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REDUCE ŞI AJUTĂ LA PREVENIREA PROBLEMELOR GINGIVALE ÎN 4 SĂPTĂMÂNI PENTRU A ÎNTRERUPE CICLUL GINGIVITEI

blend-a-med Oral-B CLINIC LINE GUM PROTECTION SYSTEM

Recomandați Sistemul blend-a-med Oral-B Clinic Line Gum Protection

Este dovedit clinic că reduce si ajută la prevenirea problemelor gingivale în 4 săptămâni pentru a ajuta pacienții să întrerupă ciclul gingivitei. Sistemul combină acțiunea chimică puternică a fluorurii de staniu stabilizate, suplimentată de apă de gură, cu acțiunea mecanică a periuței de dinți Pro-Flex, suplimentată de ață dentară, facând din acesta completarea perfectă a tratamentului din cabinetul dumneavoastră.

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Continuă îngrijirea ce începe în cabinetul dumneavoastră

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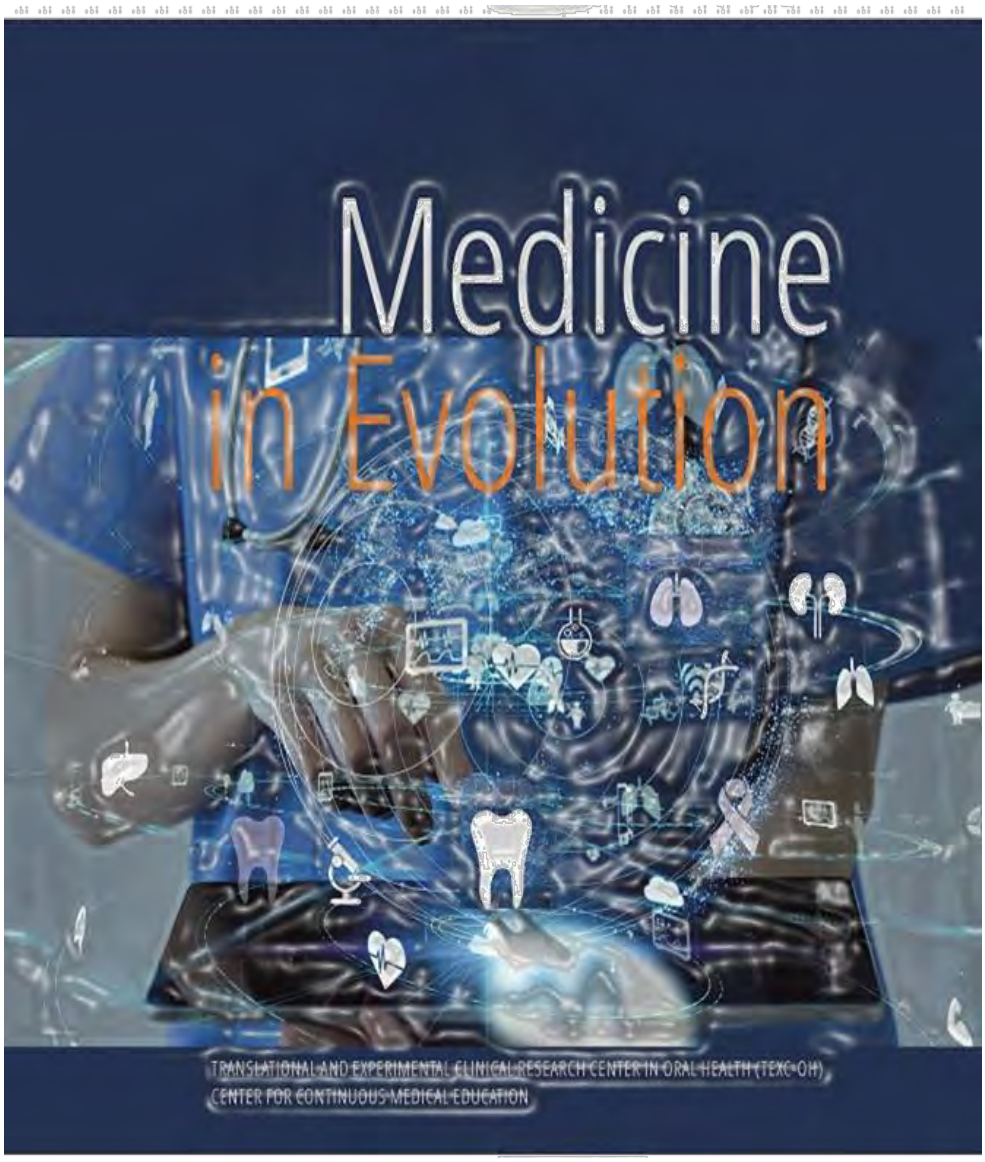

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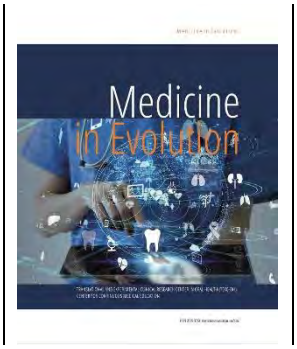

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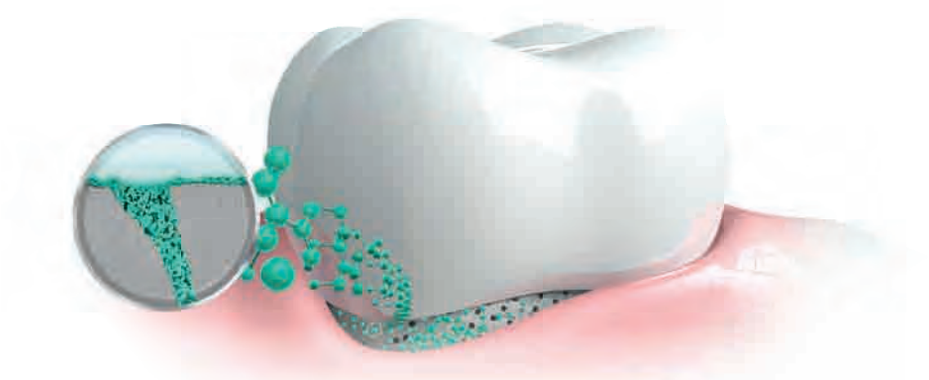
Noul elmex®SENSITIVE PROFESSIONAL cu tehnologia PRO-ARGIN

Calmarea **imediată* și de durată** a durerii din sensibilitatea dentară[1,2]



- În contact cu saliva, se formează un strat bogat în calciu, care obturează instant[1,*] tubulii dentinari deschiși
- Stratul rămâne intact în timp, chiar după expunerea la acizi, asigurând calmarea de durată a durerii din sensibilitatea dentară[2,3]

93% dintre pacienți confirmă calmarea durerii din sensibilitatea dentară[4]

93% dintre pacienți — confirmă reducerea hipersensibilității dentinare[4]

91% dintre pacienți — apreciază recomandarea medicului stomatolog[4]

Calmarea imediată* a durerii din sensibilitatea dentară[1]

Calmarea imediată* și de durată începe cu recomandarea dumneavoastră**

*Pentru calmare imediată, aplicați direct cu degetul pe dintele sensibil și masați ușor pentru 1 minut;
**Doar în legătură cu pasta de dinți

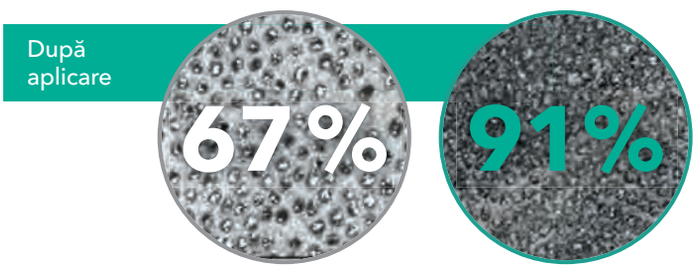
Referințe: 1. Nathoo S, et al. J Clin Dent. 2009;20(Spec Iss):123 –130; 2. Docimo R, et al. J Clin Dent. 2009;20(Spec Iss): 17– 22.; 3. Report Deon Hines-0003, 2016; 4. Studiu Ipsos cu privire la utilizarea produsului elmex® SENSITIVE PROFESSIONAL Repair & Prevent, efectuat în Polonia, rezultate după 2 săptămâni de utilizare, cu 325 de participanți (2017).

elmex® SENSITIVE PROFESSIONAL realizează obturarea superioară a tubulilor dentinari în comparație cu tehnologiile concurente[1,2,*]

Studiul 1[1,*]

Tehnologia cu fluorură de staniu/ fluorură de sodiu

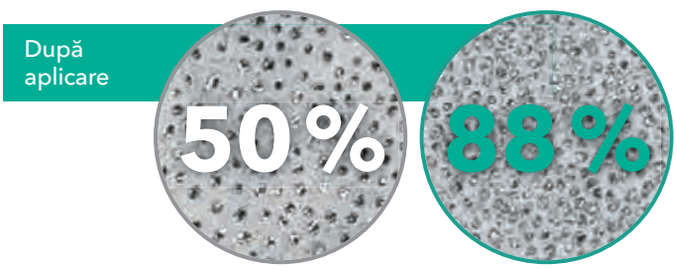
Tehnologia PRO-ARGIN



Studiul 2[2,*]

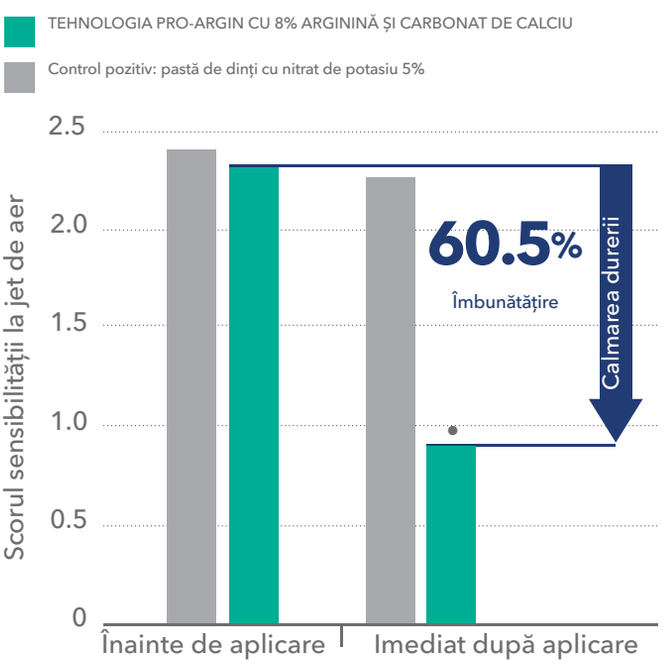
Tehnologia Novamin/ fluorură de sodiu

Tehnologia PRO-ARGIN



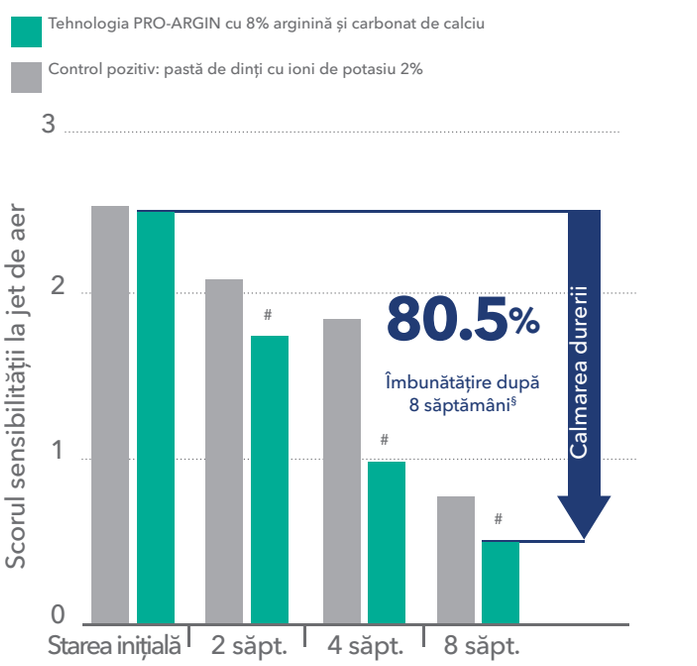
elmex® SENSITIVE PROFESSIONAL oferă calmare semnificativă imediată** și de durată a durerii din sensibilitatea dentară[3,4]

Calmarea semnificativă a durerii din sensibilitatea dentară instant[3,‡,**]



‡ În comparație cu starea inițială (sunt prezentate doar datele relevante)
• Semnificativ statistic (p<0,001)

Calmarea semnificativă de lungă durată a durerii din sensibilitatea dentară după 2, 4, și 8 săptămâni de utilizare[4,§,&]



§ În comparație cu starea inițială
& În comparație cu o pastă de dinți comercială desensibilizantă, ce conține 2% ioni de potasiu și 1450 ppm de fluor (NaF)
# Semnificativ statistic (p<0,05)

*Studiu in vitro, imagini reale de microscopie confocală după 5 aplicări (p<0,05%);
**Pentru calmarea imediată aplicați direct pe suprafața sensibilă și masați ușor cu vârful degetului timp de 1 minut.

Referințe: 1. Hines D, et al. Poster acceptat, July 2018 IADR. Colgate- Palmolive Company 2018.; 2. Hines D, et al. Poster #0742, March 2018 AADR. Colgate-Palmolive Company 2018.; 3. Nathoo S, et al. J Clin Dent. 2009;20(Spec Iss):123 –130; 4. Docimo R, et al. J Clin Dent. 2009; 20(Spec Iss): 17– 22.

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Treatment effectiveness of dry eye syndrome among computer users

Jurca A. M.[1], Stanila A.[1], Gajta A.[2], Stanila D.[1], Panga A.[1]

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Abstract

The aim of the study is to evaluate the symptoms of dry eye syndrome among computer users and to evaluate the effectiveness of treatment with various topical medication (artificial tears). The investigative methods used were: Ocular surface disease index questionnaire (OSDI), based on 12 questions related to subjective ocular signs and symptoms that occurred during various activities of daily living, the Schirmer I test (without anesthesia), tear break-up time (T-BUT) and tear pH. In this study were admitted 35 subjects, video terminal operators (VDT), 12 Male (M) and 23 Female (F), average age of 38.51 years, with signs and symptoms of dry eyes, no acute ocular pathology, no previous eye surgery and no topical drugs administered two months before the study. The results show an improvement in symptoms after one month of treatment with topical medication.

Keywords: computer users, risk factor, dry eye syndrome

INTRODUCTION

Dry eye disease it's one of the most common ocular comorbidities and may overlap with other causes of ocular surface disease, such as ocular allergy and meibomian gland dysfunction. Dry eye syndrome is a multifactorial disease whose outcome is malfunctioning of the tear film due to insufficient tear production qualitative or quantitative or increased tear film evaporation, with potential damage to the ocular surface [1]. A study made by the National Institute of Safety and Health at Work shows that about 90% of those computer workers are affected by dry eye syndrome [2]. Computer vision syndrome, also referred to as digital eye fatigue, has been described by the American Optometry Association as a vision and eye problem seen in long-term computer, tablet, and cell phone users [3]. The use of computers leads to decreased blink rate, incomplete blinking, faster evaporation of tears from the eye surface and later to dry eye syndrome [4].

Aim and objectives

The aim of this study was to evaluate the influence of computer workers on the symptoms of dry eye and to evaluate the effectiveness of treatment on the ocular surface using various topical drugs (artificial tears).

MATERIAL AND METHODS

In this study were admitted 35 subjects who work on the computer between 5 and 10 hours a day, 12 M and 23 F, mean age of 38.51 with signs and symptoms of dry eyes, no acute ocular pathology, no previous eye surgery and without topical medication given two months before inclusion in the study. All patients admitted to the study were evaluated on the day of enrolment in the study and after 30 days of treatment through the OSDI questionnaire. Schirmer I test, T-BUT and tear pH were performed in the morning (before work), in the evening (after work), on the same day and after 30 days of treatment (in the evening - after work). Also, the measured values were noted for each eye (RE – right eye; LE – left eye). All subjects were treated with a tear substitute - 1 drop 3 times/in both eyes/day for 30 days.

Ocular surface disease index questionnaire (OSDI) is based on 12 questions related to subjective ocular signs and symptoms that occurred during various activities of daily living. The overall OSDI score defined the ocular surface as normal (0-12 points) or as having mild (13-22 points), moderate (23-32 points), or severe (33-100 points) disease [5].

For the Schirmer I test we used the standard test paper strip, inserted in the conjunctival sac, without anesthesia. After 5 minutes it was removed and the wet length of the strips was read, the results being noted in millimeters. The normal values of Schirmer I test are over 15 mm/5 min.

Tear break-up time (T-BUT) - a drop of fluorescein 0,5% it's applied in the lower conjunctival fornix. The patient is asked to blink several times and the interval between the last blink and the appearance of the first black spots on the corneal surface is measured in seconds. Tear film break-up time is a standard and widely accepted test for tear film stability assessment [6]. Results over 10 seconds are considered normal values.

For the tear pH, we used pH strips of paper inserted into the conjunctival sac and left to soak with tears, then the color obtained was compared with the color of the test scale. Normal values are considered between 6.5 – 7.6.

RESULTS

In this study were admitted 35 subjects, video-terminal operators, 12 men and 23 female, with a mean age of 38.51 years [Table 1]. The average working hours on the computer

was 7.6 hours / day. In all subjects included in this study, after 30 days of treatment with artificial tears was observed a decrease or disappearance of symptoms present at baseline.

Table 1. Distribution of patients by age / gender / smokers/ non-smokers

Age category	M smokers	F Smokers	M non-smokers	F non-smokers	Total / Category
20-29	0	0	2	4	6
30-39	0	2	4	3	9
40-49	0	3	6	9	18
50-59	0	0	0	2	2
Total	0	5	12	18	35

All patients responded to OSDI questionnaires before treatment and after 30 days of treatment. The average OSDI initial score was 43.83, and after 30 days of treatment the average OSDI score was 27.45. The results show an improvement in the post-treatment OSDI score, which indicates an improvement in dry eye symptoms, as well as less discomfort in daily activities [Figure 1].

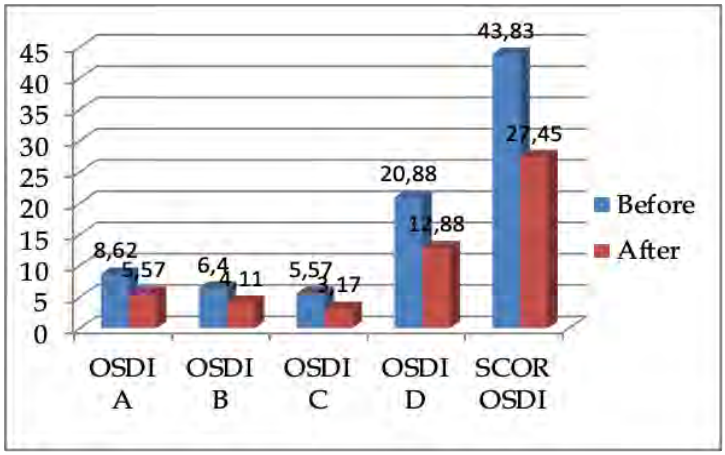

Figure 1. OSDI questionnaire answers before and after 30 days of treatment

The results of the Schirmer I test show a decrease in tear secretion in the evening compared to those measured in the morning, as well as an increase in tear secretion after treatment. The results of the Schirmer I test after treatment show us post-treatment values, measured in the evening, are comparable and slightly above the value of the Schirmer I test performed in the morning, without treatment [Figure 2]. The difference between the two eyes has no statistical significance.

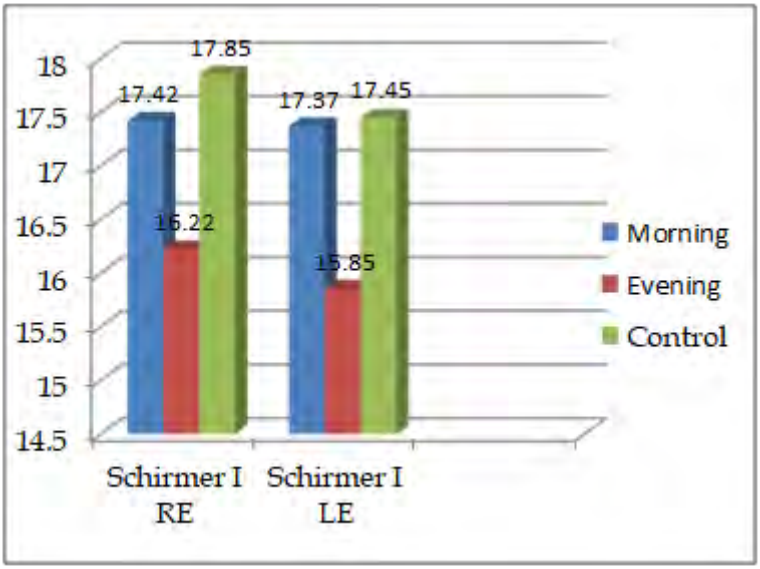

Figure 2. Schirmer I test results in the morning, evening and post-treatment control

A large statistical difference can be observed in the measurements of the tear break-up time performed in the morning, evening and after 30 days of treatment, which makes us think of an excessive evaporation of the tear film in computer users [Figure 3]. The difference between the two eyes has no statistical significance. After one month of treatment, the tear film rupture values were higher than the values measured in the morning without treatment.

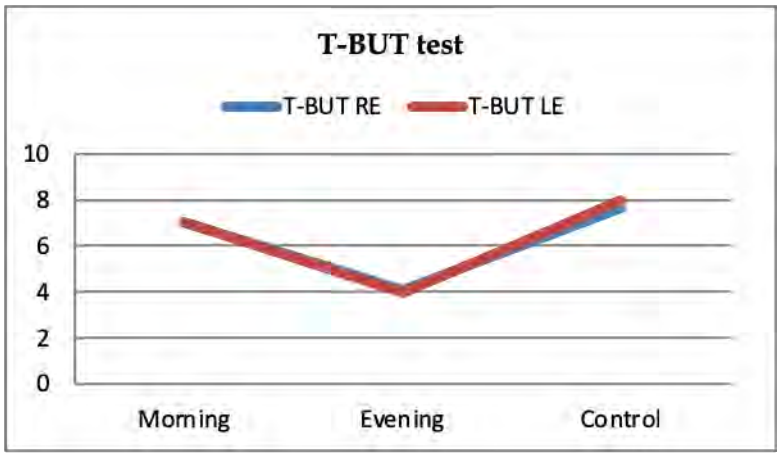

Figure 3. T-BUT test results in the morning, in the evening and at post-treatment control

The diagram below [Figure 4] shows an increase in pH in the measurements performed in the evening (RE – 7.48; LE – 7.710), without treatment, as well as a decrease in tear pH to normal values at 30 days of treatment (RE – 7.17; LE – 7). This shows that lacrimal Ph tends to alkalize in people with dry eye syndrome.

