, because other methods are very demanding for them and the patient (KILIAN et. al., 1999).

Dental hygiene in disabled individuals in the home or institutional environment

High-quality and carefully performed oral hygiene, optimally twice a day, in the morning before meals and in the evening after the last meal, is part of the standard hygienic habits of a healthy individual. This should be a common standard for a disabled patient, either in home or institutional care. If there is insufficient supervision of such an affected person and is not educated according to their abilities, or institutional supervision and assistance of caregivers fails, this will immediately affect the patient's oral health and oral hygiene. The supervision and assistance of caregivers is very important and indispensable.

During the workshops organized within the project Education of caregivers for mentally disabled patients in the field of dental hygiene, we educated patients under the supervision of caregivers, first on dental models, where they were introduced to toothbrush cleaning

techniques. We used a manual brush, also an electric rotary and oscillating brush. Patients could try everything on themselves, as we had hygienic disposable brush covers and disposable cleaning heads for electric brushes available from our business partners. Patients were provided with manual toothbrushes and toothpaste samples provided by toothpaste manufacturers. This had a very positive response, as most disabled patients have limited financial resources and any help is very beneficial for them.
It should be emphasized that if a caregiver wants to perform oral hygiene in his/her patients properly, all techniques need to be learned. It is advisable to visit a dental hygienist or dentist who will help him/her in this training (Nováková et. al., 2008).
For patients with mental disabilities, gradual training is very important. Training should begin at the earliest possible age. This exercise always involves nonverbal communication (facial expressions, touches, gestures) and there should be positive stimuli that the patient understands very well. The form of the game is also recommended. Praise for every success is also necessary (Pilinová et. al., 2001).
Patients with mental disabilities often have combined disabilities and their manual dexterity has its limitations. They need to be approached kindly, with an individual dose of patience. Brushing one's teeth should be a common and normal part of the day, which should be done comfortably and calmly, not under time pressure. The patient should take brushing his teeth as a pleasant but necessary activity. His surroundings should be a model for him also in the field of dental hygiene, both family and caregivers. The dental hygienist should be appropriately dressed and groomed, be accommodating and not use pressure, but create a calm atmosphere in which she will educate the patient.
The goal of oral hygiene is to remove dental plaque and food scraps. We use mechanical aids (toothbrushes), chemical aids (rinsing) and other possible means available to remove dental plaque (Nováková et. al., 2008).

Cleaning method

The method of brushing teeth in patients with mental disabilities should be as simple and effective as possible. In childhood, the patient's teeth are cleaned by his/her parent or caregiver. It must not be uncomfortable for the patient, but at the same time the caregiver must be very thorough. First, we clean without toothpaste, later with toothpaste for those patients who are able to rinse their mouths. In the next stage, when the patient is already independent, he/she cleans his/her teeth himself/herself, but a check by a parent or caregiver is always necessary (Pilinová et. al., 2001).
For patients with mental disabilities, the simple Fone's method (rotation method) is recommended. This method is easily mastered, but it also has its disadvantages, namely that the subgingival plaque is not sufficiently removed and the interdental spaces are omitted. But unfortunately we do not achieve better cleansing for people with mental disabilities, we are happy for any form of cleansing (Weber, 2006).
The Fone's method is described in the literature as follows: "The toothbrush fibers are placed horizontally perpendicular to the teeth and circular movements are performed. The vestibular surfaces of the upper and lower jaws are cleaned together and then the biting surfaces are cleaned in a vertical motion" (Sychrová, 2007).

Aids

For dental cleaning techniques to be effective, the right dental aids must be chosen. We select them on the basis of the patient's manual skills and with regard to the specifics of his/her disability. We have a wide range of oral hygiene products on the market, so both the dental hygienist and the dentist will help the patient with the choice. We divide them into mechanical and chemical (Pilinová et. al., 2001).

We include toothbrushes as mechanical means. A regular toothbrush should meet certain criteria:

- the length of the working part (head) should be 1.5 cm for children and 2.5 cm long for adults
- optimal number of fibers is 1600 and more. Bundlea of fibers are in 3–4 rows
- the fibers are made of plastic (nylon, tynex) and the ends should be rounded
- the diameter of the fibers (bristles) determines the hardness and is in the range from 0.15–0.28 mm
- fibers are flat-cut – flat surface better cleans flat surface (Kilian et. Al., 1999) Hand brushes for disabled patients usually have differently designed handles for easier gripping and handling in the oral cavity (Welbury, 2001).

"In addition to the standard hand brush, less common double-headed or triple-head hand toothbrushes are offered to people with disabilities, which speed up brushing teeth by acting on more surfaces at the same time" (Weber, 2006).

