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Journal of Basic Health (JOBAH)

CONTENTS

“I firmly believe that the cherished republic, which is the precious work of national determination and consciousness, will always rise and live in the strong hands of today’s and tomorrow’s generations.”

Mustafa Kemal ATATÜRK

As JOBAH Editorial Office, we proudly celebrate the 100th anniversary of our Republic and commemorate our heroic martyrs, especially Gazi Mustafa Kemal ATATÜRK, with mercy and gratitude.

Editor in Chief: Gulsah YILDIZ DENIZ

Health Services Vocational Collage

Oral hygiene care in primary school children: practice recommendations

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Abstract

Poor oral hygiene is a great public health problem worldwide. Dental caries is considered the most prevalent human disease, affecting 80–90% of the world population. In children, it appears to have a fivefold higher prevalence than asthma, which is the second most prevalent disease. Oral diseases can cause severe pain and loss of teeth, both of which affect appearance, dietary intake, and consequently the growth and development of children. Children may not be very good at cleaning their teeth and mouth. The child's dexterity and the parent's attitude determine the tooth brushing habit. Milk teeth contain more organic matter than normal teeth, so they are more prone to decay and decay more easily and quickly. The purpose of this study is to compile the current concepts and scientific evidence needed to understand and implement preventative oral health programs designed to improve health problems for children at risk of dental caries.

Keywords: Dental caries, oral ecosystem, oral hygiene.

Introduction

The mouth is colonized by 200 to 300 bacterial species, but only a limited number of these species participate in dental decay (caries) or periodontal disease (Liu et al., 2012). The oral ecosystem reforms with the eruption of the first tooth. The host and environmental factors also influence the assembly of the oral microbiome in early childhood (Dewhirst et al., 2010). The most studied factors include genetics, terms of labor, delivery mode, antibiotics use during birth and early infancy, feeding method, and maternal oral microbiome characteristics. These influencing factors contribute to shaping both bacterial and fungal communities. Microorganisms originating from the oral flora that settle on the tooth surface produce acid by metabolizing the sugars taken with food (Moore et al., 1994). The oral microbiome encompasses a highly diverse microbiota, consisting of over 700 microorganisms, including bacteria, fungi, and viruses. Colonization of oral mucosal surfaces begins at birth with the introduction of bacteria and fungi through multiple paths, including maternal transmission during childbirth, parental exposures, diet and horizontal transmission from caregivers and peers. The oral microbial community continues to develop with the eruption of primary teeth in early infancy and establishment of permanent dentition in children, evolves into a complex and diverse microbiome. The biochemical changes that occur in the hard tissues of the teeth are called dental caries (Caufield et al., 2000). Dental decay recognized the world's most common bacterial infection and is due to the irreversible solubilization of tooth mineral by acid produced by certain bacteria that adhere to the tooth surface in bacterial communities known as dental plaque. Streptococcus mutans is the main cause of dental decay (van Houte et al., 1982). However, other microbial species were also isolated from carious lesions and have been related to the process of tooth decay, including lactobacilli and bifidobacteria (Agnello et al., 2017).

Various lactobacilli are associated with progression of the lesion. The tooth surface normally loses some tooth mineral from the action of the acid formed by plaque bacteria after ingestion of foods containing fermentable carbohydrates. This mineral is normally replenished by the saliva between meals. However, when fermentable foods are eaten frequently, the low pH in the

plaque is sustained and a net loss of mineral from the tooth occurs (Featherstone 2008). This low pH selects for aciduric organisms, such as S mutans and lactobacilli, which (especially S mutans) store polysaccharide and continue to secrete acid long after the food has been swallowed (Raja et al., 2010).

Caries become intensely painful when the lesion approaches the tooth pulp. Oral health care education is a public health priority as the maintenance of oral hygiene is integral to overall health. It is known that dental caries can be reversed at the initial stage and can be stopped up to a stage. But the mouth current demineralization-remineralization in the environment balance continues to deteriorate in favor of demineralization. If it does, cavitation occurs. Caries reaching this level can only be restored with interventional treatments. To control the dental caries problem in the society First of all, it is necessary to spread the awareness of prevention, and then to ensure that the most appropriate treatment is applied.