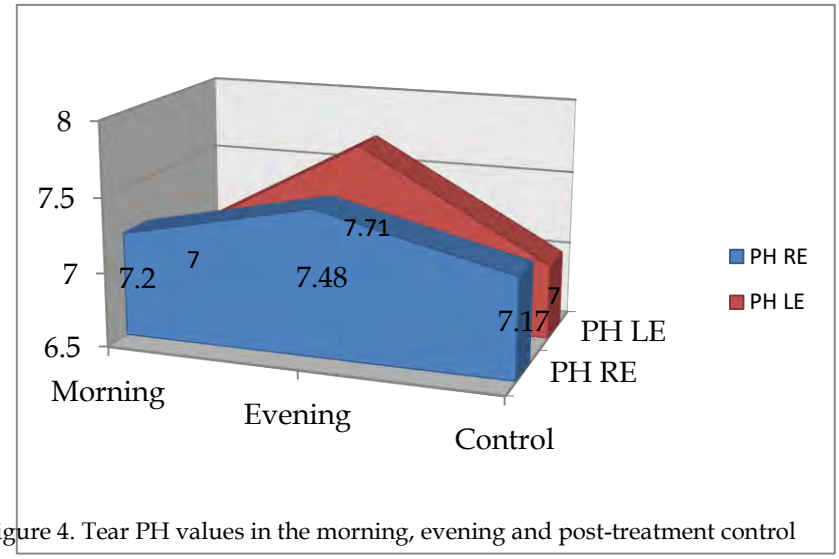

Figure 4. Tear PH values in the morning, evening and post-treatment control

DISCUSSIONS

It was shown in this study that a long-term use of the computer for more than 5 hours a day, causes instability of the tear film, which leads to increased evaporation of the tear film on the ocular surface. T-BUT, which shows the stability of the tear film, proved to be significantly lower in the initial measurements made in the evening, compared to the measurements in the morning. In addition, measurements made in the evening after 30 days of treatment, T-BUT values increased significantly compared to the initial measurements made in the evening. This shows a high instability of the tear film after a day of work on the computer, as well as an increased evaporation of tears from the eye surface. The increase in values after treatment shows that the use of artificial tears as an initial treatment for dry eye syndrome has a positive influence on the stability of the tear film. Portello et al. found a positive correlation between the number of incomplete blinks and eye dryness symptoms of individuals. They found a negative correlation between the number of blinks and relevant symptoms [7].

Lower values of the post-treatment OSDI score was found compared to the initial OSDI score, which correlates with the results of the other measurements performed in the study. Due to this, we can take the OSDI questionnaire as an adjuvant method to support the diagnosis of dry eye, as well as to reveal the symptoms of dry eye. F. Ozcura et. al. demonstrates that OSDI questionnaire is a standardized instrument to evaluate symptoms and can easily be performed and used to support the diagnosis of dry eye syndrome [8].

In this study, the results of the Schirmer I test show a decrease in measured values in the evening compared to the morning, as well as an improvement in the Schirmer I test after 30 days of treatment. The difference between the two eyes has no statistical significance.

Some clinical studies have demonstrated that the Schirmer test does not reliably detect the efficacy of drugs in patients undergoing treatment for dry eye. This variation has led to the changing methodology of the test and investigations into the cause of the test's variability [9].

In this study, the tear pH values have a tendency to alkalize at the initial measurements performed in the evening, compared to the morning values.

After 30 days of treatment, the Ph values have an average similar to the initial values measured in the morning.

Khurana et al. reported a small alkaline shift of 0.1 pH units in participants with dry eye compared to non-dry eye ones [10].

The increasing use of computers, laptops, tablets, smartphones has led to an increase in the prevalence of dry eye disease in the younger population, so additional epidemiological

studies are needed to accurately estimate the prevalence, the relationship between hours spent on computer screens and its preventive measures and awareness [11].

Tsubota K. had shown that the mean blink rate significantly drops down as level of concentration or attention increases. Mean blink rate is 22 per min in relaxed state to 10 per min when reading a book and 7 per min on the computers [12].

Sheedy JE demonstrate that the use of computer monitor in an ergonomic position - one arm distance or 40 inches away with a downward gaze of 14 degree or more appears to help relieve the symptoms of computer related dry eye. This is achieved by placing the monitor so that the top line of screen is at or below eyelevel [13].

Taking a short break, stretching the muscles, change of scenery and a quick walk around the office have been shown to improve productivity and reduce ocular symptoms of stress. Working nonstop for more than 4 hours has been associated with eye strain. Frequent short break can restore and relax the accommodative system of the eyes and preventing ocular strain and visual fatigue [14].

CONCLUSIONS

Dry eye syndrome is a multifactorial condition that occurs very frequently among computer users. The OSDI questionnaire, the Schirmer I test, the tear film rupture test, as well as the tear pH alone cannot support the diagnosis of dry eye, but together we can have a safe diagnosis, but also a starting point for evaluating the treatment of this syndrome.

Artificial tears as an initial treatment for dry eye syndrome can bring significant subjective improvements to the patients, but also objective improvements pursued through the investigations outlined above. Observing the values of the tear film rupture time, we conclude that the major component of dry eye syndrome in computer users is the evaporative one.

In order to bring additional benefits to dry eye symptoms in computer user, it is very important to place greater emphasis on prevention rules.

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Silent bone epidemic - osteoporosis

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Abstract

According to the U.S. International Osteoporosis Association, more than 44 million people have osteoporosis or face the threat of developing osteoporosis due to low bone density results. Estimates place osteoporosis by the end of 2021 around 60 million.. Every three seconds in the world a fracture happens due to the decrease in bone density, causing almost 10 million fractures just because of the pressure on the bones affected by osteoporosis. In general, osteoporosis is associated with a weakened, sarcopenic muscular system so there is no strong support for the degenerated bone.

Keywords: Osteoporosis, sarcopenia, postmenopausal, fracture, bone

INTRODUCTION

Osteoporosis is a degenerative bone disease that causes the loss of bone mass and bone tissue. It is common in patients immobilized for a long period of time, in people in postmenopausal disease, medication (steroids) in malignant diseases, poor lifestyle, etc. In the known process of bone resorption, men develop more bone during their lives than women, so the ratio of men to women in this condition inclines towards women with a higher number.

Osteoporosis is a condition for which there is a remedy, it is treatable and can be reversible.

It can be prevented for longer periods of time by preventive and attack methods.

It is very important to have early detection, to know its types, what are its causes and how to intervene in its treatment.

EPIDEMIOLOGY

Because the average life span on the world level will increase the incidence and prevalence of osteoporosis, its economic resounding over the various population groups will increase in the years to come [1-3].

Who considers osteoporosis the second health problem in the world, after cardiovascular diseases. More than 75 million people suffer from osteoporosis in Europe, the US and Japan.

Osteoporosis causes more than 8.9 million fractures worldwide each year, which means an osteoporotic fracture every 3 seconds in EU countries [1,4].

More than 200 million women in the world have osteoporosis; estimates indicate that the number of osteoporotic fractures that occur in them will increase from 1.6 million to 6.2 million in 2050, which requires the urgent development of prophylaxis strategies [5-8].

Osteoporosis can be: primary or secondary. Primary osteoporosis is the most common form and is due to age-related bone loss. It is classified in type I and type II [9,10]. Secondary osteoporosis results from the presence of other diseases or conditions that predispose to bone loss and is classified as "type III".

Osteoporosis type I, is post menopause osteoporosis present in 5-20% women, affects those with 15-20 years of menopause with a peak of the incident between 60-70 years. The incidence in women is 8 times higher than in men. Osteoporosis frequency of post menopause shows a rate, a men's women ratio 2:1 to 3:1 [11-13]. Estrogenic deficiency is the cause of this form of osteoporosis, making the skeleton more sensitive to PTH resulting in increased calcium resorption in the bones. This will have the effect of decreasing the secretion of PTH, producing 1,25-dihydroxy vitamin D and calcium absorption, these will result in the loss of trabecular bone that leads to vertebral subsidence and colles fracture. Women can lose around 2-3% of bone mass per year in the first 5 years after menopause [14,15]

Due to the massive decrease in estrogenic production, women lose almost 50% of the trabecular bone and 35% of the cortical bone throughout their lives, pec and men lose only 25% of both types of bone [16].

At least 75% of the bone loss that occurs in women in the first two decades after menopause can be attributed to estrogenic loss rather than age.

The bone loss associated with menopause does not begin at the time of amenorrhea but after 2-3 years [17].

Osteoporosis type II, occurs in women or men over 70 years of age and is usually associated with the decrease of bone formation along with the decrease of the kidney's ability to produce 1.25(OH)2 D3, deficient in vitamin D results from the increase of calcium absorption that increases the PTH level and especially bone resorption.

In osteoporosis type II, the cortical and trabecular bone is lost increasing the risk of hip fracture and vertebral fracture. Osteoporosis type III, or secondary osteoporosis, occurs

equally in women and men at any age. In men most cases are due to diseases or drug therapy, but in 30-35% of cases the cause can not be identified [18].

This type of osteoporosis is associated by a wide variety of conditions including: hormonal dysfunction (Cushing's syndrome), cancer (especially multiple myeloma), gastrointestinal disorders (especially inflammatory bowel diseases that cause malabsorption) medication (corticosteroids, chemotherapy, anticonvulsants, heparin, barbiturates, GnRH, conH antacids, antacids with high aluminum content).

Chronic renal failure, hyperthyroidism, immobilization, osteogenesis imperfecta, inflammatory arthritis, malnutrition due to anorexia nervosa. About 32% of women up to 80 years of age may experience a fracture of the femoral neck. The risk of a femoral neck fracture is equal to the risk of breast, cervical, uterus cancer and is equal to the mortality in breast cancer.

The prevalence of vertebral fractures is 42% in older women with low bone mass. In women there is an increased rate of vertebral fracture, which is initially associated with menopause, followed by cervical fracture associated with decreased age and decreased bone mass [18-21]

Osteoporosis develops less in men than in women because in men bone loss begins later than in women and progresses much more slowly, due to the period of hormonal changes that is also slower. It will also make the bone loss smaller.

The difference in bone geometry and remodeling also contributes to a low fracture rate in men. Osteoporosis in men is an important public health problem, especially since the number of men over the age of 70 years will double between 1993-2050. In the elderly the use of psychotropic agents, give an increased rate of orthostatic hypotension (frequency in antihypertensive medication) and the wider use of polymedication contribute to the increased incidence of falls, the consequence being fractures [22].

RISK FACTORS

The two major risk factors determining the occurrence of osteoporosis are, the loss of bone mass and the speed of bone loss. These two determining factors are influenced by a number of genetic factors and environmental factors. Approximately 705 of the causes of osteoporosis are the result of genetic predisposition, including the role of genetics in determining how an individual responds to various exogenous stressors.

A percentage of 30% of cases are determined by environmental factors. Ethnic or racial origin is an important risk factor for bone mass loss. White and Asian women have the highest risk, but blacks and hispanics are protected because bone loss is slower [1,18].

Any factor resulting from estrogenic deficiency, especially before physiological menopause, involves increasing the risk of bone loss.

Women have a particular risk who have had an early menopause or a late menarche, or those who had a premenopausal oophorectomy or amenorrhea.

In men, the decrease in testosterone due to hypogonadism has been associated with the development of osteoporosis. Prolonged bed rest and sedentary lifestyle are important risk factors for osteoporosis.

Less well known are risk factors that include family clinical history especially on the maternal line and short stature. Indeed, the evidence suggests that obesity can be a protective factor against osteoporosis due to the conversion of androgen hormones into estrogens, into peripheral adipose tissue [23]. Constant consumption even in small amounts of alcohol has been clearly identified as a risk factor of osteoporosis even in young people, women or men. Large drinkers are more prone to bone loss and fracture due to malnutrition and the risk of falling. Although the exact mechanism by which alcohol influences bone metabolism is not clear, it seems that it is a combination of the direct effect of alcohol on the bone cell and indirectly effect on hormones that intervene in hormonal metabolism: as metabolites of

vitamin D, PTH and calcitonin. Alcoholics have high levels of corticoids in the blood; these hormones produced by the adrenal cortical glands induce bone loss. Recent studies have shown that women smokers have low levels of estrogens and have an early menopause compared to non-smokers. Smokers can be considered to have increased risk for osteoporosis. The role of caffeine is very controversial, it has been proven that tea drinkers are less exposed than those who drink coffee. Caffeine is a diuretic and causes hypercalciuria. It has been proven that the elderly are less able to compensate for the diuretic effect of caffeine by believing the serum concentration of dihydroxy-vitamin D. Older people who are big coffee drinkers have a negative calcium balance that aggravates bone loss due to age. Malnutrition due to food disorder is a risk factor [24]. The osteoporosis diagnosis is made with the DEXA device (osteodensitometry). The location between the normal bone density and the average bone density level, between 1 and 2.4 standard deviations below the average level of bone density. The level of the T score above -2.4 denotes a definite diagnosis of osteoporosis.

DISCUSSIONS

Osteoporosis may not be detected until the first fracture in the bone occurs due to load pressure, or it may be by fall, for example, the Pouteau-Colles fracture [23].

Osteoporosis is a skeletal disorder characterized by compromised bone strength leading to an increased risk of fracture. It is defined as a BMD that lies 2.5 SD or more below the average value for young healthy women, as measured with DEXA. According to the current guidelines on osteoporosis management, BTMs cannot diagnose osteoporosis, but changes in BTMs may be useful in monitoring osteoporosis treatment to confirm the efficacy of treatment and treatment adherence and can improve the specificity of assessment of fracture risk. All postmenopausal women should be encouraged to maintain a healthy weight; to obtain adequate calcium, vitamin D, and protein intake; to participate in appropriate exercise; to avoid excessive alcohol consumption and smoking; and to utilize measures that prevent falls. Finally, drug therapy is recommended in all postmenopausal women who have a history of osteoporotic vertebral or hip fracture, in those who have BMD values consistent with osteoporosis, and in those who have T-scores from −1.0 to −2.5 and a 10-year risk of major osteoporotic fracture [24].

Ideally, the treatment of this pathology should be extended to the muscular system, because in general the risk factors of osteoporosis attack to a great extent the muscular system, it is a tandem, it is not possible to separate the functionality of the skeletal muscular system. It is good to take into account this synergistic duality, in order to be able to reinstall functional potency and a good quality of life of patients [25,26].

The treatments available for osteoporosis are aimed directly at causing the loss of quality of the bone system. First of all, the treatments would be necessary to correct the vitamin deficiencies such as, Ca, Vit. D, hormonal, etc. It has been shown that giving up a faulty, carential lifestyle has done nothing but substantially improve the state of the skating system [27].

CONCLUSIONS

Through rapid identification and attack treatment, bone degeneration can be stopped and even a considerable regression of bone system degeneration.

Osteoporosis prevention begins in childhood, when a healthy diet for bones and exercise helps children increase bone mass.

For women, early prevention is especially important, because after menopause the protective effect of estrogen is lost.

Making dietary changes, getting enough exercises, and avoiding bad lifestyle habits help prevent osteoporosis.

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Anatomo-clinical correlations between total or partial edentation and digestive disorders

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Abstract

The functions of the dento-maxillary apparatus are essential for the preparation and formation of the food bowl, which reaches the lower segments of the digestive tract. In the absence of teeth, the process of digestion is much more difficult, which leads to significant disorders in food absorption. At the same time, due to the lack of teeth, dysfunctions occur at the temporomandibular joint, movements of the mandible (left-right laterality, propulsion/retropulsion, opening/closing the mouth) are no longer performed properly which ultimately leads to loading the stomach with food incorrectly processed, as well as prolonging digestion time.

Following the anamnesis performed on the group of patients, we noticed that there is a correlation between totally or partially edentulous patients and the appearance of digestive tract diseases. There is a causal relationship between edentations and the appearance of digestive disorders at patients over 45 years old.

Keywords: partial edentation, total edentation, digestive disorders

INTRODUCTION

The functions of the dento-maxillary apparatus are essential for the preparation and formation of the food bowl, which reaches the lower segments of the digestive tract.

Dentition, whether natural or artificial, plays an extremely important role in the normal development of an individual's life [1].

Also, the teeth have a very important role in chewing and preparing the food bowl as follows: the incisors have the role of cutting, canines tearing, crushing premolars and molars for grinding food. In the absence of teeth, the process of digestion is much more difficult, which leads to significant disorders in food absorption.

At the same time, due to the lack of teeth, dysfunctions occur at the temporomandibular joint, movements of the mandible (left-right laterality, propulsion/retropulsion, opening/closing the mouth) are no longer performed properly which ultimately leads to loading the stomach with food incorrectly processed, as well as prolonging digestion time.

Digestive disorders involve the digestive tract, which is also known as the gastrointestinal tract. The gastrointestinal tract includes the esophagus, liver, stomach, small and large intestines, gallbladder and pancreas. The most common symptoms of digestive disorders include bleeding, bloating, constipation, diarrhea, heartburn, pain, nausea and vomiting. Accurately diagnosing digestive disorders involves collecting a thorough medical history and conducting a physical examination. Some patients with digestive disorders may need more extensive diagnostic evaluations, including endoscopic procedures, lab tests and imaging.

Aim and objectives

The objective of this article is to demonstrate that there is a causal relationship between edentations and the appearance of digestive disorders at patients over 45 years old.

MATERIAL AND METHODS

Within the dental complex, SC PROXI-DENTA SRL Oradea, during one year (September 2017- August 2018) we have consulted and treated 600 patients, of which only 300 patients, both male and female, were eligible for the study. These patients are over 45 years old and are partially or completely edentulous. We have noticed that male patients represent a higher percentage of the total edentulous patients totally or partially.

We observed that patients at 45-55 years old have partial edentations, and those over 55 years old have total edentations.

Patients under 45 years old were not eligible for the study, with no edentations.

The patients were investigated on the ADEC PERFORMER 8000 dental unit, the consultations being performed with specific dental instruments (probe, forceps and dental mirror).

To the patients who came to our field of activity, the cephalic extremity, the dento-maxillary apparatus, following the anamnesis and the clinical examination performed, we noticed that a significant percentage of them have multiple pathology.

Following the anamnesis and the file completed by each patient (Figure 1), we noticed that they presented various digestive symptoms such as: nausea, vomiting, bloating, intestinal transit disorders (constipation, diarrhea), diffuse abdominal pain, epigastric pain. Also after the anamnesis, we found out that due to the presence of patients edentations, their mastication is defective.

I. Identification data:
Name ...
Surname ...
Age ...
Gender ...
Environment: urban / rural ...

II. Number of daily meals (check the correct answer):
- 1 meal / day
- 2 meals / day
- 3 meals / day
- more than 3 meals / day

III. Did you have any of the following digestive symptoms? Answer with Yes/No
- nausea ...
- vomiting ...
- ballooning ...
- intestinal transit disorders: constipation ... / diarrhea ...
- diffuse abdominal pain ...
- epigastric pain ...

IV. What is the period of time after ingestion of food in which the symptoms described above appear? (check the correct answer)
- immediately after ingestion of food
- 2-3 hours after ingestion of food
- more than 2-3 hours after ingestion of food

Figure 1. Patient's medical file

Classification criteria:

I. by age groups (Figure 2)
II. by patient's gender (female/male) (Figure 3)
III. by environment of origin (urban/rural) (Figures 4,5)
IV. by type of edentation (partial: frontal or lateral; total) (Figures 6,7,8)
V. by the number of daily meals (Figures 9,10)
VI. according to the digestive symptoms (Figures 11,12)

the period of time after ingestion of food in which the digestive symptoms appear (Figures 13,14)

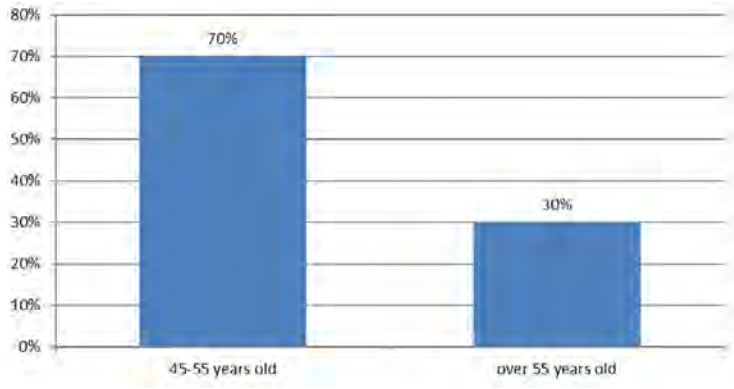


Figure 2. Classification by age groups

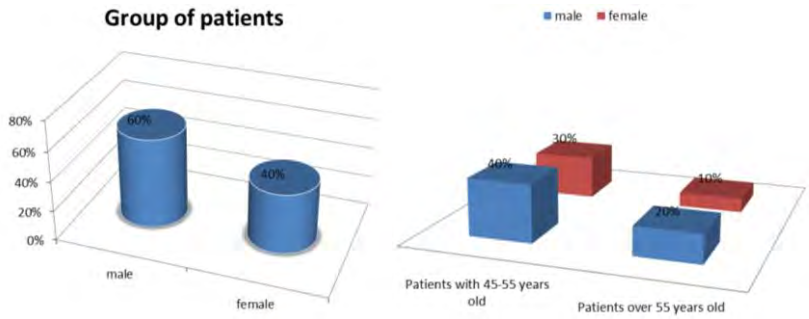


Figure 3. Classification by patient's gender (female/male) and age

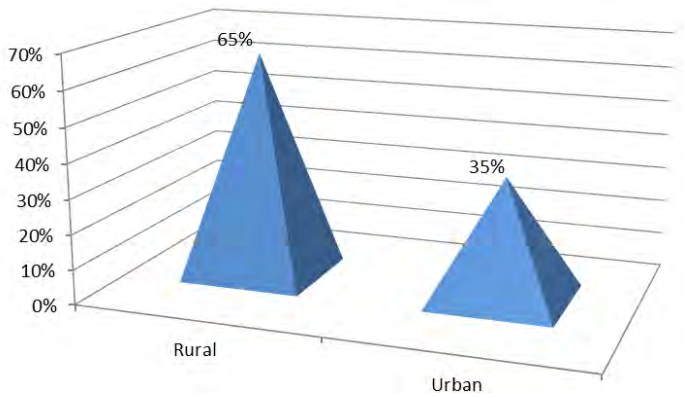
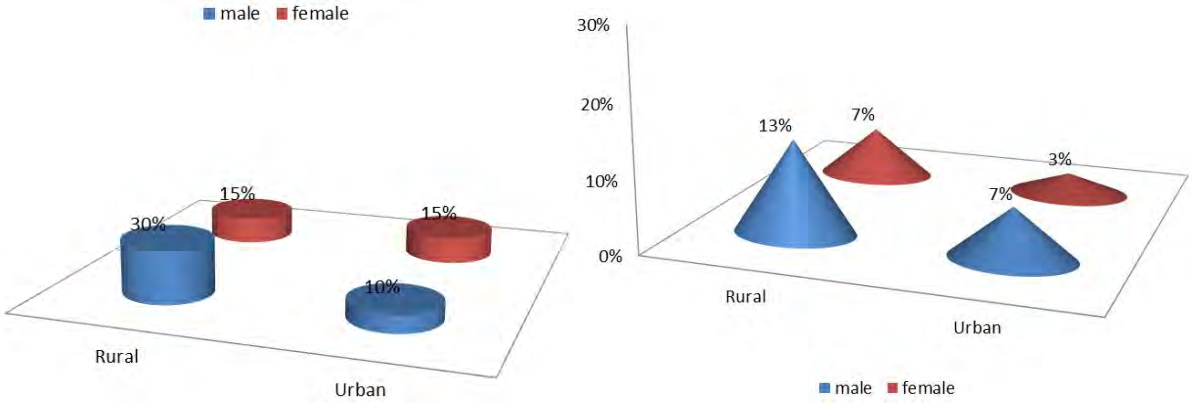