The method of choice is also different types of electric brushes, namely rotary, oscillating or combined. For some disabled patients, it is acceptable if they have some motor skills and are sufficiently educated and trained to work with these oral hygiene aids.

Single-bundle, so-called solo brushes, and interdental cleaners, such as interdental brushes and dental floss, are not commonly used by mentally disabled patients because they require very good manual dexterity and are not easy to work with. We do not prohibit their use, but usually mentally disabled patients do not work independently with these aids. Family members or caregivers of the disabled clean more often with them.

Together with mechanical aids for dental hygiene, it is appropriate to include in oral care also chemical means of dental hygiene such as mouthwashes, toothpastes, fluoride preparations and the mentioned plaque indicators for quality control of dental hygiene.

CONCLUSION

Dental hygiene and preventive care for the mentally disabled is a marginal area. Addressing this field and topic requires considerable effort and cooperation from both the patient and the greater commitment of the caring staff and the family. At a time when we are struggling with a shortage of dentists and dental hygienists, this is even more challenging. The results we encountered in a small group of patients and their caregivers are very encouraging and motivate us to further educational and preventive activities, which we plan in other projects. Dental hygiene education of staff and patients has become part of the care of mentally disabled patients in our medical facility. It continues

with preventive and educational programs at the Psychiatric hospital in Opava, and dental hygiene students at the Silesian University in Opava are also actively involved in these activities.

The article is a part of a project that was implemented with the financial support of the Ministry of Health of the Czech Republic.
Project title: Education of caregivers for mentally disabled individuals in the field of dental hygiene.
Identification number: 2021/PVP_NE/OKD/210/MZDR 44611/2020/OKD

References

KILIAN, J. et. Al. *Prevence ve stomatologii*, 2. vydání. Praha: Galén – Karolinum, 1999. ISBN 80- 7184-976-6.

NOVÁKOVÁ, K. *Stomatologická péče o hendikepované pacienty*, 1. vydání. Olomouc: Univerzita Palackého, 2008. ISBN 978-80-244-2008-0.

PILINOVÁ, A. Stomatologická péče o děti a dospělé, žijící v ústavech sociální péče. *Sociální péče*. 2001, roč. 2, č. 4.

SYCHROVÁ, K. *Individuální orální hygiena* [on-line]. 27. 2. 2007 [cit. 20. 2. 2012]. Dostupné z: http://www.stomateam.cz/index.php?clanek=164.

KAWULOKOVÁ, I., ŽÍDKOVÁ, V. a KRESTOVÁ, B., Ošetření hendikepovaného pacienta ve stomatologii. *Sestra*. 2002, roč. 12, č. 3, s. 8. ISSN 1210-0404.

HRBKOVÁ, I., Handicapované děti ve stomatologické ambulanci. *Florence*. 2007, roč. 3, č. 3, s. 124–125. ISSN 180-464X.

HONZÁK, R. a PÁLKA, J. Komunikace lékařů a zdravotníků s handicapovanými pacienty: Komunikační strategie. *Praktický lékař*, 1995, roč. 75, č. 7/8, s. 384–385. ISSN 0032-6739.

HALAČKOVÁ, Z., IZAKOVIČOVÁ HOLLÁ, L. a KUKLETOVÁ, M., Zubní péče u rizikových skupin pacientů s diagnózou mentální retardace a epilepsie. *Česká stomatologie a Praktické zubní lékařství: časopis stomatologických společností*. 2009, roč. 19, č. 4, s. 66–69. ISSN 1213-0613.

VALENTA, M., MICHALÍK, J. a LEČBYCH, M. a kol. *Mentální postižení*. 2., přepracované a aktualizované vydání. Praha: Grada Publishing. 2018. ISBN 978-80-271-0378-2.

VALENTA, M. a MÜLLER, O. Etiologie mentální retardace. In: VALENTA, M., MICHALÍK, J., LEČBYCH, M. a kol. M*entální postižení*. 2., přepracované a aktualizované vydání. Praha: Grada Publishing. 2018. ISBN 978-80-271-0378-2.

WEBER, T. *Memorix zubního lékařství*. 1. české vydání. Praha: Grada Publishing. 2006. ISBN-10: 80-247-1017-X.

WELBURY, R. *Paediatric Dentistry*. 2.vyd. Oxford: 2001, s. 401–402. ISBN-13: 978-019-2631-862.

Contact

MUDr. Ing. Daniela Mošová
Faculty of Public Policies in Opava, Silesian University
Institute of Non-medical Healthcare Studies
Bezručovo nám. 885/14, 746 01 Opava, Czech Republic
daniela.mosova@fvp.slu.cz