Childhood oral diseases

Early childhood caries (ECC) is characterized by the presence of one or more primary teeth with caries, in the form of lesions that are cavitary or not, or teeth that are missing or filled because of caries, in preschool children aged from 0 to 60 months (Finnegan et al., 2016). In children younger than 3 years, severe forms of ECC are defined by signs of caries on the smooth surfaces of teeth, generally the maxillary incisors, and in children from 3 to 5 years old, one or more of the maxillary incisors with caries or filled or missing because of caries (Seow et al., 2009).

Children from families with a low socioeconomic position (SEP) are affected by poor oral health, including dental caries (Kossioni 2018). It is thus important to identify and understand the risk factors for dental caries in order to reduce oral health inequalities in the future. Caries, the most common chronic childhood disease, is of dietary/bacterial origin, and it occurs as a result of cariogenic diets (sugar-related) and the metabolism of specific bacteria on dietary sugars in susceptible hosts (Alvarez 1995). The role of dietary carbohydrates on caries development is well-known, but the influence of infant feeding and its practices on childhood caries is poorly understood and can lead to confusion. There are several studies

showing that breastfed babies were less affected by cavities than bottle-fed babies (Avila et al., 2015). Timby et al. characterized and compared the oral microbiome in formula-fed and breastfed infants (Timby et al., 2017). The oral microbiota pattern of breastfed infants differed markedly from the formula-fed infants, with significantly lower species richness at 4 months of age (Arweiler and Netuschil, 2016). However, notable enough, this difference in oral species richness between breastfed and formula-fed infants disappeared when these infants reached 12 months of age. In contrast to the species richness, the difference of certain microbial community characteristics remained even after the discontinuation of the breastfeeding, which indicates that there might be a long-term effect of breastfeeding on the oral microbiota and this phenomenon deserves further follow-up (Tham et al., 2015). The oral microbiome remains its stability over time in healthy individuals, despite subjected to a variety of host and environmental challenges.

Prevention and Treatment

Cleaning should begin after the first teeth begin to appear in the baby's mouth (6-8 months). After each feeding, the teeth are wiped with a clean cheesecloth or gauze. Starting from the age of 1-1.5, teeth can be cleaned with a soft toothbrush (Joshi et al., 2018). The toothbrush should have small, flat, soft and nylon bristles. After their second birthday, children can use toothbrushes, but this is only to get them into the habit. This task belongs to the parents. After the age of 2.5, a very small amount of toothpaste can be placed on the toothbrush. But it should never be swallowed. The widespread use of fluoride in the water supply, in dentifrices, and in local applications by the dentist has reduced the prevalence of caries by 30 to 50 percent among young people in many industrialized countries (AAPD, 2017). In clinical trials, the use of topical antimicrobial agents to eradicate diagnosed S mutans infections usually significantly reduces decay. Brushing at least twice a day with toothpaste containing fluoride is considered an important aspect of the prevention and promotion of good brushing habits at an early age to prevent early childhood dental decay (Fisher-Owens 2007).

Maintaining optimal oral hygiene among children is challenging and can be supported by using relevant motivational approaches. According to the data of the

Turkish Statistical Institute (TUIK), the proportion of children aged 3-17 who brush their teeth at least once a day in 2022 was 66.5%. When tooth brushing rates were analyzed by gender, it was seen that girls had a higher rate of tooth brushing than boys. While the rate of girls in the 3-17 age group, who stated that they brush their teeth once a day, was 36.7%, the rate of boys was 34.1%. While the rate of girls in the 3-17 age group, who were stated to brush their teeth more than once a day, was 36.7%, the rate of boys was 26.0%. When tooth brushing rates were analyzed by age groups, it was observed that the proportion of children brushing their teeth increased with age. While the rate of children in the 3-5 age group who stated that they brush their teeth more than once a day was 21.3%, the rate of children in the 13-17 age group was 39.3%. Reduction of carbohydrate intake frequency is one of the most important methods which decreases demineralization and thereby promotes remineralization. In order to control the problem of tooth decay in society, it is necessary to first spread awareness about prevention and then ensure the application of the most appropriate treatment.