Figure 4. Classification by the origin of environment (urban/rural)



a b

Figure 5. Classification by the origin of environment and age (a: patients between 45-55 years old; b: patients over 55 years old

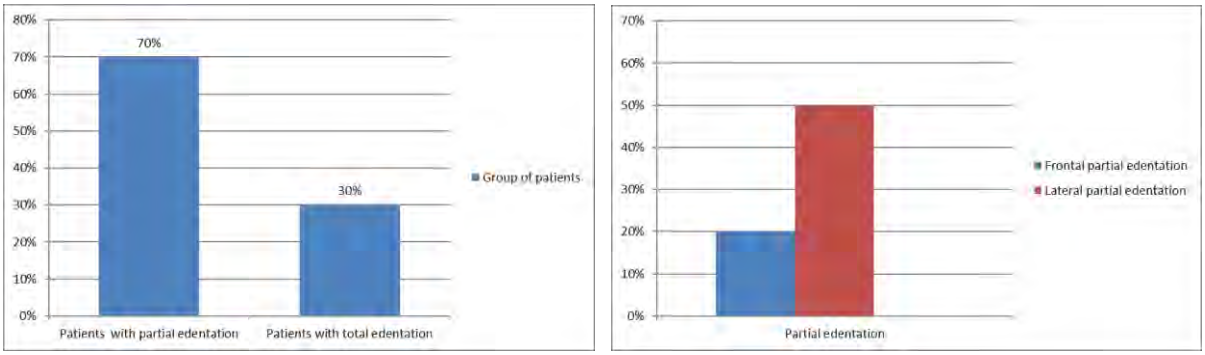


Figure 6. Classification after type of edentation

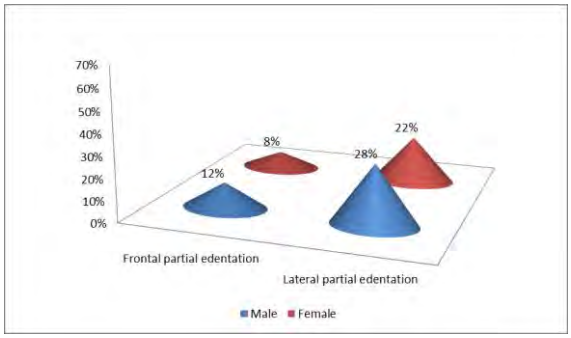


Figure 7. Gender ratio to partial edentations

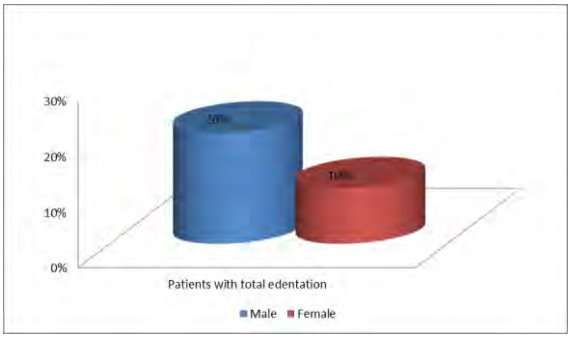


Figure 8. Gender ratio to total edentations

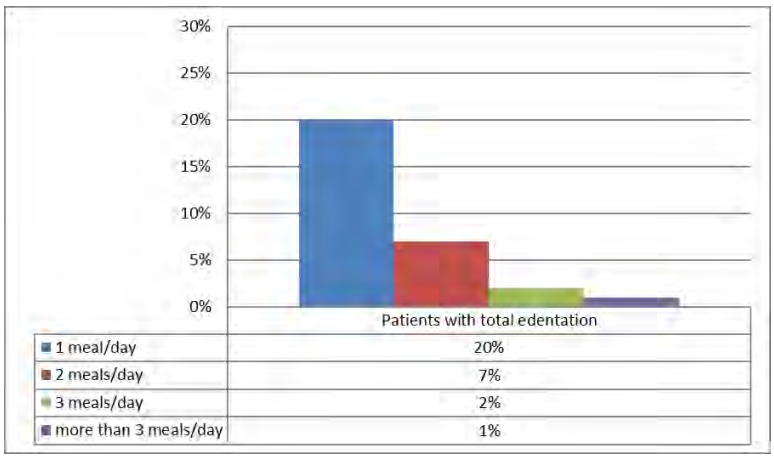


Figure 9. Classification by number of daily meals at patients with total edentation

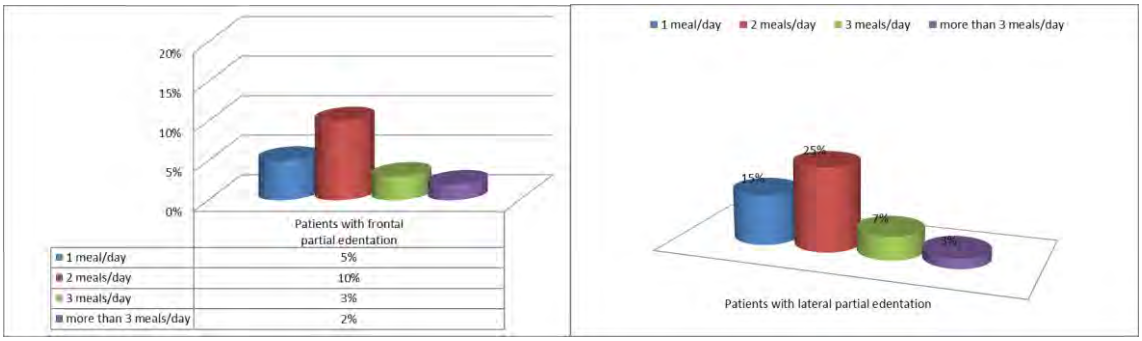


Figure 10. Classification by number of daily meals at patients with partial edentation

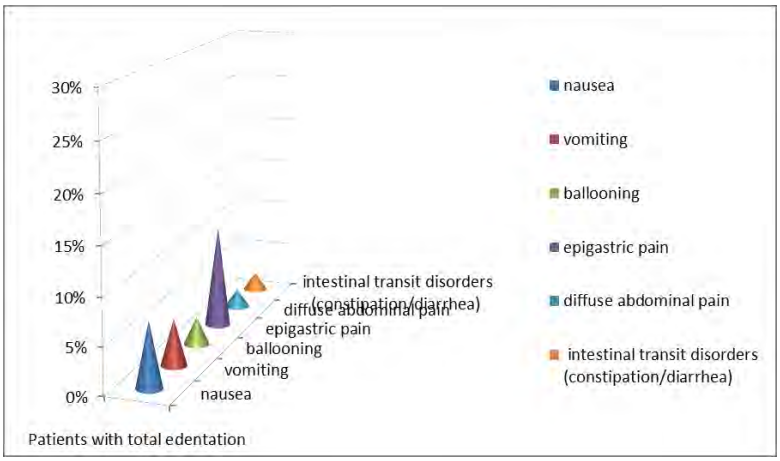


Figure 11. Classification according to digestive symptoms in total edentulousness

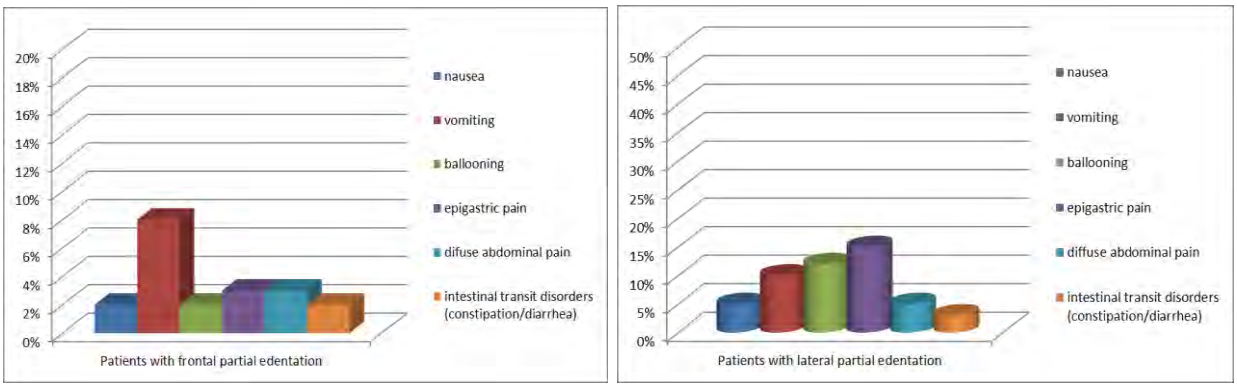


Figure 12. Classification according to digestive symptoms in partial edentulousness

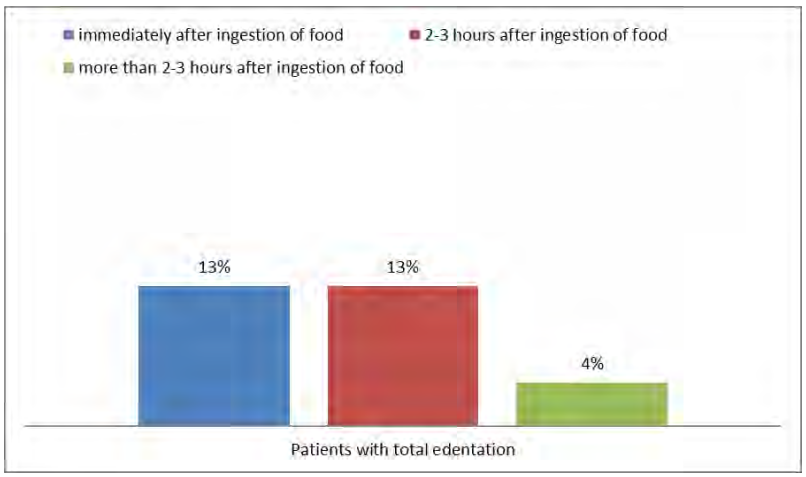


Figure 13. Classification by the period of time after ingestion of food in which the symptoms appear at patience with total edentation

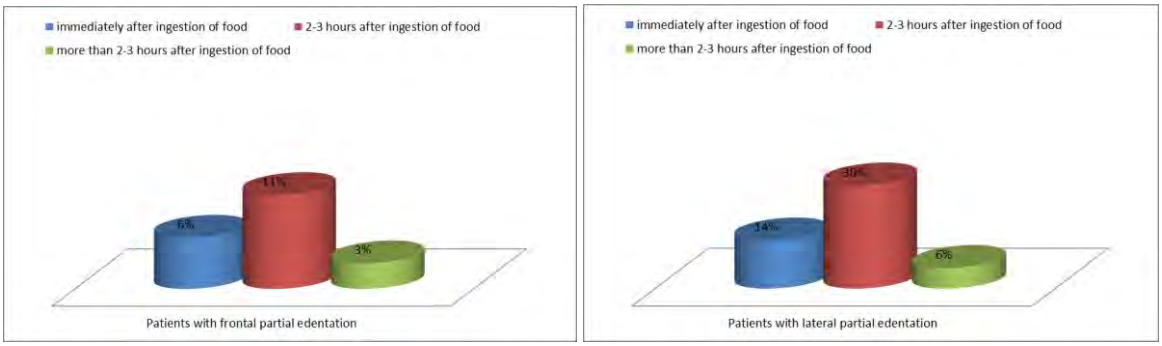


Figure 14. Classification by the period of time after ingestion of food in which the symptoms appear at patience with partial edentation

RESULTS

We have noticed that 70% of the patients with edentations are 45-55 years old and 30% are patients over 55 years old (Figure 2). 60% of all men have edentations compared to women who only 40% of them have edentations (Figure 3).

We noticed that out of the total number of edentulous patients, most come from rural areas, more precisely 65% compared to those from urban areas which are in a percentage of 35% (Figure 4).

The most patients aged between 45 and 55 years, who come from rural areas and have edentations are male, and those who come from urban areas and have edentations are female (Figure 5). Most patients over the age of 55, who come from both rural and urban areas and have edentations are male (Figure 5).

We observed that 70% of patients had partial edentations, and only 30% of them had total edentations (Figure 6). Of the 70% of partially edentulous patients, 50% had lateral partial edentations and 20% frontal partial edentations (Figure 6). Of the patients with partial edentations, the majority were male (Figure 7). Of the 30% of totally edentulous patients, 20% were male and 10% female (Figure 8).

Most totally edentulous patients had only one meal a day (Figure 9). Most frontal partial edentulous patients had only two meals a day (Figure 10). Most lateral partial edentulous patients had only two meals a day (Figure 10).

Of the total edentulous patients, most had epigastric pain and nausea. Of the frontal partial edentulous patients, most had vomiting. Of the lateral partial edentulous patients, most had epigastric pain and nausea.

In most totally edentulous men the digestive symptoms appeared immediately after ingestion of food, compared to totally edentulous women in whom the digestive symptoms appeared at 2-3 hours after ingestion of food (Figure 11).

Therefore, in totally edentulous patients, an equal percentage of digestive symptoms occurred immediately after ingestion of food and 2-3 hours after ingestion of food.

In both partially, frontally or laterally edentulous patients, digestive symptoms occurred 2-3 hours after ingestion of food (Figures 12,13).

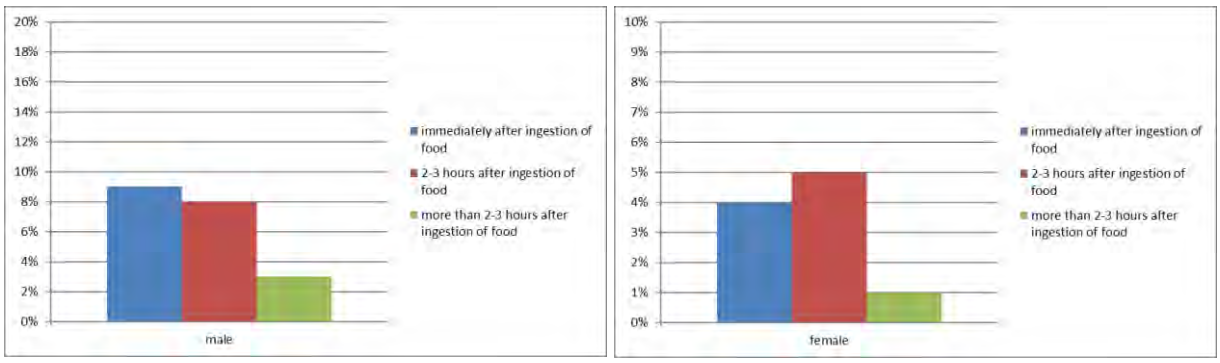


Figure 11. Classification by gender and the period of time after ingestion of food in which the symptoms appear at patience with total edentation

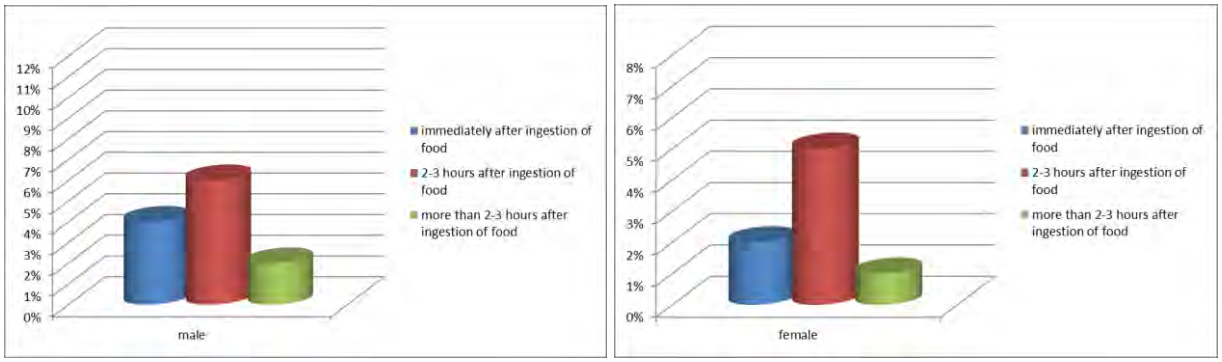


Figure 12. Classification by gender and the period of time after ingestion of food in which the symptoms appear at patience with frontal partial edentation

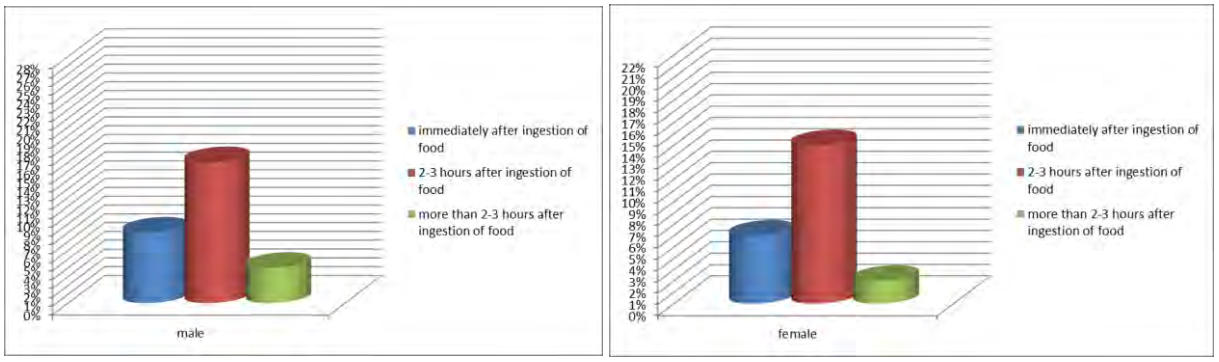


Figure 13. Classification by gender and the period of time after ingestion of food in which the symptoms appear at patience with lateral partial edentation

DISCUSSIONS

Overlooking the special needs of elderly individuals may lead to impaired chewing function, resulting in nutritional imbalances and increased burden on the digestive tract, causing more health disorders [2].

An adequate dentition is of importance for well-being and life quality. Despite advances in preventive dentistry, edentulism is still a major public health problem worldwide [3].

According to several studies, edentation can affect general health in several ways as indicated as follows: increased rates of chronic inflammatory changes of the gastric mucosa, upper gastrointestinal and pancreatic cancer, and higher rates of peptic or duodenal ulcers [3].

Mobile prosthesis wearers generally prefer a soft diet that does not require too much during mastication, so the result will be a nonprescriptive diet from a caloric and nutritional point of view, being the first step towards malnutrition and other illnesses of digestive system [4,5].

CONCLUSIONS

Therefore, following the anamnesis performed on the group of patients, we noticed that there is a correlation between totally or partially edentulous patients and the appearance of digestive tract diseases.

Contrary to the literature, where at these ages we should not encounter so many edentations at a patient, it can be seen from this clinical study: the lack of interest of the patient for the hygiene of his oral cavity; lack of periodic check-ups at the dentist.

Following the interpretation of the patients files, we noticed that they all present in different proportions, digestive symptoms specific to gastric ulcer.

As a result, we propose to study a group of patients with digestive symptoms specific to gastric ulcer in a gastroenterology department, to see if those patients have edentations in the oral cavity.

We also propose to study the cause-effect relationship between these dysfunctions and diseases of the lower segments of the digestive tract through laboratory investigations, immunohistochemistry, enzymatic dosing, pathogens (bacteria, Helicobacter pylori, etc.), trying to demonstrate this causal relationship.

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Evaluation of dental health. Case study on adolescents

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Abstract

Oral health is an integral part of general well-being because the oral cavity is the component of the human body at the level of which the masticatory, phonetic, swallowing, and mimic functions are performed in the absence of discomfort or pain. Also, the oral cavity is a component of the constantly changing human body throughout life, and proper care is needed to maintain its health [3]. Due to the increased prevalence worldwide, the World Health Organization (WHO) monitors the assessment of oral health internationally through standardized studies based on data collected by age group at the level of each country [12]. The purpose of this research is to assess through a questionnaire the oro-dental health of young people aged between 14 and 18 years old. The research undertaken is aimed at finding out the habits of dental hygiene, eating habits and their correlation with dental diseases.

Keywords: questionnaire, oro-dental health, adolescents

INTRODUCTION

Oral health is a fundamental element of overall health and quality of life. This involves not only the absence of tooth decay but also of other conditions such as: periodontal disease, oral cancer and congenital anomalies. In 2017 it was estimated that oral diseases affect 3.5 billion people worldwide, with the use of tobacco, alcohol and the sugar-based unhealthy diet as common risk factors, which have a significant influence on the occurrence of oral diseases [1].

Oral health is an integral part of general well-being because the oral cavity is the component of the human body at the level of which the masticatory, phonetic, swallowing and mimic functions are performed in the absence of discomfort or pain. Also, the oral cavity is a component of the constantly changing human body throughout life, and proper care is needed to maintain its health [3].

In 2016, The World Dental Federation (F.D.I) adopted a universal definition, according to which oral health plays a key role in every population and therefore must be unanimously accepted at the level of all policies. In the current context, in addition to the primary functions, it also has other features. In the current context, in addition to the primary functions, it also has other features. Oral health is an important element of the general state of health, being a variable directly proportional to the general state of health. The psychological and social status is influenced by oral health. [4].

The World Health Organization (WHO) has introduced a new definition, according to which oral health is characterized by the absence of odontal and periodontal diseases which may lead to tooth loss, the appearance of discomfort and pain, also involving social and economic factors which play an important role in general well-being [5].

Due to its importance, caring for oro-dental health can prevent the appearance of oral diseases, especially since the level of oral health can influence the health of the whole body, so the oral cavity needs complete care for optimal state of health. Therefore, when discussing the concept of oro-dental health, attention should be focused not only on the oral cavity, but also on the individual and on how oral diseases threaten health and quality of life. Proper oral hygiene has the advantage of avoiding inconveniences that may occur both in the teeth and in the oral mucosa [6].

At present, having a good oro-dental state of health has become, more than ever, a priority.

Although in the past the focus was on dental hygiene to prevent dental diseases, in particular tooth decay, today the use of sanitation means is also considered to contribute to preventing or improving diseases in the soft parts of the oral cavity. Thus, the oral mucosa can be home to the manifestation of general, sometimes serious conditions [6].

Oral diseases, in particular tooth decay, have been a major public health problem over the past two decades. According to the study "Global Burden of Disease", it has been estimated that about 3.5 billion people worldwide suffer from oral diseases and untreated dental caries, being considered a major problem in all areas of public health, with a continuous increase [11].

Due to the increased prevalence worldwide, the World Health Organization (WHO) monitors the assessment of oral health internationally through standardized studies based on data collected by age group at the level of each country [12].

Over the years, these studies have established the main risk factors that influence oral health, being genetic, social or economic factors. Approximately 66% of adolescents in low or medium-economic level countries face serious dental problems as a consequence of unsatisfactory hygiene [13].

The association of dental diseases with the socio-economic factor is a globally accepted issue. It is known that people living in disadvantaged backgrounds with a low standard of

living are more prone to getting ill than people who have the financial resources needed for proper care. Although the economic factor plays a key role in influencing oral health, it cannot be held solely liable for this situation. To bring about significant improvements in population levels, it is necessary to implement appropriate education programs in this regard [14].

In South-Eastern Europe, due to the economic and political changes undergone in the last two decades, the population has limited access to dental services and prevention programs. As a result, the caries index is much higher among adolescents compared to Western and Northern European countries where the standard of living is much higher [12].

In developed European countries such as Norway, Sweden and Denmark, the World Oral Health Report confirms the very low incidence rate due to free dental services, the implementation of modern strategies for minimally invasive treatments and free consultations offered to all underage residents. In these countries, although the quality of dental services offered is high compared to the South-Eastern countries, tooth decay still remains the main risk factor among adolescents [15].

Between 2013 and 2014, in Central Europe, the Institute of German Physicians started studies that showed a decrease in the incidence of tooth decay and tooth loss among adolescents. Also, the German Health Interview and Examination Survey for Children and Adolescents (KiGGS Wave 2), carried out between 2014 and 2017, reported information on the frequency of sanitation and regular check-ups at the dentist. Thus, more than half of the adolescents comply with the indications recommended by specialists. Germany is one of the countries that ranks favourably in terms of oral hygiene at international level, but nevertheless, dental problems remain a concern for specialists [16].

Although there has been an improvement in the prevention and improvement of oral health in recent years, comparative studies carried out at international level between rural and urban environments have revealed a significant difference between the two areas. In the rural area, the accessibility to dental services is much limited, with significant problems regarding the knowledge and practices necessary for a rigorous oral hygiene. The lack of professional care through regular dental visits also shows a negative impact on oral health [17].

In Romania, dental services differ from those offered in the countries of Northern and

Western Europe, operating mostly in a private environment such as the Eastern European model. As in other European countries, dental services have improved over time due to the curricula offered by dentists within the institutions. However, greater emphasis is placed on curative treatment than on preventive treatment, which is why the incidence of dental problems among Romanian adolescents is still high [18].

Aim and objectives

The reason for choosing this topic is the desire to know the particular situation of diseases and eating and oral hygiene habits of adolescents. The purpose of this research is to assess through a questionnaire the oro-dental health of young people aged between 14 and 18 years old. The research undertaken aims at finding out the dental hygiene habits practiced, the eating habits as well as their correlation with the dental diseases.

MATERIAL AND METHODS

For the investigation of oro-dental health, the type of research is quantitative. The information was collected by means of a questionnaire. Given the resources and the situation of physical distancing imposed by Covid 19, the use of a questionnaire that was distributed online was the solution opted for.

The questionnaire was carried out to test research assumptions and was distributed online using Google Forms. Types of questions used: Closed and rating scale type. The

questions have been formulated in such a way that they are clear and do not distort the answers. The demographic data collected were appropriate with the information sought for the study undertaken. These are: gender, age and background. Sampling is probabilistic on a voluntary basis. The sample size was set at a minimum of 152 respondents. The population is real, finite and defined.

The objectives of the research have been achieved by collecting information on the frequency of oro-dental deseases in adolescents, on the oral hygiene practices, eating and drinking habits of products known to have a negative impact on oral health.

RESULTS

The people targeted by the research carried out were those aged between 14 and 18 years old. A percentage of 47.4% of the respondents were from the 14-15 years old age group, and a percentage of 52.6% were from the 16-18 years old age group. Of the voluntary sample, 47.4% of respondents are male and 52.6% are female. As in the case of age, the percentage of distribution is relatively balanced. The most recent demographic data collected is the background of young people, which indicates that 40.1% of the respondents are from rural areas and 59.9% from urban areas.

The questionnaire consisted of 17 questions. The first question was about a self-assessment of oral hygiene, the respondents being asked to position themselves on a value scale from 1 to 5, where 5 is a condition of very good oral hygiene, 4 means good hygiene, 3 means an average hygiene, 2 means bad hygiene, and the value 1 means a very bad hygiene. Of the 152 valid responses collected, 0% mentioned that their oral hygiene is very bad, that is, the value 1. A percentage of 13.8% mentioned that their oral hygiene is, from their point of view, at the level of value 2. For the average value, 3, a percentage of 30.3% estimated that their oral hygiene is at this level. The highest percentage of respondents, respectively 42.8% considered that their oral hygiene is at the level of 4 out of 5. A very good oral hygiene was mentioned in the self-assessment by 13.2% of respondents.

The second question in the questionnaire pursued the respondents' opinion on the possibility that oral hygiene may affect their overall health. 23.7% of respondents stated that they did not believe that this fact was valid and 76.3% provided a positive answer, considering that their oral hygiene can affect their overall health.

The frequency with which adolescents go to the dentist was investigated by question number 6 in the questionnaire. A percentage of 24.3% of the adolescents participating in the questionnaire mentioned that they had never gone to the dentist in the last year. Most of them, 28.9% mentioned that they had been to the dentist once; 25.7% stated that they had been to the dentist twice, and 21.1% said they had been more than twice.

For those who said they hadn't even once gone to the dentist in the past year, another question was asked as to why they did not go. One third of the 45 responses mentioned as a reason the lack of pain or discomfort that would require a visit to the dentist. The lowest number of them, 3, did not go to the dentist because of the lack of dental services in the area. 11 respondents mentioned that it was the fear of treatment or dentist who prevented them from going for a check-up, but most of the respondents, 16, mentioned the cost of dental services as the reason why they had not gone at all to a dental examination or treatment in the last 12 months. 7,9% of those who went to the dentist reported that the reason for the last visit to the dental practice was the wearing of orthodontic devices, 15,2% of the respondents stated a dental treatment, 37,7% said they went due to dental pain and 39,1% for routine check-up.

The 152 respondents were asked about the oral conditions they currently suffer from. Two people mentioned that they currently wear orthodontic apparatus for correcting dental disharmonies. A percentage of 9.9% said they had gum inflammation and 11.8% said that they have lost at least one tooth so far. More than a quarter of the respondents, respectively

29.6%, mentioned that they currently have dental caries, and almost half, respectively 47.4% mentioned that they did not have dental problems when they filled in the questionnaire.

Questions were also included in the questionnaire to indicate the dental hygiene habits of adolescents. Question number 10 aimed to establish how important daily tooth brushing is. To this question, 19,1% of them replied that this was not important, and 80,9% of them consider daily brushing to be an important act for them.

In addition to the importance given to daily dental brushing, the adolescents who participated in the questionnaire were asked if they brushed their teeth daily. Compared to the previous question, 27.6% of adolescents said that they did not brush daily, and a percentage of 72.4% said they brushed their teeth daily.

The next question was aimed to establish how often adolescents brush their teeth daily. Of the 152 responses, 27% mentioned that they brushed their teeth once a day, but every few days. 29,6 percent of the respondents said that they brushed their teeth once a day, and 43,4 of them said that they brushed their teeth twice a day.

The duration of the dental brushing was appreciated by 27% of the respondents at 1-2 minutes, and by 73% of them at about 3-4 minutes. None of them mentioned a duration of more than 4 minutes when performing tooth brushing.

The time frame for changing the toothbrush has been included in the set of questions regarding the dental hygiene habits of adolescents. Of the 152 answers collected, the answers were grouped into the following percentages: 3,3% of them have used a toothbrush for more than 1 year, 12,5% have used a toothbrush for about 1 year, 41,2% change their brush every 6 months, and a similar percentage every 3 months.

Next, the participants in the questionnaire were asked if they used dental floss for oral hygiene, and if they used it, how often they did it. Just over a third of respondents, respectively 34.9% said they did not use dental floss at all for oral hygiene. A percentage of 25% said they used dental floss 3-4 times a month, and 13.8% said they used it 3-4 times a week. It is used once a day by 21.7% of them, and twice a day by only 4.6% of respondents.

The frequency of mouthwash use was also monitored. Of the total, 30,3% do not use mouth water for oral hygiene at all, and 24,3% use it 3-4 times a month. 18.4% use mouthwash about 3-4 times a week, 23% once a day, and 3.95 use it twice a day.

The frequency with which adolescents who have experienced pain in the oral cavity in the last 12 months was monitored. To this question 17.8% of them said that they had had such pain very often, 44.75 said that they had experienced such pain occasionally, and 37.5% answered that they had never had pain in the oral cavity in the last 12 months.

To question number 18 in the questionnaire, the surveyed adolescents were instructed to answer Yes or No to three statements related to oral hygiene habits. Thus, to the statement "I use an electric toothbrush" 43% of them answered yes, and 57% answered no. To the statement "I use a fluoride toothpaste", 48% of them stated that this applied to them, and 52% of them said that they did not use a fluoride toothpaste. To the statement "I use oral hygiene products recommended by the dentist", 46% of them said that suited their situation, and 54% said that that was not their case.

The questionnaire analyzed the eating habits of adolescents. This question presents a multiple answer, aiming to discover which are the most used foods, from the group of those that negatively influence oral health. Thus, out of the 152 answers collected, it appears that meat and eggs (59.2%), dairy (41.6%) and sweets (42.1%) are consumed most often. About a third have in their diet fruit (34.2%), carbonated beverages (32.9%) and bakery products (28.9%). Natural juices (15.8%) and chips (12.5%) are the least consumed.

The last question in the questionnaire was also related to the eating habits of adolescents, monitoring the frequency with which sweets, coffee, carbonated beverages and tobacco are consumed, these being known to be products with a clear negative impact on oral health. Sweets are often consumed, once a day, coffee at all or 3-4 times a month, tobacco at

all or 3-4 times a month, and carbonated beverages are consumed with a frequency similar to that of sweets, the highest percentage stating that they consume them 3-4 times a month.

CONCLUSIONS

As a result of the research carried out, the following aspects have been found, the recommended oral hygiene habits are likely to reduce the incidence of diseases. In addition, dietary habits of a particular type (sugar, fizzy drinks) are recognized as having a negative impact on oral health through direct or indirect mechanisms. The data collected from the 152 respondents show that there are statistically significant correlations between hygiene, eating habits and the appearance of dental diseases.

The first alternative, "Daily tooth brushing, increased brushing frequency, brushing time and the interval at which the toothbrush changes lead to fewer oro-dental conditions." has been fully confirmed. It has been found that daily tooth brushing, changing the toothbrush every three months as well as the longer time given to tooth brushing lead to a lower incidence in the occurrence of oral diseases. The second researched hypothesis, "The use of mouthwash and dental floss leads to a lower frequency of diseases in the oral cavity" has been confirmed, so auxiliary means of prophylaxis have an important role in the daily routine. The third hypothesis, "The consumption of carbonated beverages, sweets, tobacco and coffee is correlated with diseases in the oral cavity", is partially confirmed. The frequency of smoking has been found to be directly proportional to the occurrence of oro-dental diseases.

The comparison of the questionnaire results with the known data on dental diseases at national and international level confirms a correlation of the data, but the limitations of the study, mainly filling in an online questionnaire and the self-evaluation of adolescents, may generate significantly different from those that would be obtained at a clinical examination. Thus, we notice a close percentage of oral diseases (52.6%), similar to the percentage of the international average specified by W.H.O.(66%).

Finally, the economic situation is of particular importance, this research also bringing forward the lack of financial resources as a reason for not having gone to the dentist in the last year or the lack of services in the area.

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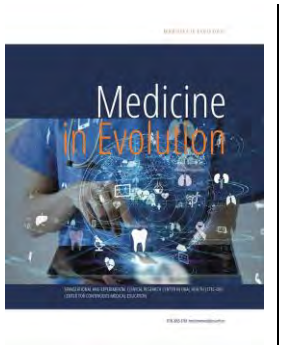
Anxiety Assessment in Children and Adolescents Caused by Dental Treatment



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Abstract

Children exaggerated reactions to the felt fear can make it difficult and can even make dental treatment impossible under normal conditions. Dental fear, dental anxiety and dental phobia are three different ways of perceiving dental treatment, respectively three different ways of reacting to dental interventions.

This study is a retrospective study carried out between April - May 2019 in the Paedodontics Department of the Faculty of Dental Medicine, "Victor Babeş" University of Medicine and Pharmacy of Timişoara, and includes 1816 adolescent patients. The investigation method used was the questionnaire-based survey, applied to a representative sample of the adolescent population (aged 14-18) of Timişoara. Results show different variations in dental fear and dental anxiety according to sex, age groups, personal characteristics and other psychological and social factors.

It is important to follow therapeutic guidelines that allow us from the beginning to assess the patient's anxiety about dental treatment to create a comfortable environment for the patient so it will increase the acceptability of dental procedures and addressability to treatment.

Keywords: anxiety, dental fear, therapeutic protocol

INTRODUCTION

Practising dental treatment in children is difficult, and overcoming these difficulties becomes a real challenge for the doctor, if the patient has behavioural problems, refusing treatment.

Fear and anxiety continue to be a barrier to various medical practices for a considerable number of children [1] and its presence is a common situation among children [1,2].

Treating a difficult child can take a long time and sometimes, after long sessions in which an approach by non-pharmacological techniques is tried, the child will continue to refuse the dental treatment [3]. It is important to be able to determine the child's degree of anxiety in order to understand him and to be able to treat children most effectively.

An increasing number of children and adolescents perceive treatment in the dentist's office as a tense and stressful situation. The level of situations in which one can talk about collaboration problems in the dental office includes the cases in which the treatment is very difficult, requiring a lot of time, up to the extreme situation in which the treatment cannot be performed [4]. Refusal of dental treatment and dental fear are not synonymous, but they can coincide because a slight fear of dental interventions is normal in children [5-7]. We can refer to dental fear in the situation when the patient feels fear of a certain, well-defined thing, while anxiety is a generalized fear, a diffuse, anticipatory fear [7]. The distinction between the two (fear and anxiety) is unclear and it is difficult to establish exactly, especially in the dental office. Dental phobia is an increased degree of fear, which leads to the avoidance of dental treatment which is associated with a disproportionately high danger [8].

Anxiety can be of two types: acquired anxiety and innate anxiety. Acquired anxiety occurs in situations where consciously, due to previous experiences, we feel in danger and insecure, the patient's emotional balance being disrupted. This imbalance disappears when the causative factor is eliminated. Innate anxiety is defined as a continuous presence in the patient's subconscious, constituting an aspect of his personality. This is a person who tends to be constantly anxious and worried. The child will respond much more aggressively in situations that will cause him stress and that will give him the impression of a possible danger [9]. Questionnaires can be designed for the use in dental practice, and specialized studies have shown that are effective, and can assist the dentist in classifying the patient's behaviour [10,11].

Children's behavior in the dental office varies according to age, sex, temperament, personality, intellectual capacity, depending on previous medical experiences, family and cultural situation, all affecting their ability to cope with the experience in the dental office [12].

The dentist must be able to determine the patient's reactivity to medical treatment, in order to measure the patient's degree of anxiety in the dental office, there are several methods [13-17].

It is necessary to be able to correctly identify if a patient is anxious or phobic about dental treatment, thus being able to develop the correct treatment plan, respectively to choose the ideal method of approaching the patient. Depending on the degree of fear/anxiety of the patient, it is possible to opt for dental treatment under sedation or general anaesthesia. Adapted for children, there are a variety of techniques to determine the degree of fear of dental interventions: norms of behavior, psychometric scales, psychological measurements, etc.

The most commonly used questionnaires for children are [9-11, 17-20]:

1) Frankl Classification (Frankl; 1962) [21],

2) The Child Fear Survey Schedule (CFSS; Belfast version: Carson and Freeman 2000) [22],
3) Modified Child Dental Anxiety Scale (MCDAS; Wong et al. 1998) [23],
4) Venham Picture Scale (1979) [24],
5) Facial Image Scale (Buchanan 2002) [25];
6) Smiley Faces Program (SFP) [26],
7) Children's Dental Fear Picture Test (CDFP) [27].

Modified Dental Anxiety Scale

It is a questionnaire modelled after the Dental Anxiety Scale, to which was added questions regarding the administration of local anaesthesia [28]. The psychometric characteristics of the questionnaire are good and it should be completed easily and quickly, and the calculation of the result is easy and fast [29,30].

Studies have shown that completing this questionnaire in the waiting room does not amplify the feeling of fear [31-34].

If the patient gets a score of 19 or above, it can certainly be said that he has a high degree of anxiety and will require dental treatment under sedation or general anaesthesia [35].

The Modified Dental Anxiety Scale is a tool for determining fear of dental work used in many specialized studies [33,34], being translated into many languages: Spanish [36], Turkish [37], Greek [38] and Chinese [39].

Modified Dental Anxiety Scale for Children

This questionnaire is based on the Modified Dental Anxiety Scale, containing eight questions, with questions being added to distract the child from dental work and the thought of fear [23].

Venham Image Scale

This questionnaire [24] consists of eight images representing a child in two different situations, namely the positive, fearless and the negative, the anxious. The child will choose the image that corresponds to the way he feels (figure 1). Each negative image has a score of one point, while the positive image has a score of zero points [40].

This way of measuring dental anxiety in children has been used in a variety of studies [41-43] in order to determine the degree of anxiety of the child before starting dental treatment, its validity being proven [41,42].

Figure 1. Scale with images after Velham [43]

Facial Imaging Scale

This scale consists of a series of different facial images, from very happy to very sad. The child must show on one of the images the way he feels, respectively his perception for the dental manoeuvres. It can also be used during treatment to understand how the child perceives a certain intervention [25].

This way of determining the child's degree of anxiety about dental interventions proved to be easy to accept, the results being effective, thus helping the dentist to decide on the most appropriate approach, which will be necessary for the patient (figure 2) [40].

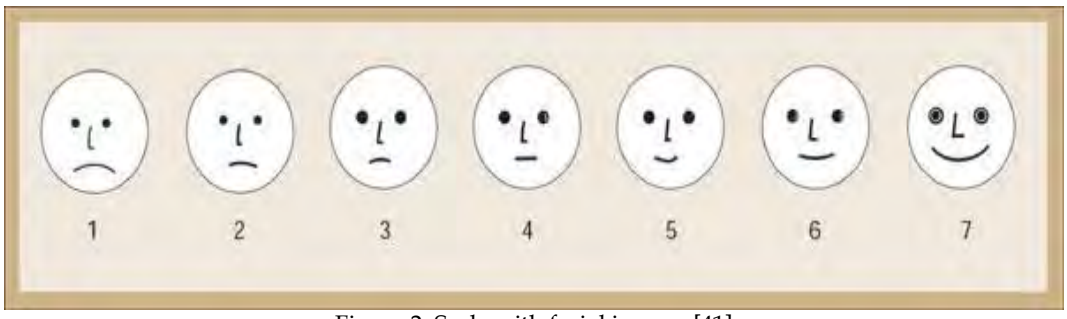

Figure 2. Scale with facial images [41]

Facial Imaging Program

It is an electronic questionnaire consisting of five questions based on the Modified Dental Anxiety Scale for Children, and seven different facial images, which help determine how the experience in the dentist's office is perceived by the child patient. The result is obtained directly from the computer, saving time from the doctor [26].

Dental Fear Imaging Test in Children

It is a questionnaire which in turn contains three sub-tests [27]:

- Choosing images with static elements from the dental office;

- Choosing images with situations from the dental office;
- Questionnaire with questions.

The test results divide children into three categories:

- Fearless, positive;
- Undecided, neutral;
- Fearful, negative.

It is a test frequently used to determine the degree of anxiety of the child, the results being effective [27,44].

Aim and objectives

The purpose of this study is to determine the level of anxiety among adolescents in terms of dental treatment and to identify factors that increase the anxiety level.

MATERIAL AND METHODS

This study is a retrospective study carried out between April - May 2019 in the Paedodontics Department of the Faculty of Dental Medicine, "Victor Babeş" University of Medicine and Pharmacy of Timişoara, and includes 1816 adolescent patients. The investigation method used was the questionnaire-based survey, applied to a representative sample of the adolescent population (aged 14-18) of Timişoara.

The questionnaire used in the investigation is MDAS (Modified Dental Anxiety Scale, MDAS; Humphris et al. 1995) [28], to which we added several items regarding: the initials of the name, the sex of the interviewee, his age, a question regarding the existence of dental health problems, two questions regarding the avoidance of visits to the dentist and the reasons for this avoidance and two questions regarding the acceptability of the dental treatment under sedation or general anaesthesia and the reasons for its possible rejection.

The inclusion criteria for the study were:

+ age of 14 years and not more than 18 years;
+ living in Timişoara.

The exclusion criteria for the study included:

- age under 14 years or over 18 years;
- living in another country than Timişoara

Data analysis was performed using graphical models and frequency, mean and standard deviation and, for comparative analysis, chi-square test (χ^2) for frequencies and t-test for averages. We considered a significance of 0.05 to be acceptable for comparative results [45].

RESULTS

The final group consisted of 1690 subjects, aged 14-18 years. The distribution by ages and sexes is presented in figure 3.

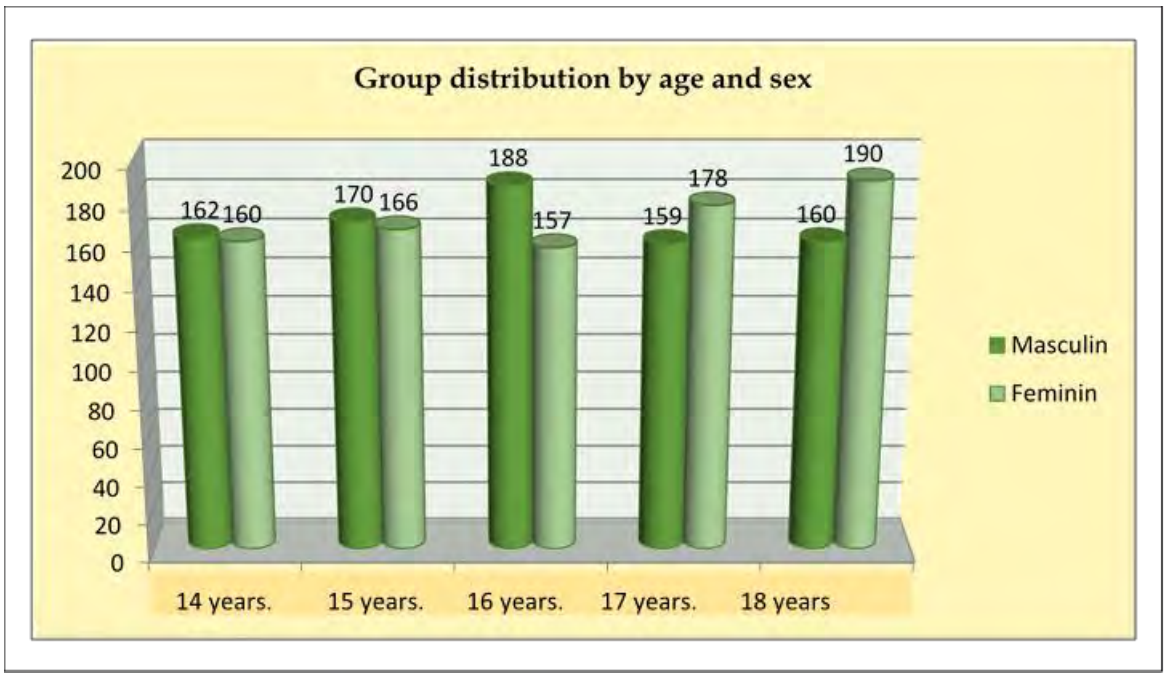

Figure 3. Group distribution by age and sex

The average age is 16.03 years with a standard deviation of 1.41. By sex, the mean age is m = 15.98 (d.s. = 1.39) for men, and m = 16.08 (d.s. = 1.43) for women. The difference between groups is statistically insignificant (F statistic = 2.23, T = 1.49, P = 0.1351), which leads to the conclusion of group homogeneity by age and sex.

Scores distribution obtained in the anxiety questionnaire of the interviewed subjects is presented in figure 4.