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Health Services Vocational Collage

Electrical Picture of The Brain

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Abstract

Experts in many different fields work in hospitals and various health institutions. In this way, the system progresses in a very controlled manner. Electroneurophysiology technician performs various neurophysiological measurements to easily and quickly diagnose diseases caused by Central Nervous System (CNS) problems. The person who uses and directs all these devices such as electromyography, electroencephalogram and polysomnography under the supervision of specialist physicians is called an electroneurophysiology technician. These technicians can also easily take care of the maintenance and cleaning of the devices. The electroneurophysiology technician who keeps patient records also ensures that the records are archived regularly. At the same time, it plays an important role in easily solving any problems related to the devices. In this study, I aimed to compile information about the electroneurophysiology department and its technicians, which is a new field in our country, as a result of literature research and present it to those who are interested.

Keywords: Electroneurophysiology,

electroencephalography,

electroencephalogram.

Introduction

Electroneurophysiology is the scientific field dedicated to the recording and examination of the electrical activity of the brain and the nervous system (Uskudar University, 2023). Hans Berger, a psychiatrist, and neurologist is known as the innovator of electroencephalography (EEG), the method used to record the electrical activity of the brain. During World War I, Hans Berger conducted the first electroencephalogram recording by placing electrodes in the brains of individuals who had suffered head injuries (1924). In the subsequent years, he demonstrated that electroencephalogram recordings could also be made using electrodes placed on the scalp (Ummuhan, 2022). Today, electroencephalography is recorded using electrodes attached to the scalp, following the internationally accepted 10-20 system (Betül at al, 2019). Our brain continuously generates very low-intensity electrical currents and emits these waves in a regular manner (About EEG, 2023). EEG is the process of recording these waves in a computerized environment. EEG recording is performed by placing small electrodes on the scalp through a conductive substance called "paste." For the most accurate EEG recording, the patient's hair must be clean. During the recording, the technician should pay attention to commands such as opening and closing the eyes, and if the patient is in a state of sleep, they should avoid opening their eyes or moving. Changes in electrical potential between the electrodes placed on the skull are recorded by the computer, and the results are interpreted by an expert who provides the necessary information to the patient. When examining the obtained recording, deviations from the norm can be used to diagnose various brain disorders (Donald and Fernando, 2017). EEG is a completely painless and harmless examination method. It does not cause discomfort. There is no exposure to electricity or radiation. It is not harmful to pregnant women, does not harm the brain, and EEG recordings can be taken from individuals of all ages, including newborns (Canan, 2023).

In EEG recording, the following steps are followed:

1. The technician performs the initial measurement and determines the exact placement of the electrodes, marking them with a special pen. EEG paste is

applied to the electrodes to enhance conductivity.

2. After this determination, the electrodes are placed on the scalp using adhesive. Sometimes, electrode caps may be used instead. The electrodes are connected to the EEG device to transmit brain waves.

3. Once the preparations are complete, the recording process begins. Sometimes, to obtain more reliable results, you may need to fall asleep during the recording. Certain eye and body movements can interfere with the quality of the results.

4. While EEG records brain waves, your body movements are simultaneously recorded with a video camera. These recordings can provide guidance in diagnosis and treatment.

5. After the EEG recording, the electrodes are removed, and the results are delivered to the physician (Acıbadem, 2022).

Diseases That Can Be Diagnosed By EEG

EEG can be applied to patients with suspected or diagnosed neurological disorders where measuring brain activity is crucial for diagnosis and monitoring. These patients can be summarized as follows:

- Epilepsy patients
- Those suspected of or diagnosed with brain hemorrhage
- Stroke or cerebrovascular disease patients
- Individuals with suspected brain tumors or brain cancer
- Presence of infections affecting brain tissue such as encephalitis
- Excessive sleepiness (narcolepsy) or insomnia
- Individuals with a history of head trauma
- Dementia
- Patients in a coma state (Acıbadem, 2022)

Types of Electroencephalogram

Routine (Awake) EEG: Also known as the awake EEG, this type of EEG recording requires the patient to remain calm while sitting or lying down. The patient is asked to open and close their eyes 4-5 times with 10-second intervals during the EEG recording. Deep breathing exercises are performed for 3-5 minutes. Additionally, a photic

stimulation activation method is used for 5-7 minutes. The goal of routine EEG is to evoke epileptic foci or abnormal activity actively(About EEG, 2023).