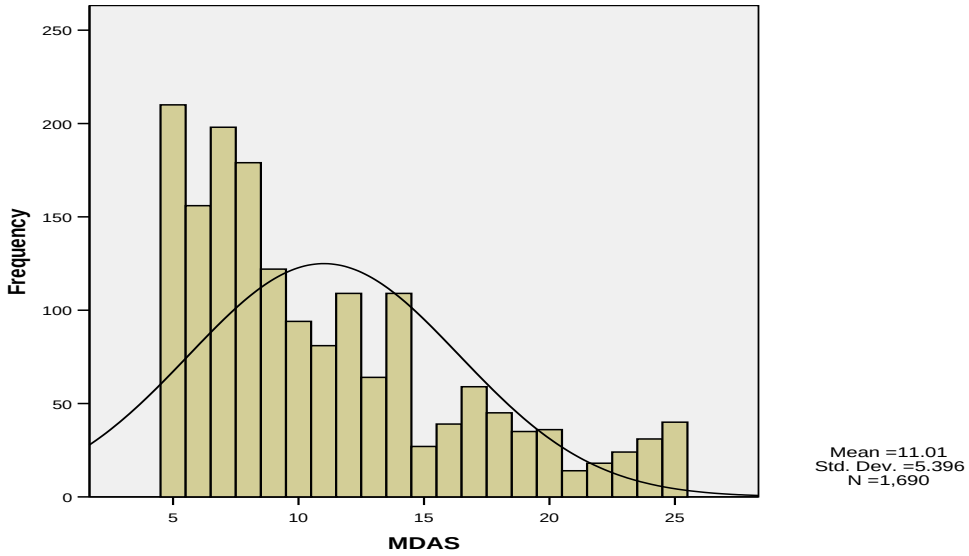

Figure 4. Histogram of MDAS scores obtained in adolescents group

We note that the distribution of scores does not overlap with the normal distribution, there is an obvious shift to the left of them, which is explainable by the fact that the normality in the case of our questionnaire is in the area of low scores, below 15.

Studying the frequency of MDAS scores obtained on the group of adolescents 10.1% (170 subjects) had average levels of anxiety (MDAS score = 15-18) and 11.7% (198 subjects) had severe anxiety levels (MDAS score> = 19).

Items of the MDAS questionnaire scores are presented in table 1.

Table 1. Mean and standard deviations of MDAS items

Control anxiety	Anxiety in the waiting room	Dental burs anxiety	Ultrasonic scaler anxiety	Anaesthesia anxiety
m=1.56 d.s.=0.91	m=1.85 d.s.=1.048	m=2.55 d.s.=1.26	m=2.05 d.s.=1.213	m=2.99 d.s.=1.353

There are different average levels of anxiety compared to different situations in the contact of individuals with the dentist (figure 5), the highest levels being for anaesthesia and drilling, average levels for scalling and waiting room and the lowest level for dental control. The differences between the averages are significant in all associations, finding a significance $p < 0.001$ for all associations, except for the association between waiting room anxiety and scalling anxiety, where the significance is 0.01.

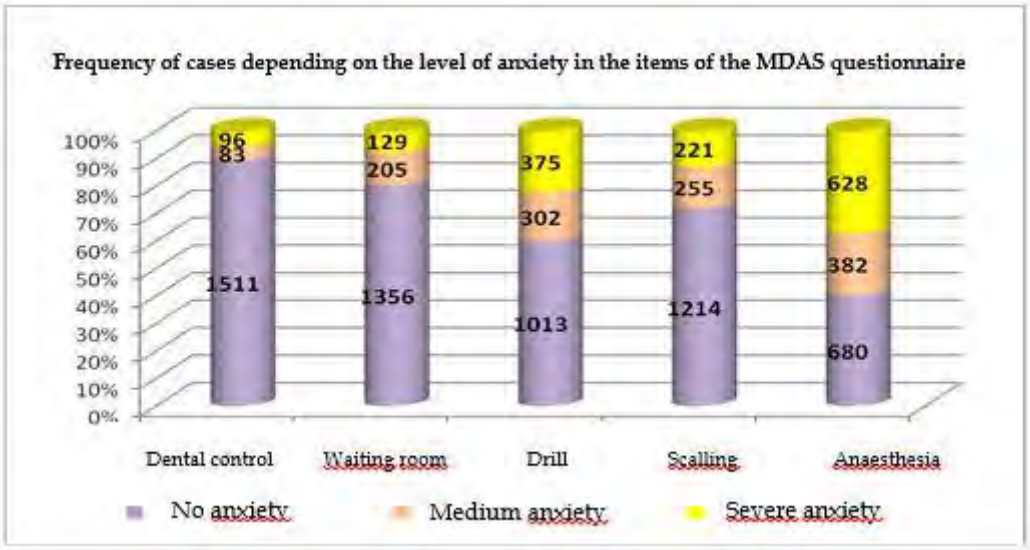

Figure 5. Frequency of cases depending on the level of anxiety in the items of the MDAS questionnaire

The existence of high rates of anxiety about anaesthesia can lead to difficulties in accepting dental interventions that need this procedure.

The anxiety levels reflected by the MDAS score related to the age of the interviewed subjects led to interesting results reflected in figure 6.

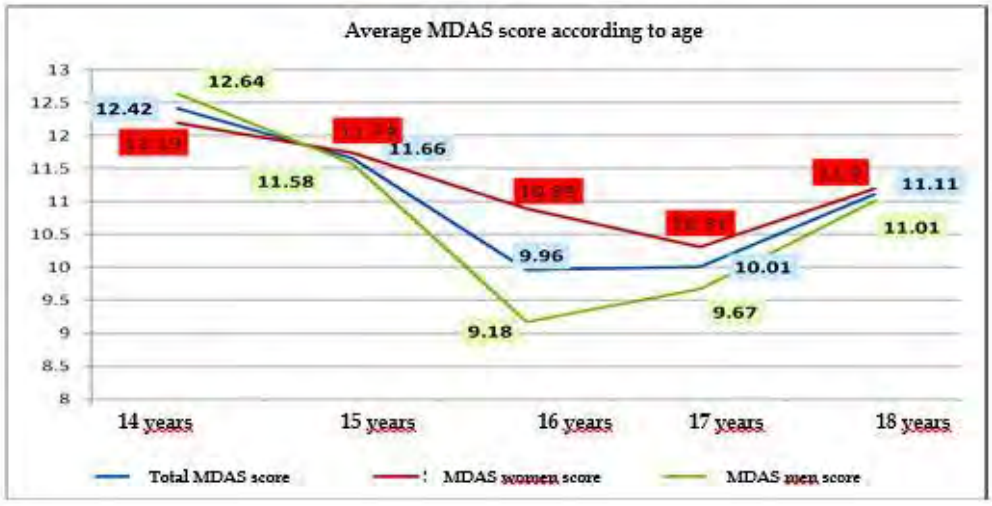

Figure 6. Average MDAS score according to age

We notice a general tendency to decrease the levels of anxiety reported, both for boys and girls up to the age of 16, in boys the decrease of scores between 15 and 16 years being intensely statistically significant (t = 4,588; p <0.001), so that between 16 and 17 years of age their growth will follow. In girls, the decline continues between 16 and 17 years. Between the ages of 17 and 18, there is an increase in both girls and boys. We cannot provide an explanation for this pattern of evolution of MDAS scores.

Analyzing the levels of anxiety by sex and age from a qualitative point of view, we notice some peculiarities (figure 7). Thus, although at 14 years of age boys tend to report significantly more severe anxiety than girls (χ^2 = 7.81; p = 0.005. At 15 years of age, significantly more girls report moderate anxiety (χ^2 = 10.74; p = 0.005), while for Severe anxiety the frequencies are relatively equal between the sexes, and for 16 and 17-year-olds the frequencies are relatively equal for both moderate and severe anxiety, the differences being statistically insignificant, so that at 18 years there are significantly higher frequencies of severe and general anxiety in boys. (χ^2 = 10.73; p = 0.001, respectively χ^2 = 10.86; p = 0.004).

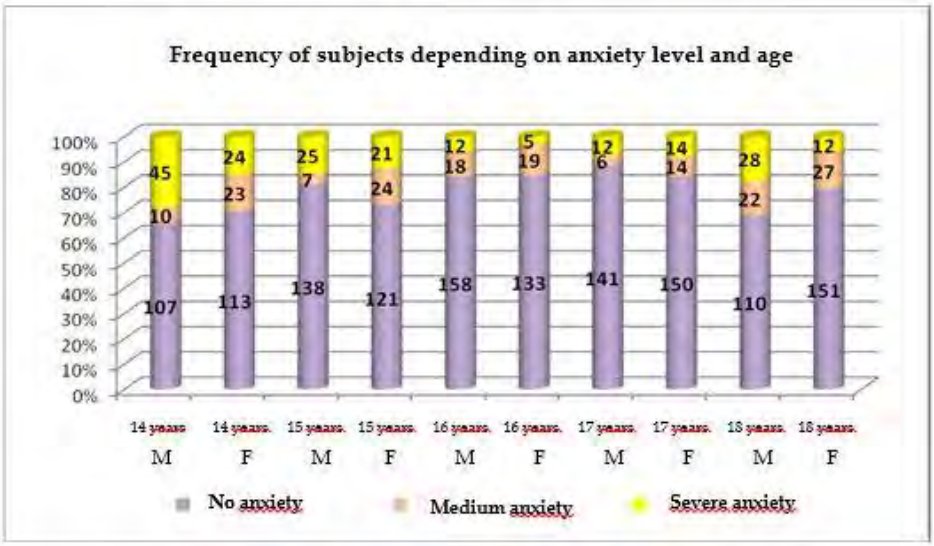

Figure 7. Frequency of subjects depending on anxiety level and age

The average scores on the MDAS items according to age are presented in figure 8.

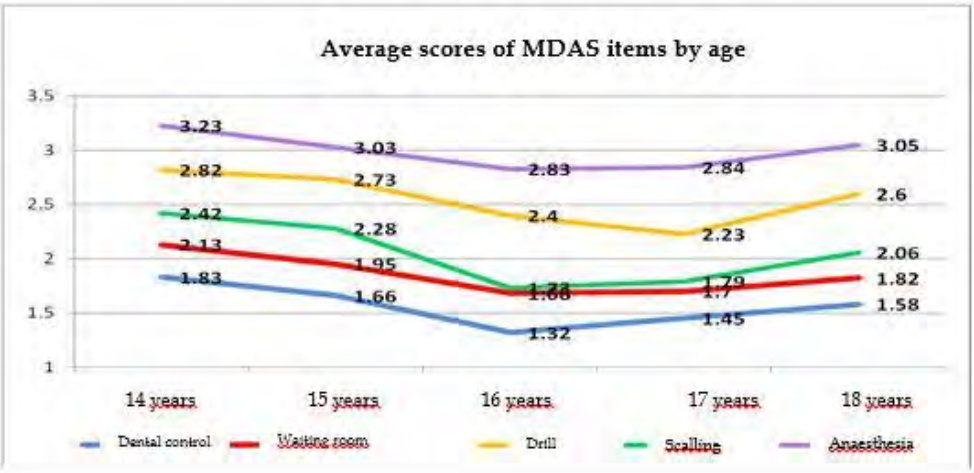

Figure 8. Average scores of MDAS items by age

We note that in all items there is a tendency to decrease the scores from the age of 14 to 16 years, and then there is an increase in the ages of 17 and 18, except for the anxiety for the

drill, whose decrease is kept for the age of 17 years. The final levels of anxiety (at the age of 18) are in all cases below the initial ones (at the age of 14), the difference being statistically significant for control anxiety ($p = 0.002$), anxiety in the waiting room ($p < 0.001$) and anxiety for scalling and brushing ($p < 0.001$), but without reaching significant levels for anxiety for local injection anaesthesia ($p = 0.115$) and anxiety for drilling ($p = 0.41$).

We can explain this evolution by the fact that probably, with maturation, the subjects begin to understand the need for dental treatment, so that they begin a process of self-education during which the denial of anxiety towards the dentist also appears. This explains the decreases that occurs for all items of the questionnaire up to the age of 16 years. The subsequent increase in scores indicates that there is, however, objective anxiety, which is ultimately accepted as such by individuals.

Anxiety levels at 18 years of age are not significantly lower than 14 years of age for potentially painful procedures (drilling and local injection anaesthesia), indicating that there is an objective level of anxiety for these procedures, which can be overcomed by education/self-education measures, anxiety that must be taken into account in routine dental practice and applied as far as possible measures to combat pain while performing these procedures.

DISCUSSIONS

The literature presents discordant data regarding the prevalence of anxiety, the data accessed by us from [37,46] report increased scores of dentist anxiety in women. Dumitrescu et al. [47] cite Maggirias et al. who report higher scores in men and Economou et al. and Settineri et al. which reports similar scores in women and men. We remind that in our group there is a relative tendency to higher scores in girls compared to boys, even if they do not reach the statistical significance. Where moderate and severe anxiety develops, there are higher levels of anxiety in boys. In groups with absent or low anxiety (MDAS <15), MDAS scores by sex are significantly higher in girls ($m = 9.11$, $ds = 2,838$, respectively in boys $m = 8.12$, $ds = 2,767$; $t = 6.42$, $p < 0.001$).

Fear of the dentist is a major cause for refusing dental treatment [5,18,48,49]. Dental fear is one of the most common emotional disorders encountered in modern society [50,51].

The behaviour of the child who refuses treatment in the dental office differs between age groups, personal characteristics and other psychological and social factors [4,52].

Common for these patients is that fear of dental interventions, considered to be the main reason for refusing dental treatment [4,52-56], but also to avoid contact with the dentist [52,57-60].

In Sweden, 1.3% of children and adolescents (0-19 years) require dental treatment in specialized clinics, where pharmacological elements of sedation are used to perform dental interventions [61].

Numerous studies show that not all children (aged 4 to 12 years) who refused dental treatment did so because of fear of dental interventions [5,6,18,49,62].

Various studies have associated temperament with the refusal of dental treatment, respectively with dental fear [63-66]. Refusal of treatment occurs most frequently in very active, impulsive children [6], while dental fear occurs most frequently in shy children [49,62,65].

A study conducted in Sweden [66] that evaluated the influence of temperament on the way the child accepts dental treatment, performed on preschool children who needed extractions, the manoeuvers being performed under sedation with Midazolam, showed that shy children find it much harder to accept dental interventions. Refusal of treatment occurs frequently in children with negative emotions, who are more agitated at the entrance to the waiting room.

Social influence has always been directly correlated with the child's physical and mental condition, and has a great influence on oral health. The relationship between socio-economic status and oral health is very well defined [67,68], it also influences the patient's physical health [69]. Physical and mental disorders occur most frequently in patients with poor or non-existent education, and in those with limited financial resources [70]. Raadal et. al. [71] has shown that lack of education and financial resources is a major risk factor for oral health. Socio-economic status and inter-family relationships influence the child's behaviour in the dental office, respectively a possible refusal of treatment by the child.

CONCLUSIONS

It is important for the dentist to be able to determine the child's anxiety level from the first phase of treatment in order to individualize the treatment plan according to the patient's psycho-emotional needs, to determine the need for local anesthesia treatment or if conscious sedation or general anaesthesia is needed.

Declaration of patient consent

The authors certify that they have obtained all the patient's consent forms. The patient, through his legal representative, consented for his clinical information to be reported under anonymity for medical and scientific research purposes.

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The prevalence of frontal teeth discoloration among thai pacients

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Abstract

Aim and ojectives: A smile has an important role in our beauty and attractiveness. When it comes to dental problem, it always diminished self-confident and affects the mental health of the patient

Material and methods: The study present in this paper uses the data from a web - based survey or a survey administration software called Google form. A cross-sectional study was conducted between 2 February and 30 May, 2021 including 333 participants, aged 18 – 50 years old Thai people.

Results: Most of Thai participants have moderate or neutral feeling toward their anterior tooth shade and only few participants are truly satisfied with the anterior teeth shade.

Conclusions: No matter how much satisfaction people have with their anterior teeth's shade, having white teeth is esthetic and it is what most of people want.

Keywords: aesthetic area, discromia, prevalence

INTRODUCTION

The appearance and color of the teeth is a common concern in many people nowadays. Tooth discoloration is one of the most significant aesthetic issue that patient seek for treatment especially when it affects the anterior teeth which is mainly reveal when patient smiles. In the present time, most people are not only looking for healthy oral cavity but also perfect smile.
A smile has an important role in our beauty and attractiveness. When it comes to dental problem, it always diminished self-confident and affects the mental health of the patient [1].

Structure of tooth comprise of 4 dental tissues. Enamel, dentin, cementum and pulp tissue. All these structures affect also the color and appearance of the tooth. Normally enamel is colorless and semi translucent and the dentin or any material underneath the enamel is strongly and has a great impact on color of the tooth due to thick layer of dentin compare to enamel which is thinner [2].

Tooth discoloration is changed or deviated of color, hue, translucency of the tooth surface [2]. The physical tooth appearance is modified from its natural condition. There are varying factors and etiologies that cause tooth discoloration and staining including composition, locality and adherence of tooth discoloration and staining are in difference degrees [3]. Since There are diverse causes of tooth discoloration that has been supported by many researches, The most common causes are consumption of food and drink (coffee, wine, tea, soda), habits of using nicotine and tobacco products (cigarettes, shisha, dokha and snuff), betel nut, poor dental hygiene, tooth decay, medications especially antibiotic tetracycline, medical treatment such as radiation therapy and chemotherapy, dental materials (amalgam, silver sulfide containing materials, endodontic sealers), aging, genetics, fluorosis, trauma and diseases. However all these causes can be considered as pathological processes, but only one exception which can categorized as a physiological process which is tooth discoloration due to increment of age [4]. Usually teeth become darker as a physiological age change because of increased of secondary dentin thickness and reducing enamel thickness, occlusal wear, and pigment deposition within dentin structure [5]. At present, there are different treatment options for tooth discoloration and staining depends on the etiology and severity of tooth discoloration. Mild to moderate tooth discoloration can be treated individually or combination with conservative approach such as enamel microabrasion and bleaching. For severe tooth discoloration and staining needs a restorative approach with porcelain veneers or coverage with crowns [6].

Although, it's crucial for dental practitioners to know and understand the etiology and clinical aspect of tooth discoloration in order to achieve the diagnosis and select the most suitable and appropriate treatment for the patient [7].

The objective of this review is to determine the prevalence and etiology of anterior tooth/teeth discoloration among Thai patients.

MATERIAL AND METHODS

The study present in this paper uses the data from a web - based survey or a survey administration software called Google form. A cross-sectional study was conducted between 2 February and 30 May, 2021 including 333 participants, aged 18 – 50 years old Thai people. Participants in this survey got informed before got in to survey that all participants in this survey must meet the inclusion criteria and there are no qualifications in exclusion criteria.

Inclusion criteria: a willingness to provide informed consent, age from 18 to 50 years old and having a complete or missing máximum 2 teeth on both arches.

Exclusión criteria: edentulous patient, present of crowns or veneres on anterior tooth/teeth and orthodontic appliance

The sample of population are randomized and participation in this survey is voluntary and does not collect identifying information such as name, email address or IP address. Therefore, all responses will remain anonymous.

The questionnaire link has been shared via the Facebook application. A self-assessment questionnaire was used as a tool, which include; demography data, lifestyle habits, diet, oral hygiene, satisfaction with teeth color, the desire for whiter teeth and the last part was informed consent for using all the answer on the research.

The questionnaire comprised of the following 2 parts:

Part 1 the general information of respondents consists of 6 questions

Part 2 questions regarding tooth/teeth discoloration and satisfaction of patient consists of 18 questions.Respondents can choose not to answer questions that they are uncomfortable with.

Presentation of the statistical procedures used:

The SPSS statistics software program was used to create the database, to analyze the data obtained from the results of all the answers to the questions of the participants, to distribute the data, including to make diagrams and reports in this study.

The results of this study will be presented in the form of diagrams, chart, tables and graphs, which we will express in absolute value or in the form of percentages. Association between tooth discoloration and independent factors were tested by X2 with a significance level of 0.05.

Problem of the study:

Respondents may not feel encouraged to provide accurate and honest answers along with Respondents may not feel comfortable providing answers that present themselves in an unfavorable manner.

RESULTS

A. Prevalence of anterior tooth discoloration with respect to gender

Chi-square value = 12.974, P value = < 0.001

B. Prevalence of anterior tooth discoloration with respect to age

Chi-square value = 20.003 (6) p value = 0.003

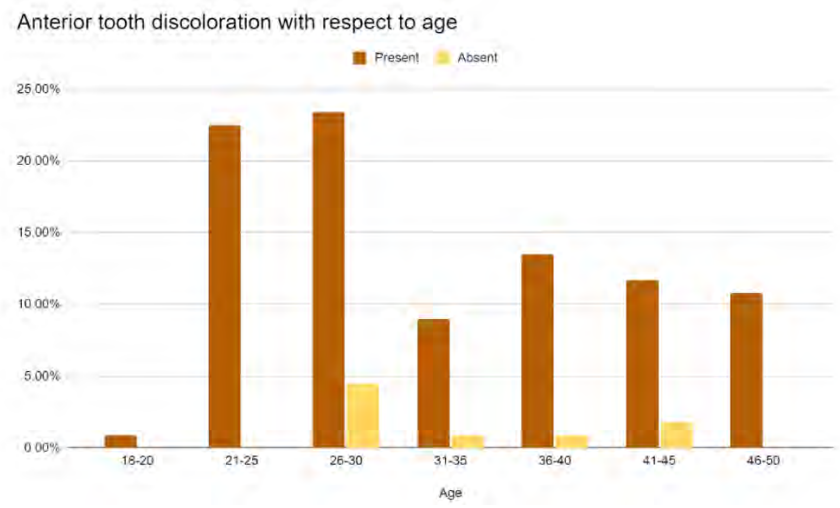

Figure 1. Prevalence of anterior tooth discoloration with respect to age

C. Prevalence of anterior tooth discoloration associated with location

Chi square value = 0.400, P value = 0.527

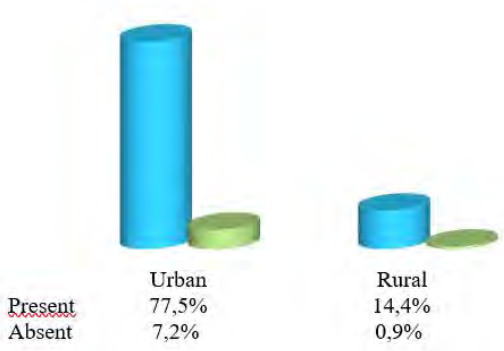

Figure 2. Prevalence of anterior tooth discoloration with respect to location

D. Prevalence of anterior tooth discoloration with respect of occupation
Chi square value = 16.855, P value = 0.002

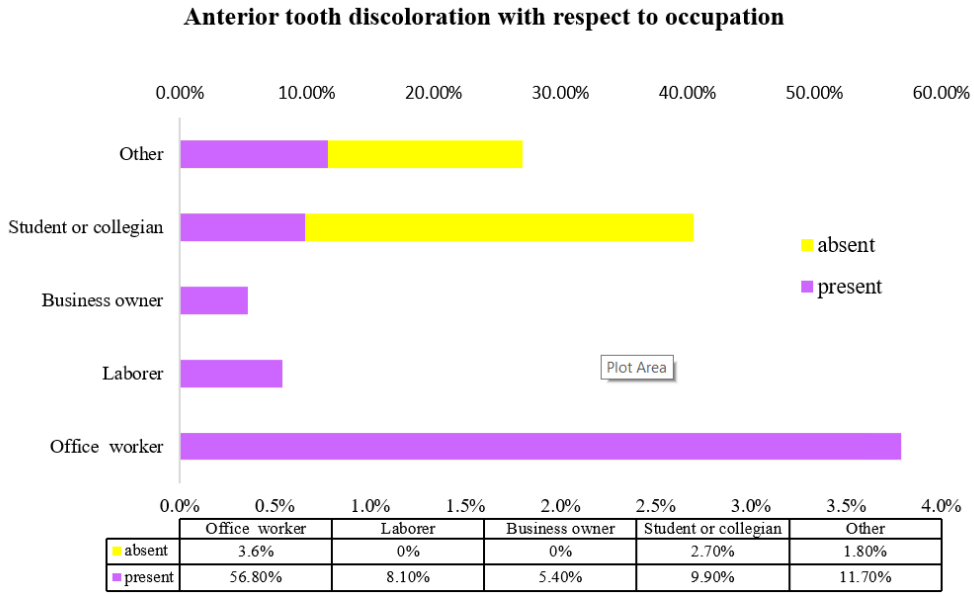

Figure 3. Prevalence of anterior tooth discoloration with respect to occupation

E. Frequency of tooth brushing associated with anterior tooth discoloration
Chi square value = 1.404, P value = 0.496

F. Frequency of dental visiting for checkups associated with anterior tooth discoloration

Chi square value = 3.668, P value = 0.338

All of participants in this study, 92.8% have the desired to have whiter teeth and only 7.2% doesn't want to have whiter teeth. As for the people who feel satisfied with the color of the anterior teeth and want to have whiter teeth counted as 23.7%, participants who were dissatisfied with the color of their anterior tooth shade and want to have whiter teeth were 15.3%, and people who were very satisfied and still want to have whiter anterior teeth were 3.9%. Chi square value = 15.136, P value = 0.002. This can explain the fact that no matter how much satisfaction people have with their anterior teeth's shade. Having white teeth is esthetic and it is what most of people want.