Sleep EEG: Sleep EEG is recorded while the patient is asleep. The patient should ideally stay awake as much as possible before the recording. However, for patients who cannot fall asleep, medications such as chloral hydrate may be administered to induce sleep (About EEG, 2023).

Sleep-Wake EEG: In a Sleep-Wake EEG examination, routine (awake) EEG recordings are obtained at the beginning of the examination. After 15-20 minutes of awake EEG recording, the patient is asked to fall asleep, and the examination continues. In sleep EEG examinations, depending on the situation, a 1-hour recording is performed, after which the patient is awakened (About EEG, 2023). This type of EEG can be informative in diseases such as epilepsy, coma, brain death, and dementia (Avicenna, 2023).

1-3 Hour EEG Monitoring: EEG monitoring involves simultaneous video recording during EEG recording. The goal here is to compare simultaneous EEG changes with suspected movements or seizure-like events, allowing for a comprehensive assessment. Thus, it becomes possible to evaluate the seizure both visually and by recording brain activity simultaneously for a certain period (About EEG, 2023).

All-Night EEG and 24-Hour EEG Monitoring: This involves recording EEG for the entire night, 24 hours, or longer (About EEG, 2023).

EEG Technician's Duties and Responsibilities

According to the regulation regarding the job descriptions and duties of healthcare professionals and other healthcare workers:

a)Performs electrophysiological applications such as electroencephalography (EEG), electromyography (ENMG), polysomnography (PSG), positive airway pressure (PAP) titration, evoked potential studies, as directed by the physician.

b) Monitors the patient throughout the procedure, reports any unusual conditions or complications observed regarding the patient's condition to the physician.

c)Prepares the necessary devices, electrodes, materials, and medications

for procedures and emergency situations. Calibrates the devices before the procedure. Ensures the suitability of the environment for procedures.

d) Ensures the cleaning and maintenance of the devices and materials used after the procedure and stores them properly (Legislation, 2014)**.**

Occupation and Career Opportunities

Graduates of the Electroneurophysiology program can work in electroencephalography, evoked potentials, and sleep units in public or private hospitals or clinics under the supervision and control of specialists in neurology, otorhinolaryngology, psychiatry, pediatrics, chest diseases, and physiology. They can also work as electrophysiology technicians in scientific research conducted domestically and internationally at universities. In addition, those who successfully complete the associate degree programs in "Electroneurophysiology" can be appointed as Healthcare Technicians according to the Public Personnel Selection Examination (KPSS). Graduates who have completed associate degree programs in "Electroneurophysiology" can transfer vertically to undergraduate programs in "Nursing, Nursing and Health Services, Physiotherapy and Rehabilitation" if they are successful in the External Transfer Exam (DGS) organized by OSYM (Biruni, 2021).

In the Electroneurophysiology program, training is provided on how to apply electrophysiological methods such as Electromyography (EMG), Polysomnography (PSG), and Electroencephalography (EEG), which are essential for the examination of cognitive and behavioral analysis in the brain and the diseases that result from the loss of these functions. The number of graduates with the title of Electroneurophysiology Technician is quite limited, and in today's world, where the importance of the healthcare field is increasing, there can be seen a significant demand for professionals in this field (Biruni, 2021).

The general aim of this study is to contribute to understanding the development of EEG from the past to the present, how EEG is recorded and by whom, and the job description of EEG technicians. Additionally, it aims to provide information about job and career opportunities for individuals who wish to choose this field after graduation.

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