DISCUSSIONS

Tooth discoloration is aesthetically displeasing and it's one of the main causes that patient seeking for treatment. Prior to starting treatment, understanding the etiology is

important for the dentist to make the right diagnosis and lead to correct and successful treatment. (6)

Nowadays, there are many treatment methods for tooth discoloration depends on the etiology of discoloration such as proper diet and habits, tooth brushing, Professional tooth cleaning, bleaching, enamel microabrasion, veneers. (7)

CONCLUSIONS

Knowledge and understanding of the etiology of anterior tooth discoloration, including treatment options, products and procedures are importance to dental practitioners. In order to give correct diagnosis, understand the condition of patient and choose the most suitable treatment option for the patient.

The discoloration on one single anterior tooth or many teeth can affect the quality of life.

The study revealed that Thai people who presented with anterior tooth discoloration, majority are females, in the age group of 26-30 years old, in urban area, work as office worker.

The prevalence of anterior tooth discoloration in Thai patients are between 20-30 years of age.

People in their 20s and 30s often have a habit that cause anterior tooth discoloration such as drinking soda, coffee, wine and tea or smoking habit.

The main causes of intrinsic anterior tooth discoloration among Thai patients are trauma on anterior tooth, non-vital tooth, dental caries, tetracycline medication and fluorosis respectively.

The main causes of extrinsic anterior tooth discoloration among Thai patients are habit of drinking soda, coffee, wine, and tea, using chlorhexidine mouthwash, smoking habit and chewing betel nuts respectively.

In this study revealed that most of Thai people doesn't have habit of chewing betel nuts at all. Only present on old patients and most of them live in rural area.

Most of Thai participants have moderate or neutral feeling toward their anterior tooth shade and only few participants are truly satisfied with the anterior teeth shade.

Either very or less satisfied with the color of the anterior teeth. Most of patients still have the desired to have whiter teeth.

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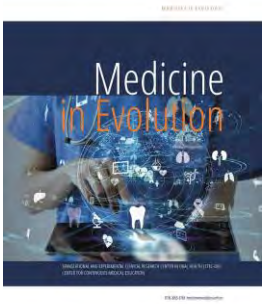
Evaluating the modern means of online socializing in the medical field: A study



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Abstract

Aim and purpose: The purpose of this study is to evaluate the social media interaction in the medical activity in the last decade.

Materials and methods: we conducted a retrospective observational study between January and March 2021, inquiring 24 doctors using semi-structured interviews.

Results: WhatsApp and Facebook social media platforms proved to be the most widely used among healthcare professionals.

Conclusions: The use of social media platforms for professional information has advantages and disadvantages, being a relatively new mean of obtaining relevant healthcare advice.

Keywords: social media interaction, medical activity, social media platforms

INTRODUCTION

Social networks - websites and other online tools called social networks - serve as a tool to connect people and organizations around topics of common interest [1-9]. Social platforms offer a great opportunity to interact quickly and sometimes in depth with many and diverse stakeholders, as people have the ability to communicate back and forth from anywhere in the world [10-19]. As more and more people receive their health news and information online, it is important to make sure that content delivered through online resources is accessible to a diverse target audience [19-29].

Aim and objectives

The aim of this paper was to make an assessment of the social-media interaction in the medical activity in the last decade.

MATERIAL AND METHODS

To carry out this paper we conducted a small retrospective observational study, of qualitative type conducted in January-March 2021. Using a qualitative survey project, 24 physicians were interviewed (using a semi-structured interview method) to achieve the objectives study. A qualitative survey is one of the most appropriate research methods for investigating exploratory questions.

The majority of participants were men (92%). This could be due to the snowball and conventional sampling used to recruit participants. No consistent data were found in the literature indicating major gender differences among physicians in adopting social networks. Most participants were also in the age groups 31-40 years (54%) and 41-50 years (29%). The high percentage of participants were from Timisoara (54%), followed by Resita (38%) and Lugoj (8%). Regarding the clinical specialty, the majority of participants were emergency physicians (58%) and general practitioners (21%). Other specialties were the participation of a general surgeon, a psychiatrist, a pediatrician, an orthopedic surgeon and an allergist.

RESULTS

According to the 24 doctors interviewed in the study, WhatsApp and Facebook were the two main socializing tools that attracted many doctors. Almost all the doctors who participated in the study used WhatsApp frequently and were involved in support groups on Facebook. The use of social networks is defined here as regularly using one or more social networking sites for creating and exchanging knowledge, engaging in discussions and comments with colleagues, for reading and updating (Figure1, Table1, Table2).

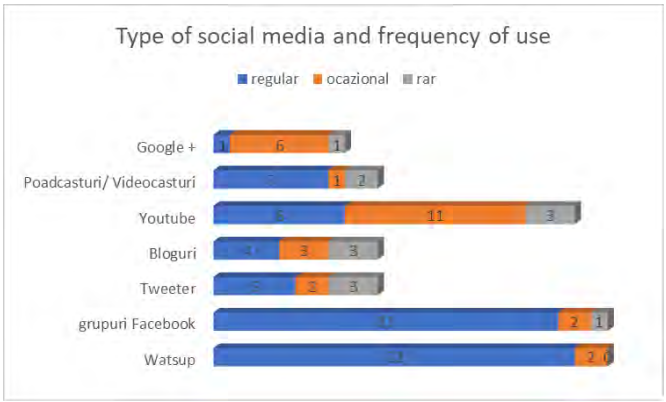

Figure 1. Frequency and type of social networks used by participants

Table 1. Reasons for the adoption of social media networks by doctors

Motives	Quotes from doctors
To stay connected	• Stay connected with colleagues through social media (S=23)
Expansion and group creation	• They can maintain contact with friends and colleagues who live far away (S=17)
Split of friend groups	• During the pandemic they posted once a day at least, because of situations with patients that came up during this time (S=7) • Access to information about new laws or medical discoveries (S=17)
Continuing the medical education	• Kept in touch with the latest discoveries and medical news (S=18) • Watching videos of different techniques for perfecting the knowledge (S=5)
Branding	• Using community group pages for advertising, advice and sharing cases and building a personal brand (S=7) • Information about protective habits against the covid (S=8) • Tried to reach an audience (S=19)

Table 2. Challenges in the adoption of social media networks by doctors

Challenges	Examples
Maintaining doctor patient confidentiality	• Scared to overshare personal patient cases in order to not bother personal privacy (S=9) • Biggest social media problems is one is never completely sure of the target reach (S=15)
Lack of active participation	• Doctors consider social media more of a marketing tool and less of an educational one (S=19) • The active teaching role of doctors is poorly managed by them and the use of social media (S=11)
Lack of trust	• Hard to accept knowledge and criticism by doctors I don't personally know or who are unknown internationally or nationally (S=8) • Scared to share too much information on social media out of fear to be judged or blamed (S=10)
Finding time for social media	• A matter of time, being a doctor covers most of the free time. (S=9)
Acceptance and support from the workplace	• Legislative lax outlines make it confusing to post and share a lot of information (S=7) • The notion of education through social media still not respected enough by patients or community. (S=4)
Information chaos	• Too much information online, but hard to distinguish through the spam. (S=6) • Youtube offers a lot of useful information but in order to reach the educative parts one has to sift through a lot of junk (S=5)

DISCUSSIONS

Social media is a new technology in healthcare. Healthcare managers are working to effectively utilize social media to engage patients. Through effective communication and marketing methods, we can use the internet to connect with patients. Patients are increasingly relying on information found online and using the Internet to gather information about healthcare and to connect with other patients. Others use these resources for research or to share experiences with healthcare providers. Patients are also looking for information through social media that helps select doctors, specialists and hospitals to make informed decisions to seek treatment [30-41]. The adoption of social networks has both benefits and risks for doctors [42-48]. Doctors and other health professionals are currently facing increasing challenges in adopting social networks for knowledge sharing [48-53].

CONCLUSIONS

The participants in the study considered that the future of social networks in the field of health is promising. It is currently underused and quite unregulated. However, it is still expanding and many major health organizations and professionals are looking closely at social media. Social networks can revolutionize medicine in terms of consultations, professional interactions and networks, the exchange of knowledge between organizations, the transformation of continuing health education and the democratization of healthcare, allowing more people (including patients, journalists, other clinical professionals or enthusiasts) to have a voice. and get involved in medical activities:

- The use of social networks by patients for health reasons is increasing.
- The future implies the need to use social media networks both in educating patients, for telemedicine, but also to continue the general training of health professionals for a better homogenization of the training of medical staff globally.

This study reflects the beneficial and potentially harmful effects of patients' use of social networks on health:

- The findings show that patients use social media primarily for social support, which is represented by informational support, emotional support, esteem support, and network support.
- They are extremely important for patients because they cover their emotional side and social comparison.
- The use of social networks by patients most often leads to the empowerment of the patient.
- Identified patients felt the need for subjective well-being, dependence on social networks, promotion and loss of privacy.
- The types of use of social networks by patients affect the relationship between professionals and healthcare by stimulating a more equal communication between the patient and the health professional, shorter relationships, harmonious relationships, suboptimal interactions between the patient and the health professional.

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The internet-effective educational instruments in health education

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Abstract

The aim of this study is to demonstrate the innovative use of technology in medical education and bring awareness of current and future trends in the use of technology to enhance teaching and learning. Also, the purpose of this study is to reveal patterns in the use of health information on the Internet.

Material and method: 1028 people responded to the telephone survey and that was conducted between October 2020 to December 2020. 865 out of 1028 completed the survey and 678 of them, used the Internet to obtain health information in the last year.

Results: The determining factors in the use of the Internet for the selection of the hospital were represented by the area of residence, age and health status and the recommendations received on the social platforms.

Discussions: There are several ways in which the Internet has been used for health education. The first involves professional development and the second and most important is the use of the Internet as a channel of intervention.

Conclusions: The implementation of "learning engineering" as an emerging technology can help in the teaching and learning process. Training of more educators who can continue their further training in the effective use of technology to improve teaching and learning.

Keywords: medical education, technology, health information

INTRODUCTION

The Internet is the usual way to access all kinds of information, so it has a very influential place in the field of healthcare. More and more people are using the Internet to get the latest information on health issues. However, it is very important, but it is not easy to find the right data and select it efficiently from the huge amount of information. In order to identify information seekers and understand their needs or purposes, they would be very effective for providers to provide high quality health information to Internet users.

Innovative use of technology in medical education and an awareness of current and future trends in the use of technology to enhance teaching and learning. We will begin with a reflection on the current increased use of technology as a major factor in enabling the continuation of medical education during the pandemic. This reflection will be followed by a discussion of several potential future scenarios that are based on emerging trends in the use of technology, but also on an understanding of how complex social systems respond over time to the trigger of major events. We will also discuss the benefits and challenges of the future use of technology in medical education after the pandemic is resolved.

CBL is a teaching-learning practice in which clinical cases are used to aid traditional lectures. CBL promotes active learning and has recently been used to compensate for lack of motivation in teaching lectures. Students are given the opportunity to explore real cases in which the patient's history, signs, symptoms are provided, along with clinical and laboratory results [1]. Through teamwork and peer interaction, students evaluate the case as they plan investigations and proper management. The motto is to equip students with the skills needed for critical analysis.

EBM provides students with the tools they need to learn, understand, and evaluate the medical literature. The EBM follows five steps: a) translating indeterminate information to a question with an answer, b) retrieving the best available evidence, c) critically understanding the evidence for internal validity, d) applying the results in practice, and e) evaluating performance. Advocates long-term learning and disciplined thinking, allowing meticulous and sensitive application of current medical evidence in patient care decisions [2].

The main principle behind simulation learning (SBL) is to use simulation means to mimic real clinical scenarios. Although medical simulation is fairly new, simulation has long been used in other high-risk professions, such as aviation. Medical simulation allows the recovery of clinical skills through intentional practice, rather than through an apprenticeship learning style. It can help instead of real patients and clinical scenarios. Barriers surrounding limited clinical settings have encouraged the use of SBL in preclinical teaching. One of the most important advantages is the absolute freedom for trainees to commit and repeat mistakes without harming the patient [3].

Virtual reality can also be involved in SBL to increase learning standards and confidence in patient care [4]. It is best represented as a state-of-the-art concept to facilitate human-machine interaction and to effectively reduce the gap between realistic and theory-based learning by involving the learner in pseudo-realistic environments. It differs a lot in terms of its level of development, authenticity and end-user synergy with the virtual background. Understanding the use of haptic feedback can produce a sense of resilience when using tools in a simulated environment. Similar technological principles are used in the training of laparoscopic and endoscopic instruments for resident physicians.

Social platforms can help with traditional subsidiary knowledge and improve distance learning. Students and learners of all strata usually check the internet for details about diseases, therapies and associated physiology. Moreover, many organizations have realized that supporting live-tweeting or blogging medical conferences, as well as providing opportunities for a wide spread of content, can go far beyond personal presence.

Information technology has shown a greater impact on medical education, most recently through the electronic distribution of videos. The widespread use of the vast educational resources available on the Internet is of significant medical importance. These online resources can be used for practical learning of clinical procedures, demonstrations of anatomical dissections, as well as asynchronous learning through online lectures [5 - 7].

Online classroom learning has been the new innovative teaching and learning strategy that incorporates blended learning techniques using online and / or offline instructional content outside the traditional classical framework. Students are offered pre-recorded lectures assigned as homework for the course, from the instructor's focus to self-taught learning. Solve medical cases by engaging in small groups that will facilitate a team-based approach and promote longer fact-keeping [8].

Team-based learning (TBL) is one of the best learning techniques that has recently gained popularity in medical education, based on student-centered learning [9]. Team-based learning is defined as a learning strategy with a small group of students who have the opportunity to apply educational concepts through various activities that include critical thinking, individual and team-based tasks, brainstorming followed by immediate feedback from the instructor. TBL has a greater advantage in increasing communication skills and teamwork strategies in student groups, which are essential for patient care [10].

Aim and objectives

The purpose of this study is to reveal patterns in the use of health information on the Internet. Also, the aim of this study is to demonstrate the innovative use of technology in medical education and bring awareness of current and future trends in the use of technology to enhance teaching and learning.

MATERIAL AND METHODS

1028 people received a response to the telephone survey and the survey was conducted from October 2020 to December 2020. 865 out of 1028 completed the survey and 678 of them used the Internet to obtain health information in the last year. The subjects of the survey were randomly selected from local residents according to age and sex. It was performed in Timiş County, rural and urban areas, after prior telephone consent. The use of health information on the Internet has been classified into four categories as follows: general health advice, disease-specific information, shopping for health products and selection of hospitals. The questionnaire included articles on socio-demographic characteristics, such as age, gender, income, education, area of residence, health status and behaviors, such as cigarette smoking and alcohol consumption.

RESULTS

People with higher education and higher incomes are more likely to use the internet for health information. City dwellers use health information on the Internet more than those in rural areas, although there have been more since the pandemic. Personal health seems to be the most important factor to look for information about general health tips on the Internet.

Healthy people (68.3%) used the internet more than people with diseases (32.7%) who used the internet most frequently for disease-specific information (62.6%). The area of residence was the most important factor in choosing the health care provider contacted. While 31.8% of urban dwellers used the internet, only 19.0% of rural dwellers used it for the same purpose.

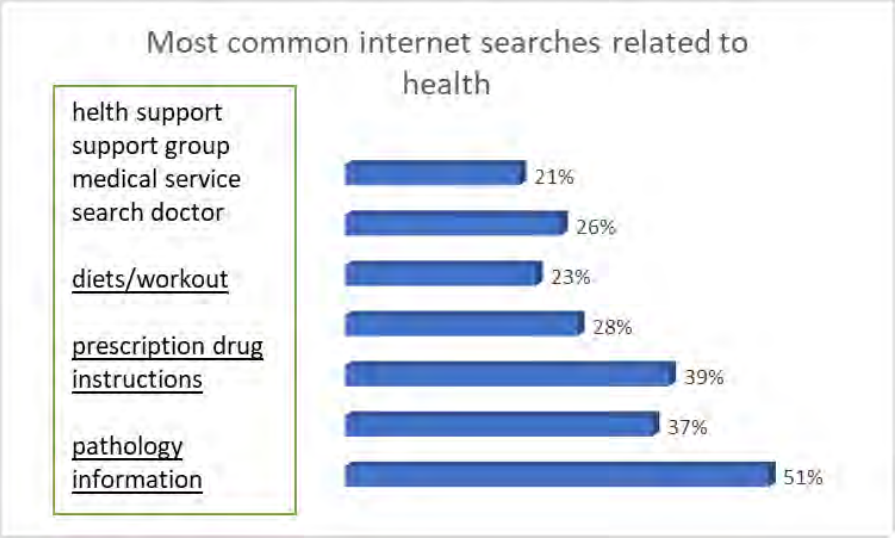

Figure 1. Health-related Internet search domains

The determining factors for the use of the Internet for the selection of the hospital were the area of residence, age and health and the recommendations received on social platforms.

During the pandemic, education took place exclusively online on Zoom education platforms, Google Classroom, Teams, etc. and all proved to be effective for advancing the education of pupils and students. Although the practical aspects of education are missing, there are also many beneficial points in using the internet for education.

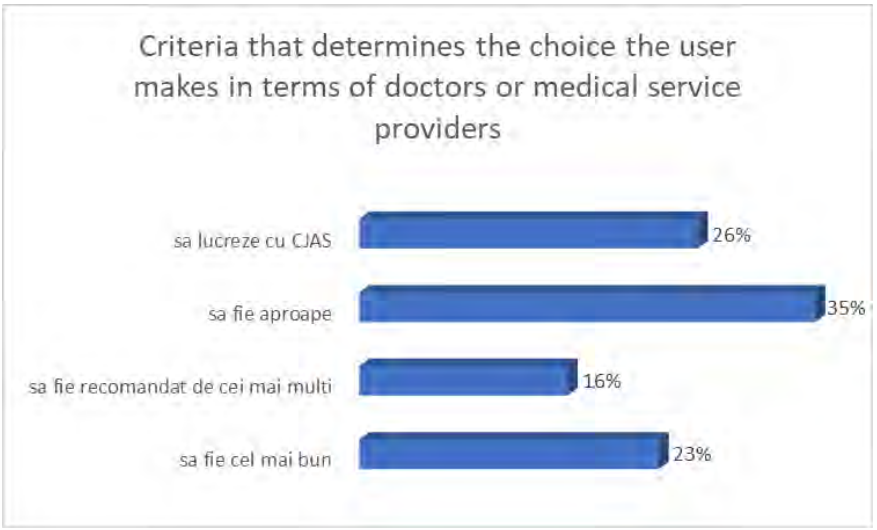

Figure 2. Criteria for choosing internet users looking for a doctor/healthcare provider from the recommendations received

DISCUSSIONS

The Internet provides a low-cost means of information and assistance to a large number of people and can therefore have the potential to reduce the financial costs of health education. It also allows the provision of personalized health information to each person, depending on their health status and concern. In addition, the Internet has the potential to disseminate health information to certain groups of the population, which have previously been untouched or difficult to reach by conventional means.

There are several ways in which the Internet has been used for health education. The first involves professional development. Several studies have examined the use of the Internet for distance learning and continuing education in health-related courses [11, 12].

The second and most important is the use of the Internet as a channel of intervention. This includes the distribution of health information or intervention systems designed to help individuals change their health behavior. Indeed, research has documented the effectiveness of a wealth of health education or intervention that has been delivered through various Internet channels.

The use of online support groups is associated with positive outcomes, including better mental health, a better quality of life, and a higher level of optimism and greater use of active coping strategies [13, 14], and the benefits do not. they seem to differ between hidden ones that read only messages posted to the group and posters that read and post messages to the group [15].

To date, most studies in this field tend to focus on the effectiveness of health education to be delivered online; There has been relatively less discussion about how we can promote the optimal use of the Internet for health education so that the general public can benefit the most from the Internet. Intervention should be provided to educate patients about their health-related internet skills.

Healthcare professionals should also increase patients' motivation and self-efficacy by minimizing perceived barriers to Internet use and helping them to develop strategies to overcome these barriers. Specifically, patients should be educated about the role of the Internet in managing their disease, technical skills on how to obtain useful information and assistance from the Internet, and how to transfer information and support from the Internet in managing the disease. Healthcare professionals or administrators of online support groups need to regularly evaluate and monitor the content of the message that is shared between group members, in order to minimize the chances of harm caused by misinformation on the Internet.

Overall, the current response to the pandemic has been to raise awareness and adopt the technologies currently available in medical education, as well as in the wider education sector. These changes along the continuum of medical education have been mainly to replace existing approaches to the provision of medical education, driven by the urgency of implementing a feasible and practical solution to crises, with educators using family technology.

Medical schools and other providers of medical education, including commercial organizations and professional bodies, have rapidly expanded the provision of online educational content and training, as well as the development of faculties in the use of technology, especially through online courses. Large group personal lectures have been replaced by streaming online lectures, using technologies for screen capture and online broadcasting.

Currently available technology, such as videos, podcasts, simple virtual reality, computer simulations, and serious games, is beginning to be used to assist educators and to facilitate students' learning and instruction in these areas. Simple online platforms, such as websites and blogs, can provide basic information, but also provide opportunities to host videos to demonstrate essential skills, such as clinical procedural skills and communication [16]. Medical educators can remotely train students with real-time mobile video tools and applications.

CONCLUSIONS

During the pandemic, education shifted exclusively online on Zoom and other educational platforms, Google Classroom, Teams, etc. All proved to be effective for advancing education in pupils and students. Although the practical aspects of education are missing, there are also many beneficial points in using the internet for education. Implementing "learning engineering" as an emerging technology can help in the teaching and learning process. Training of more educators who can continue their further training in the effective

use of technology to improve teaching and learning. The development of emerging technology, especially when it is specific to teaching and learning, is often costly and requires a range of different expertise.

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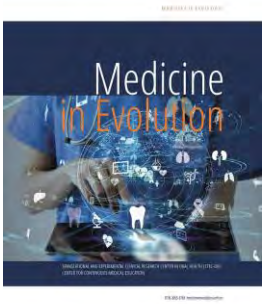
Minimally Invasive Chemo-Mechanical Treatment Methods Used in Paediatric Dentistry



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Abstract

Dental caries prevention is one of the main tasks of therapeutic dentistry. Despite this fact dental anxiety in young children is a clinical reality and thus the application of conventional therapeutic protocols is a challenge for any paediatric dentistry specialist.

Pain associated with the therapeutic act of removing a carious process and the use of local anaesthetic agents are still a real problem in pediatric dentistry, concerning anxious patients. For these reasons, we try to create a relaxing environment and perform minimally invasive procedures to increase patient comfort and increase the rate of acceptance of the therapeutic act, especially in the case of anxious and uncooperative children.

The use of chemo-mechanical methods involves the application of proteolytic substances that soften the infected dentinal tissue and allow the selective removal of necrotic tissue using hand instruments, keeping only healthy dental tissue.

The main advantage of this technique is that allows the practitioners to achieve dental treatment without the use of rotary instruments, without generating aerosols and is pain free so, well tolerated by children.

Keywords: CMCR, minimally invasive, BRIX3000®, Carisolv®

INTRODUCTION

The current treatment philosophy is to prevent and a carious lesion at the earliest stage, in order to avoid invasive treatment. With the current understanding of the nature of the carious disease and its process, the treatment philosophy is now changing to a more conservative approach and the concept of minimal intervention is gaining popularity in modern dentistry throughout the world [1].

Dental caries assumes a chronic infectious process, with a multifactorial aetiology involving demineralization of dental hard tissues due to the acidic environment, resulting from the action of bacteria that produces dental plaque on the food carbohydrate substrate [2].

Bacterial plaque represents a micro-aggregate in an organic matrix that is deposited on dental surfaces and other structures in the oral cavity, forming a strong microbial ecological system with intense metabolic activity [3].

In ideal conditions of oro-dental health, the hydroxyapatite in the tooth enamel is in perfect balance with the ions present in the saliva. Through the fermentation process of food hydrocarbons from dental plaque, H* acid ions appear, which causes a decrease in pH below the critical level of 5.5. Hydroxyapatite reacts to acid ions and the balance is disrupted, and the crystalline structure of the enamel undergoes a demineralization process [4]. The demineralization of enamel has as consequences the increase of the interprismatic spaces, the change of the orientation of the hydroxyapatite prisms, changes at the level of the organic matrix, which lead to the increase of the permeability of the dental tissues [5]. At first, the acid attack occurs at the core of the enamel prism, then extends to the walls and finally reaches the superior layer, generating spaces initially by devoiding prisms, spaces that converge and cause the destruction of surface enamel and the appearance of caries that has a rough or cavitary appearance [6].

Tooth decay, also known as dental caries or cavities, may have several different colours from yellow to black [8] and experienced symptoms may include pain and difficulty in eating. Complications may include pulp inflammation, necrosis or abscess, inflammation of tissue around the tooth and finally tooth loss [7,9]. The chemo-mechanical caries removal (CMCR) technique was used to make the treatment more comfortable and easier for both patient and the dental practitioner. Therefore, alternative methods of caries therapy were introduced for the purpose of minimally invasive dentistry without causing pain and over-preparation of dental tissue. These methods are sono-abrasion, air abrasion, ultrasonic, chemo-mechanical systems and lasers [10].

Chemo-mechanical caries removal systems are solutions that act on the principle of carious tissue softening to facilitate their removal, applying enzyme-based agents such as Papain or sodium hypochlorite (NaOCl) [11,12,13].

In 1975, Habib introduced the method of using 5% sodium hypochlorite to remove caries tissue. Many subsequent studies have tried to improve this method because the 5% Sodium Hypochlorite solution has been shown to be toxic and aggressive to surrounding tissues. Therefore, a new solution was developed by adding Sodium Hydroxide, Sodium Chloride and Glycine together with 5% Sodium Hypochlorite. The modified formula was known as GK-101. It was much more effective than 5% Sodium Hypochlorite, which was individually slow in removing carious tissue [14,15].

In January 1998, Chriser Hedwards, Lars Strid in collaboration with a Swedish medical team consisting of Dan Ericson and Rolf Bronstein led to the development of a new caries removal product called Carisolv. Carisolv offers a unique and effective method of removing cavities, leaving healthy tissue intact. Carisolv allows a minimally invasive treatment that selectively softens the affected dental tissue while preserving healthy tissue [16].

In 2004, Carisolv was modified by removing the red colouring agent, decreasing the amino-acid concentration by half and almost doubling the NaOCl concentration from 0.25% to 0.475% [17].

The manufacturer of Carisolv introduced a set of non-cutting tip instruments in order to increase caries removal efficiency and provide maximum conservation of the residual caries-affected dental tissue. The non-cutting tip has a 90° edge that allows a simple scraping movement for caries excavation which cannot be achieved with conventional spoon excavators that cut the dentine in one direction using a scooping motion [18].

In 2016, a new dental product was produced in Argentina that will revolutionize the dental industry called BRIX3000. It is an enzyme-based agent using papain enzyme which has been clinically tested in a broad range of different patients. This formula is non-toxic and has no side effects. It has proven to be safe for contact with skin, eyes and other body parts, and can be used for young children and pregnant women [19].

The enzymatic activity of the bio-encapsulated papain (3.000U/mg) needs only 2 minutes to dissolve any dental tissue that is affected by caries. The enzymatic activity reacts only with dentin that is affected by caries and is considered to be a gentle treatment and needs only a small amount of product [19].

BRIX3000 is in accordance with the atraumatic restorative treatment (ART) technique as considered by the WHO (World Health Organization) and the IDF (World Dental Federation).

Chemo-mechanical solutions seemed to be the best option towards minimally invasive treatments, with good control during application and action and that promotes higher compliance and good treatment experiences for patients of all ages [19, 20].

Aim and objectives

The purpose of this study was to evaluate the caries removal efficacy and patient acceptance for two types of materials BRIX3000 and Carisolv used for caries removal in temporary decayed molars.

MATERIAL AND METHODS

Two patients, aged 5-7 years, were selected from the casuistry of Paedodontics Department of the Faculty of Dental Medicine, "Victor Babeş" University of Medicine and Pharmacy of Timişoara, based on the following criteria.

The inclusion criteria for the study were:

- Subjects aged between 5 and 7 years
- Subjects with dental anxiety
- Subjects with cavitary carious lesions on temporary molars, without pulp complications
- Subjects with cavities that don't need a paedodontic crown restoration
- Subjects with negative percussion test
- Subjects with no periapical or inter-radicular pathology

The exclusion criteria for the study included:

- Subjects under the age of 5 and 7 years
- Subjects with systemic diseases
- Subjects with painful carious lesions
- Subjects who present carious primary molars just with enamel affected structure
- Subjects positive to percussion
- Subjects with periapical or inter-radicular pathology
- Subjects who did not agree with the proposed treatment plan

The legal representatives of the subjects completed the patient's informed consent and the medical questionnaire. They were also informed that the answers provided by them will be used in a study, and all personal data are protected by signing the GDPR.

The anamnesis included personal data (age, origin), personal pathological history, dental history, information on current diseases. All these informations were recorded in the patient's file.

Protocol of BRIX3000

A five-year-old female patient was brought by her parents in the Paedodontics Department of the Faculty of Dental Medicine, "Victor Babeş" University of Medicine and Pharmacy of Timişoara, accusing painful sensitivity during mastication. After anamnesis and clinical examination, multiple carious lesions were found. At tooth 7.4 there was a class II acute deep carious lesion. On the first appointment, the patient was anxious and uncooperative and we decided to try an expectation approach, so silver diamine fluoride (SDF) was applied on all carious lesions present in the lower arch (Figure 1). At the second visit it was observed that it was not possible to stop the evolution of the 7.4 carious lesion, the dental structure continuing to undermine (Figure 2).

Figure 1. endo-oral view a) right lateral view, b) frontal view, c) left lateral view


Figure 2. class II cavitary carious lesion on 7.4

Absence of abscess and fistula, presence of sufficient dental structure for a direct restoration were also found. A sensitivity cold test was performed as the patient reported pain, getting a positive response. The radiographic examination showed no periapical or inter-radicular pathology. The subject has no systemic diseases and the mother reported that the child was afraid of dentist. Therefore, the chemo-mechanical removal of caries using BRIX3000 papain gel (Brix Medical Science, Carcana, Argentina), was chosen to remove the infected tissue.

The procedure was performed without anaesthesia, under cotton roll isolation (Figure 3) of the operative field, following the principles of ART [21,22].

The papain base gel BRIX3000 was applied to the cavity with a micro-brush allowing the product to work for about 2-3 minutes, avoiding saliva from getting into the cavity which could thin down the gel and prolong the process. After 1 minute, the formation of oxygen bubbles was observed, and the gel turned from translucent to cloudy. The infected tissue was removed through curettage, first at the surrounding walls, using a dentin excavator followed by pulp wall removal of carious tissue (Figure 3).

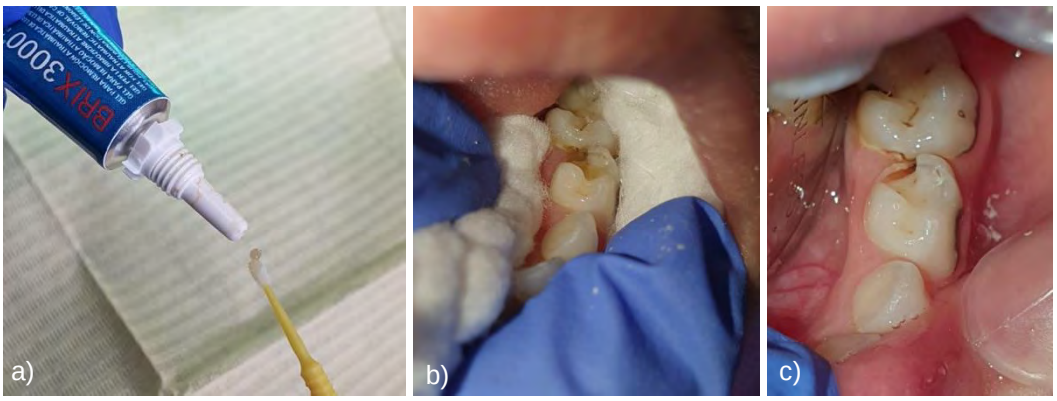

Figure 3. a) chemo-mechanical gel BRIX3000, b) applying the product under cotton rolls isolation, c) dentin surface after the first application

After the gel removal, the cavity was rinsed with water and dried using syringe with mild air blow. According to the manufacturer's guidelines, the product could be applied as many times as required to remove all the infected carious tissue. The product was reapplied, waiting for 2 more minutes, observing the gel colour change and a new curettage was performed. It was observed that after the second application most of the infected tissue had been removed (Figure 4). The cavity was washed with 0,2% Chlorhexidine solution (Gluco-Chex 2 % Cerkamed), to remove dentin residue and then dried with a gentle air jet.

The cavity was conditioned with 10% polyacrylic acid (GC Dentin Conditioner liquid, Tokyo, Japan), which was applied with a micro-brush, allowing it to act for 10s. Both enamel and dentin were washed for 30s and dried. Restorative material (GC Equia Forte Fill) was prepared according to the manufacturer instructions (tap to loosen powder, push the plunger, mix for 10s in amalgamator, click 2 times to prime the capsule and dispense slowly, allow restoration to set 2m30s (from start of mixing), the occlusion was then checked with occlusal mark film (Double check, Swedish Dental Supplies). In the end Equia Forte Coat was applied using a micro-brush and light-cured for 20s (Figure 4).

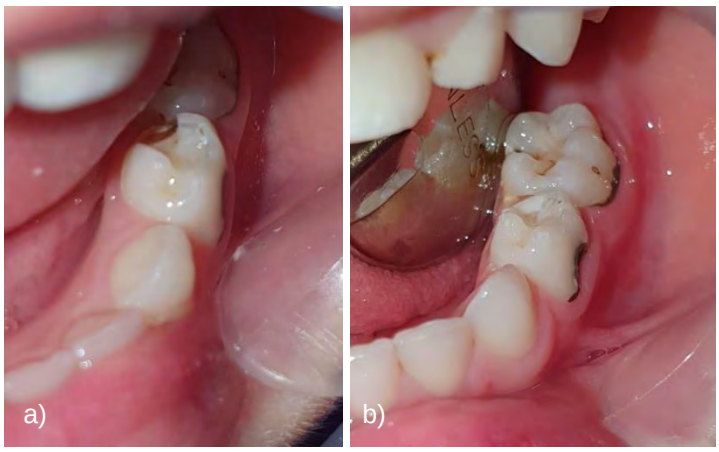

Figure 4. a) view of the cavity after second gel placement, b) final dental restoration

Immediately after the treatment, the child was questioned about the discomfort of the performed procedure using the Wong-Baker Face scale [23] (Figure 5).

Figure 5. Wong-Baker Face scale

The girl was instructed to point to the picture that represents her level of discomfort after the following question: "*What did you feel during treatment?"* The girl pointed to score 1, that is equivalent to mild pain for treatment.

Carisolv protocol

An eight-year-old female patient was brought by her mother in the Paedodontics Department of the Faculty of Dental Medicine, "Victor Babeş" University of Medicine and Pharmacy of Timişoara, with complaints of painful sensitivity caused by cold drinks and sweets. After anamnesis and clinical examination, a class II Angle anomaly was found with bilateral open bite, dental crowding, carious lesions on 1.6, 6.5, 3.6, 8.4, 8.5, 4.6. Early loss of 7.4 and residual tooth roots of 7.5. The patient complains of discomfort and pain generated by the consumption of sweets at the level of 8.5 where a cavitary carious lesion was observed (Figure 6).

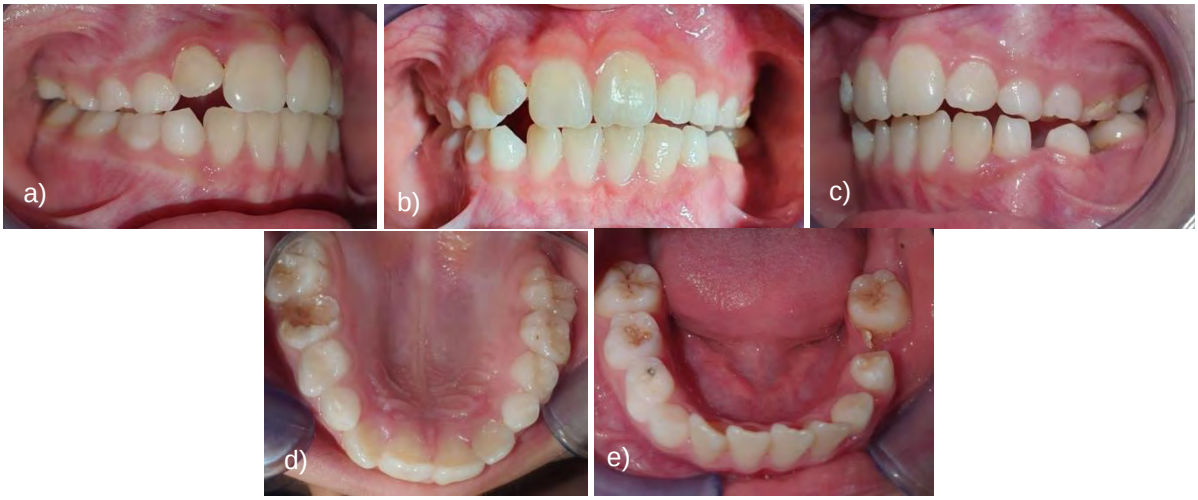

Figure 6. a, b, c, d, e – endo-oral view

Absence of abscess and fistula, presence of sufficient dental structure for a direct restoration were also found. After the sensitivity cold test was performed as the patient reported pain sensitivity, getting a positive response. The radiographic examination showed no periapical or inter-radicular pathology. The subject has no systemic diseases, the mother reported that the child was afraid of the dentist due to traumatic experiences in the past, so she was anxious and uncooperative. Therefore, a CMCR method was chosen to remove the infected dental tissue. In this case, it was used Carisolv and non-cutting instruments (Figure 7).

Figure 7. Carisolv and non-cutting instruments

The procedure was performed without anaesthesia, under rubber dam isolation of the operative filed, following the principles of atraumatic restorative treatment.

The Carisolv product was applied to the cavity with a micro-brush allowing the product to work. After 30 seconds the gel turned cloudy indicating the presence of decayed tissue. To remove decayed dentin, special, non-cutting tools were used to achieve a minimally invasive treatment (Figure 8).

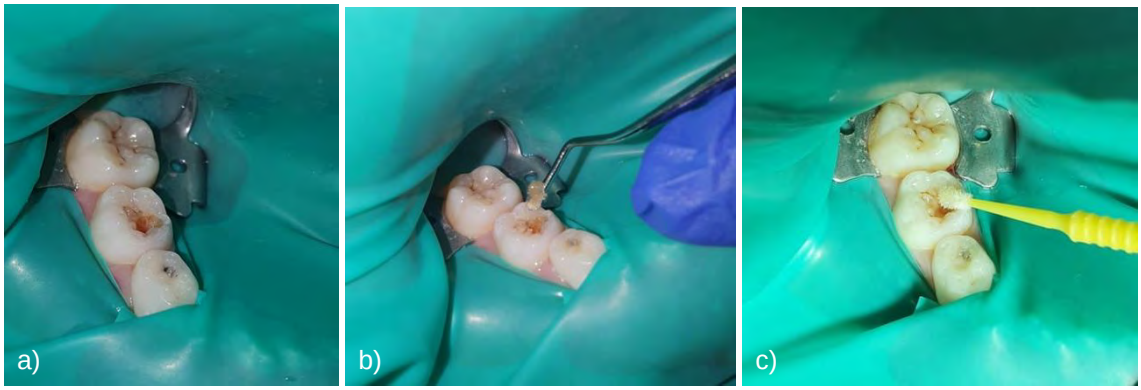

Figure 8. a) class I cavity on 8.5, b) removing the infected dentin with a blunt spoon, c) second application of Carisolv

The cavity is cleaned of cloudy gel and a caries indicator is applied to assess the remaining tissue. Due to the persistence of the infected dentin, a minimum amount of gel is applied again, and mechanical treatment is continued. After removing the entire carious process, the cavity was washed and dried. Then 0,2% Chlorhexidine solution (Gluco-Chex 2 %, Cerkamed) was applied to remove dentin residue. The same direct restoration protocol was then used. After finishing the treatment procedure, the child was questioned about the discomfort of the performed procedure.

The girl was instructed to point to the picture that represents her level of discomfort after the following question: "*What did you feel during treatment?*". The girl pointed to score 1, that is equivalent to mild pain for treatment.

RESULTS

Following the interpretation of the results obtained through the Wong-Baker Face evaluation scale, no significant differences were observed between the two types of material. The only difference noticed was the discomfort reported by the patient caused by the smell of

Carisolv material due to the presence of NaOCl. The patients said that the treatment was not painful, which increased their compliance, stating that they would return to regular check-ups.

DISCUSSIONS

Chemo-mechanical techniques have gained acceptance, especially from very anxious, disabled and paediatric patients. It does seem some of these agents would still benefit from quicker excavation times in order to achieve more universal acceptance [24].

Minimally invasive methods are preferable because they preserve more healthy tissue and prolonging the life of the tooth and the undesirable consequences of early extractions, especially in the case of temporary teeth. The concept of minimal intervention not only eliminates the pain associated with removal of caries but also can make a positive attitude in children towards dentistry [5].

The chemo-mechanical agents are the most conservative treatment approach because of their specific action towards decayed dentin.

The chemo-mechanical protocols, even though this method induces less pain in patients compared to conventional mechanical treatment, it is important to acknowledge the tendency for statistically significantly less pain reported when using the enzyme-based agents, as BRIX3000 [20,25]. The conventional methods involve the use of the rotary burs, alone or together with metal hand instruments [26].

The pain and discomfort associated to conventional cavity preparation have led to the reluctance of many patients to seek dental treatment [27]. Besides this, the local anaesthesia, frequently needed to control the pain associated with cavity preparation, is potentially responsible for discomfort and pain [28,29].

Ericson et al. reported that the chemical structure and the mechanism of action of Carisolv were similar to Caridex, except that the monoaminobutyric acid was replaced by three different amino-acids (listed above). The amino acids were shown to react with different of carious lesions. Furthermore, the addition of carboxy-methylcellulose created a higher viscosity of the Carisolv gel, which enhanced its handling properties compared to the Caridex solution. Also, Papacarie was demonstrated to be an effective method of caries removal with less pain, and superior acceptance by patients compared to conventional treatments [20].

CONCLUSIONS

The use of CMCR methods with both Carisolv and BRIX3000 were easy to use and show high patients' acceptance. It also demonstrates the potential to lead with traumatized, anxious patients, restabilising confidence during dental treatment.

Declaration of patient consent

The authors certify that they have obtained all the patient's consent forms. The patient, through his legal representative, consented for his images and other clinical information to be reported under anonymity for medical and scientific research purposes.

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Artificial Intelligence in Paediatric Dentistry

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Abstract

Currently, new digital technologies for investigation, analysis or design and manufacturing are being implemented in more and more dental offices and clinics around the world. The purpose of this study is to show how the use of these digital technologies influences paedodontic practice, what are the advantages or disadvantages and what are the indications for their use. The motivation for choosing this research topic is that the medical act in this field requires a well-trained medical team and to increase its quality, new technologies put the premise of therapeutic procedures with a shorter duration, increased comfort and numerous other benefits.

With the help of artificial intelligence-assisted diagnostic software, dentists want to not only make it easier to read and report a large number of medical imaging investigations, but also to improve work efficiency and achieve more accurate results and the final diagnosis of various pathologies.

Keywords: artificial intelligence, DiagnoCat, software, CBCT

INTRODUCTION

In recent decades, technology has evolved a lot, bringing changes in many fields, from industry to the medical field and up to the way people communicate. An essential condition for innovation is creativity. Creativity involves taking ideas, concepts and materials from different fields to create something new and innovative. Dentistry takes from technique and engineering a series of new elements to always improve its diagnostic and treatment possibilities.

Digitization is the adoption or increase of the use of digital or computer technology by an organization, industry or country. This refers to how many areas are restructured in the context of digital communication and media infrastructure. Digitization is possible primarily due to digitization - the process of converting an analogue electrical signal into an equivalent digital one. The analogue electrical signal can have different voltage values, while the digital signal has only two distinct states zero and one [1].

Artificial intelligence (AI) is defined as the ability of a machine to mimic intelligent human behaviour to perform complex tasks, such as solving problems, recognizing objects, or making decisions. Human intelligence is the result of perception and interpretation as a biological result. Artificial intelligence cannot replace the human mind, but through multiple processes, it can arrive at interpretations and actions similar to those of the mind. AI comprises two categories:

- Machine learning - the instructions are initially processed by engineers and then learned; the program can make predictions on data that it has not analyzed before.

- Deep Learning - the relevant features are learned and arranged in categories in a single step, which makes it much more capable of processing complex data sets [2].

In medicine, IA has applications on two distinct levels, virtual and physical. It virtually analyzes data to control the health system by storing and manipulating medical documents and by guiding the doctor in the treatment decision. Nano-stomatology includes nanomaterials, bio-technology and dental nanorobotics to maintain oral health. These branches give new treatment possibilities in dentistry, orthodontics, periodontology and in oral pathology. Due to their small size, nanorobots can operate on a cellular and molecular scale [3].

In the field of clinical medicine, an increasing number of artificial intelligence models have been developed to make an automatic prediction of the risk of a particular disease, the detection of abnormalities, the diagnosis and the evaluation of the prognosis [4].

Artificial intelligence in the form of a virtual assistant can perform several tasks in the dental clinic with high accuracy and a small number of errors, for example:

- Assisting the diagnostic process and treatment planning;
- Warning the doctor before each appointment about any allergy of the patient;
- Warning in case of systemic pathologies that require additional precautions in the case of dental treatment (eg.: antibiotic prophylaxis in case of cardiovascular diseases) [5].

AI has many applications that may change Paediatric Dentistry practice in the future. Artificial intelligence that assists computer-aided design and fabrication systems for the manufacture of dental restorations will show its advantage in terms of time and aesthetics.

During mixed dentition, a neural network can predict the size of future unerupted premolars and canines, which is a great advantage in space analysis [6].

Radiology facilitates direct access to artificial intelligence in medicine due to its feature of creating digitally encoded images that can be easily transferred into computer language. Machine Learning is one of the main branches of artificial intelligence that allows a computational model to learn and make predictions by recognizing patterns. As radiologists are trained by repeatedly evaluating medical images, the main advantage of machine learning is that the designed AI model is able to improve and learn with experience by traversing large

data sets. With the help of artificial intelligence-assisted diagnostic software, radiologists want to not only make it easier to read and report a large number of medical imaging investigations, but also to improve work efficiency and achieve more accurate results, the final diagnosis of various pathologies. In the field of dental and maxillofacial radiology, pre-clinical studies have shown that AI models accurately located root canal orifices, detected vertical root fractures and proximal carious lesions [4].

In the field of Dentistry, AI, although only at the beginning, makes remarkable progress. From the initial stage of recording the patient's medical history to processing data and extracting the information needed to establish a diagnosis, artificial intelligence has many applications in dentistry and medicine. However, artificial intelligence cannot take the place of the dentist, but it is necessary to take into account this tool given the technological evolution for an improvement of daily practice [7].

Aim and objectives

The purpose of this study is to determine the contribution that an artificial intelligence software can bring to the Paediatric Dentistry field.

MATERIAL AND METHODS

Correct diagnosis is the key to success in clinical practice. In this sense, properly trained neural networks, such as DiagnoCat (Moscow, Russia), can be an advantage for diagnosis, especially in pathologies with multifactorial aetiology. The software indicates the diagnosis and the differential diagnosis in its general description. DiagnoCat's artificial intelligence analyzes the purchased CBCT in DICOM format (a standard format in medical imaging) allowing seamless data transfer. The software allows the analysis of CBCT images obtained with any CBCT units without using the conventional software installed, specific to the unit (viewer). This increases the freedom of diagnosis and decreases the dependence on software imposed by the manufacturers.

In the first stage takes place the acquisition of data obtained from CBCT in DICOM format, then the neural network finds and segments the main anatomical regions, jaws, teeth, periapical lesions. Diagnosed identifies various diseases and disorders by evaluating 50 signs (normal-looking teeth, direct coronary restoration, dental crowns, endodontically treated root canals, implants, signs of periapical lesions, etc.) and selects dedicated images to support a plan of individualized treatment.

RESULTS

The following is an example of a diagnostic analysis of a 14-year-old female patient via DiagnoCat, Figure 1. Immediately after uploading files, you get access to Diagnocat Viewer, which automatically produces: a panoramic view extracted from CBCT of different thicknesses, a set of three-plane sections for each tooth and a patient report to motivate him to continue and complete the treatment. Figure 2 presents attached images from the radiological report in which the artificial intelligence system identified pathological aspects, presenting very good accuracy.

Figure 1. Extract from the DiagnoCat radiological report

Figure 2. DiagnoCat radiological report of teeth 1.8.-2.2.

DISCUSSIONS

The aim of this study was to show the implications of the use of digital technology in daily paedodontic practice by combining representative information from current bibliographic sources.

The objective of this scientific paper was achieved by capturing the advantages and disadvantages of the AI technology, but also by reporting their clinical applications in paedodontic practice:

Advantages of using artificial intelligence

The use of AI leads to an increased degree of accuracy and precision by reducing human error. In this way the working time decreases and the quality of medical services increases. Past and present health problems of patients can be analyzed, because AI can accumulate and store data in one place and allows the doctor to make a more accurate diagnosis and to predict the potential health problems a person may have in the future. The management of the dental clinic can be improved based on predictive analyzes [8].

Disadvantages of using artificial intelligence

Creating such a system requires very high costs, because they are very complex machines, which require a lot of resources to be developed.

The use of AI can reduce human interaction, an essential criterion in developing a good doctor-patient relationship.

Software programs require frequent maintenance and updating, which also leads to an increase in maintenance costs. It can also be maintained only by programmers with a high level of training in the field) [9].

Computer-aided diagnostic programs are used to obtain a second opinion in the medical field. Creating a diagnostic protocol, documenting radiological examinations, selecting and adapting dedicated CBCT sections requires a lot of time and experience in image editing [10].

CONCLUSIONS

DiagnoCat allows you to record diagnostic protocols with just a few clicks. The advantages brought by these systems are related to the elimination of human error, the shortening of working hours, the possibility to make predictions on the evolution of health and last but not least it is a good tool for communication with patients. However, the accuracy of AI interpretations in dentistry still needs to be investigated through a variety of cases and types of imaging investigations, as there is a lack of standardization in dental radiology, which makes it difficult to learn the algorithm on correct diagnosis. Future directions of study augmented reality, nanostomatology and robotics in dentistry. New artificial intelligence systems lead to an increased degree of accuracy by reducing human error, shorten working time and give the possibility of large-scale studies.

Declaration of patient consent

The authors certify that they have obtained all the patient's consent forms. The patient, through his legal representative, consented for his clinical information to be reported under anonymity for medical and scientific research purposes.

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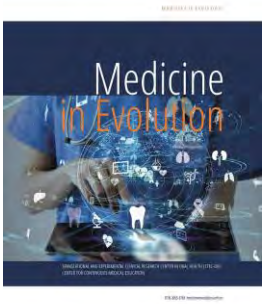
Variations in cervical preparations for metal-ceramic crowns in undergraduate dental students.



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Abstract

Objective. This study aims to evaluate the characteristics of the finish line of dental abutments made by fourth year dental students in during clinical practice in prosthodontics. Materials and methods. Eighty preparations were evaluated on working cast. All preparations were made for the application of porcelain fused to metal (PFM) crown, with non-noble metal framework. Aspects of the preparations were quantified and compared with accepted criteria defined following a review of the literature. Results. The teeth found to be most frequently prepared for PFM crowns were premolars and molars (lateral group) (80,74%). Six percent of samples presented a shoulder finish line while a chamfer margin design was noticed in 62,6%. Thirty-one percent of samples had either a feathered or no clear margin design respectively. Of the cervical preparations analyzed, 86% had been underprepared, mostly on the oral and distal surfaces. A significant difference was observed between cervical preparations on molars (preparation width ≤ 0,5 mm), comparing to premolars (preparation width ≥ 0,5 mm). Conclusion. On the evidence of this survey of this sample of undergraduate dental students, it was found that relevant guidelines for the preparations of PFM crown are not being fully adhered to.

Keywords: Procelain fused to metal crown, dental students, chamfer, shoulder, feathered

INTRODUCTION

Tooth preparation is one of the most important clinical steps in prosthodontics, as it represents the foundation of the future restauration. Knowledge of dental morphology and preparation principles are essential for the realization of grinding, ensuring that prosthetic restorations will correspond from a functional point of view, reestablish an optimal aesthetic result and are biologically compatible with periodontal tissues [1].

Porcelain-fused-to-metal (PFM) crowns have been considered the gold standard for prosthetic restauration of damaged teeth. PFM crowns have good mechanical properties, satisfactory esthetic results and an acceptable biological quality needed for periodontal health. They also present appropriate marginal and internal adaptation, but especially long-term clinical resistance. Thus, the studies show a success rate of 94.4% at 5 years, and an average durability of 47.53 years [2-4].

Dental preparation principles for PFM crown include the realization of a 0,8-1mm chamfer on the cervical area. The degree of convergence of axial surfaces towards occlusal is 6-10. All transition areas should be smooth and rounded in order to reduce the risk of stress concentration areas development, to facilitate the impression registration, PFM crown realization and its cementation [5].

The geometry of the abutment must respect the principles of homothetic preparation, respectively at the occlusal surface a reduction with preservation of morphology is indicated, thus ensuring a harmonious distribution of occlusal stresses and avoiding the appearance of stress areas at the dentin. The marginal preparation must ensure an optimal cervical closure and by its supragingival placement the necessary isolation during the cementation is obtained. Moreover, it is recommended to place the edges at the level of the enamel as the microinfiltration is lower compared to the placement of the edges at the level of the dentin. Although the opinions of dentists vary considerably with regard to optimal finish line profile and depth, there is various data concerning the extent to which recommended values are used by dental practitioners [6-9].

Pre-clinical dental students begin their dental preparation exercises with the entire tooth with ideal morphology, but this is rarely the situation clinically [10]. During the next years of dental medicine, they realize prosthetic restorations on patients addressing the Clinic of Prosthodontics.

This study is based on the model analysis of dental preparations made for PFM crown by dental students in UMFIH Cluj-Napoca, Romania. The results obtained in this study will reveal the most common errors regarding the cervical preparation for PFM crown and will highlight the most accepted recommendations of this therapeutic stage, thus influencing the prognosis and lifespan of the restoration.

Aim and objectives

This study aims to evaluate the characteristics of the finish line of dental abutments made by fourth year dental students in UMFIH Cluj-Napoca during clinical practice in prosthodontics.

MATERIAL AND METHODS

Eighty preparations were evaluated on working cast. All preparations were made for the application of PFM crown, with non-noble metal framework.

Casts where the preparations were indefinite or made for other types of crowns were eliminated from the study.

Each preparation was evaluated individually, with the removable abutment detached from the cast.

The cervical limits of the preparation were evaluated on each surface of the tooth (vestibular, lingual, mesial, distal), recording its profile and size using a magnifying loupe with a magnification of 2.5 and a digital caliper. The analyzed preparations were divided into three groups, depending on the location: incisor-canine, premolar and molar. The depth of the finish line varied between 0 and 2 mm and was categorized in 5 groups, at intervals of 0.5 mm (0, 0,5, 1, 1,5 and 2 mm).

The profile of the cervical preparations was tangential, chamfer or shoulder.

Statistical analysis

For the description of criteria regarding preparation aspect as well as their number, frequency tables were used. Data were analyzed with Statistical Package for Social Sciences, v 20 (SPSS Statistics, IBM California, USA). Differences between means were analyzed using t-test for independent samples and for analysis between two or more means OneWay ANOVA test was used, at 5% level of confidence

RESULTS

In most of the cases the cervical preparation had a chamfer profile and depth equal or below 1 mm.

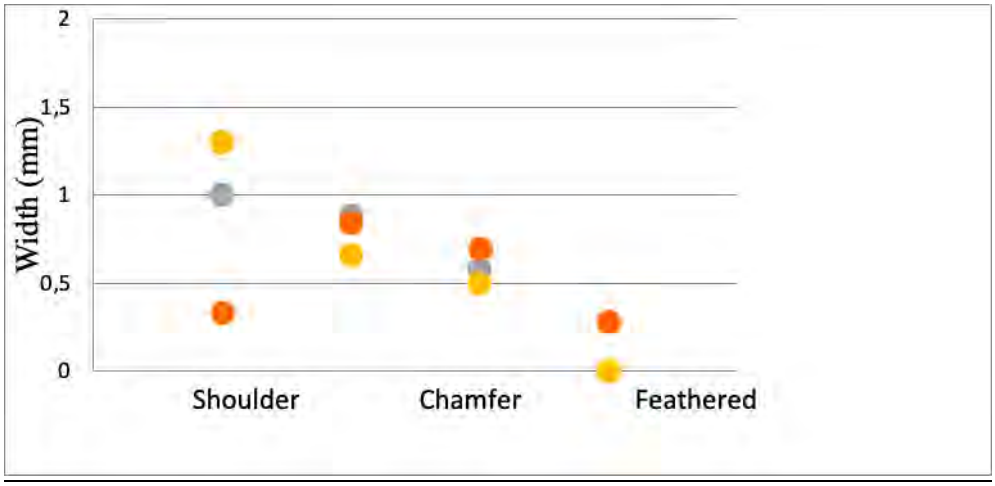

Figure 1. Mean value of cervical preparation depth and profile on different tooth localization

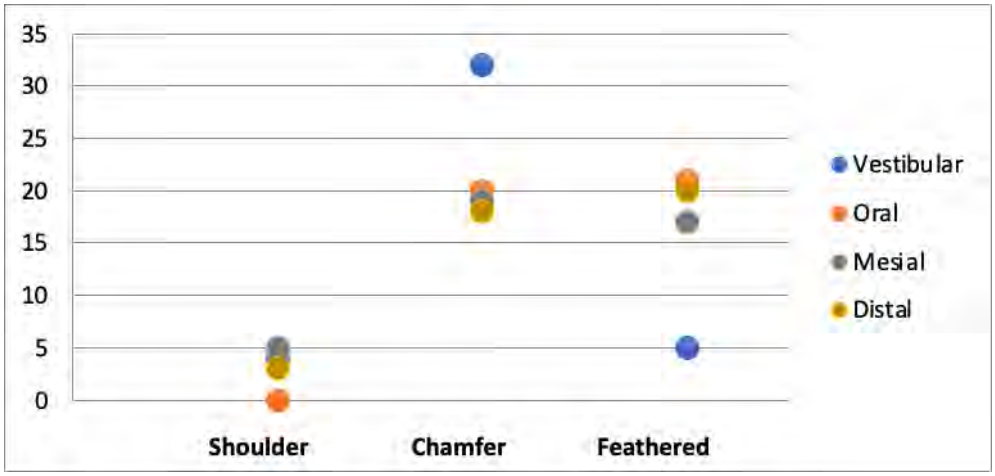

Figure 2. Mean value of cervical preparation depth and profile on different surface localization

Feathered finish line was observed mostly on molars and on oral and proximal areas.

The present study reveals that 58% of preparations have a depth strictly less than 1 mm in the vestibular, while on the lingual surface 19.7% of the preparations have a depth

strictly less than 0.5 mm in lingual and 34.5% of the preparations have a depth strictly less than 1 mm on this area.

In proximal, 24.7% of the preparations have a depth strictly less than 0.5 mm in mesial and 27.2% in distal.

Table I. Profile preparation on different groups and dental surface

Group	Depth (mm)	Labial (%)	Oral (%)	Mesial (%)	Distal (%)	p
Molar	0	5(12,3)	15(36,5)	13(31,7)	15(36,5)	0,043
	0,5	22(53,6)	19(46,3)	16(39)	17(41,5)	<0.001
	1	12(29,3)	7(17,2)	11(26,8)	7(17,2)	0,065
	1,5	2(4,8)	0	1(2,5)	2(4,8)	0,176
Premolar	0	1(3,5)	7(25)	6(21,5)	6(21,5)	0,231
	0,5	15(53,5)	14(50)	15(53,5)	16(57,1)	<0.001
	1	11(39,5)	7(25)	6(21,5)	5(17,9)	0,765
	1,5	1(3,5)	0(0)	1(3,5)	1(3,5)	0,065
Incisor-canine	0	1(9)	1(9)	1(9)	1(9)	0,124
	0,5	3(27,2)	3(27,2)	3(27,2)	7(63,8)	0,767
	1	7(63,8)	7(63,8)	7(63,8)	3(27,2)	0,013
	1,5	0(0)	0(0)	0(0)	0(0)	0

A increased frequency of undersized cervical preparation (less than 1 mm) is observed on lateral teeth (premolar, molar, $p < 0.001$), while on the frontal teeth the finish line with a depth of 1 mm predominate except for the lingual surface where the tendency is to achieve a narrower finish line.

A significant difference was observed between cervical preparations on molars (preparation width ≤ 0,5 mm), comparing to premolars (preparation width ≥ 0,5 mm).

DISCUSSIONS

The results of the present study indicate that more than half of the preparations did not meet the technical requirements due to insufficient reduction. The consequences will be or an aesthetic defect: to overcome the lack of space needed for ceramics, the prosthetist will reduce the thickness of it, the aesthetic result will be affected, or self-maladaptation: if the thickness of the prosthetic edge is at least 1mm and the width of the limit is less than 1mm, the prosthesis will be in outline. However, in this case too, the aesthetic result will be mediocre because of the outline [1, 9].

A harmonious outline is an important criterion for aesthetic success. Over-contour crowns are not confused with natural teeth because of their different shape and their adverse effects on gingival tissues. Numerous authors have shown the link between a prosthetic over-contour and the alteration of periodontal health in the marginal gingiva [8, 11, 12].

Insufficient labial reduction, particularly near the finish line, may also result in distortion of the metal substructure during fabrication and clinical service. This leads to poor marginal adaptation, debonding, and long-term cement failure, all of which have been cited as major factors in the failure of metal ceramic crowns [12].

The judicious preparation of the dental tissues with homothetic reduction ensures the premises of an optimal periodontal health, especially if the cervical preparation has the appropriate position and profile [13].

The optimal depth of the finish line for metal-ceramic restorations is between the value of the optimal thickness necessary to ensure resistance and aesthetics and at the same

time for the achievement of a physiological emergency profile. Previous studies have reported that cervical preparations with values greater than 1 mm are sometimes needed to ensure a layer of ceramic thickness enough to restore aesthetics. The recommended shoulder finish line depth for metal-ceramic restorations is 1 to 1.5 mm, while the chamfer finish should be 0.3 to 0.5 mm for only metal coverage [14]. *In vitro* studies evaluating preparations completed by experienced dentists for metal ceramic crowns have been reported. All studies reported a tendency for clinicians to underprepare teeth when a freehand approach was used [14,15].

However, the results of the current study showed that the mean buccal shoulder depth was mostly equal or lower than 1 mm. A study reviewed by Goodacre et al, reported that shoulder depth prepared by dental students was 0.9 mm [13].

Despite the fact that a shoulder finish line depth of more than 1.0 mm for metal-ceramic crowns is recommended to produce minimal thickness for strength, and to reproduce the selected color of the shade guide, the current information available from the mentioned studies indicate that a shoulder finish line depth greater than 1.0 mm is not routinely prepared (16, 17). Still, most of the finish lines in the current study had a width lower than 1 mm especially on lingual and proximal surfaces which indicates the fact that students are very aware of the teeth dimensions and tend to avoid any excessive cut mainly reduce the risk of pulp endanger and also dental structures fragilization. During fourth year of dental medicine, students are at a stage when the concepts and requirements of the preparation design are freshly instilled and their work should constantly be checked and corrected by their instructors.

Students should be encouraged to use indexes or suitable depth gauge burs in order to improve the accuracy of preparation features, or even specific software for preparation parameter evaluation [10, 17].

CONCLUSIONS

This study highlights the difference between what is taught theoretically to dental schools about dental preparations for PFM crowns and the school results of actual practice. There was a considerable disparity between the finishing lines profile and depth recorded in this study and the ideal configurations recommended in fixed prosthodontic textbooks and the dental literature. Clinically, the finish line values of prepared teeth for fixed prosthodontics are lower than the recommended values in most cases among undergraduate students.

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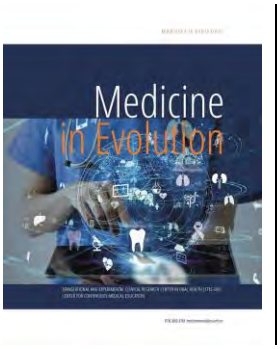
Chemomechanical caries removal – A systematic review



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Abstract

Chemomechanical removal is an alternative method with important advantage. The method selectively removes the demineralized, carious dentin, leaving healthy dentin intact. Conventional treatments for caries removal are often associated with annoying sounds, vibration, heat and production of pain.

This systematic review aims to assess the efficacy of alternative methods for caries removal. The Medline, Pubmed, Web of Science, The Cochrane Library and Clinical Trials databases were searched.

Chemomechanical caries removal methods are beneficial both for pacients and dentist. Hence, it is recommended as an alternative method of caries removal.

Keywords: chemomechanical, dental caries, alternative methods, conservative treatment

INTRODUCTION

Dental caries is one of the most common chronic diseases, resulting in localized dissolution and destruction of tooth structure. The new method of caries removal was used to make the treatment more confortable and easier for both patient and doctor. Therefore, alternative methods of conventional caries therapy were introduced for the purpose of minimal invasion without causing pain. These methods are sono-abrasion, air abrasion, ultrasonic, chemo-mechanical systems and lasers. [6]

Also the concept of minimal intervention not only eliminates the pain associated with removal of caries but also can make a positive attitude in children towards dentistry. [1] Chemomechanical tehniques has gained acceptance, especially from children and patients with anxiety.

Chemomechanical system is the most effective alternative to the conventional dental removal method. [7-9]

Chemomechanical caries removal systems are solutions which act on the principle of carious tissue softening to facilitate their removal, applying enzyme-based agents or sodium hypoclorite (NaOCl). [2-4]. After use, the gel changes color or produces bubbles, making easier the identification of the occurring reaction, or absence, meaning no remaining decayed dentin. After that, the softented tissues are been removed by using non-cutting tip intruments. [2-4].

The enzyme-based agents have anti-inflamatory proprieties, wich can lead to less pain and better treatment experiences. Agents with hypoclorite are also associated with less necessary anesthesia, because sodium hypoclorite has its action within the already damaged collagen fibrils [3,4]. Examples of NaOCL-based agents are Carisolv, examples of enzyme-based agents are Papacarie, Brix 3000.

Aim and objectives

The purpose of this study was to carry out a systematic review of the literature to show how efficient are alternative methods for caries removal for both deciduous or permanent decayed teeth. (Table 1).

Table 1. Chemomechanical methods efficiency

Criteria	*Despription*
Intervention	Chemomechanical methods
Outcome	Efficacy for caries removal
Population	Deciduous and permanent decayed teeth

MATERIAL AND METHODS

The present systematic review was performed following the recommendation of Cochrane Handbook of Systematic Reviews of Intervention [5] version 6. Only Controlled trials were analysed with no restrictions on year of publication, status of publication or region.

The participants consisted of healthy adult patients or children with clinical diagnosis of primary dental caries. The inclusion and exclusion criteria is presented in Table 2.

Table 2. Inclusion and exclusion criteria

Inclusion criteria	**Exclusion criteria**
Controlled trials	Abstracts, preliminary reports, in vitro or animal studies
Primary dental caries in healty patients	Secondary caries lesion
Cavitated dentin lesions	More than one technique applied per tooth
One treatment per tooth	Patients with special care, with syndroms

There was two types of interventions:

1. Dental caries was removed with conventional mechanical methods, using both high-speed rotary instruments and excavators

2. Dental caries treatment using chemo-mechanical methods (Brix 3000, Carisolv, Papacarie or Carie-Care)

To identify the studies for this review, an electronic search was performed using the following database: Medline/PubMed (www.ncbi.nlm.nih.gov/pubmed), Cochrane Library (www.cochranelibrary.com), Embase (www.embase.com).

For each database used there was a specific research strategy applied: caries, decay, alternative, removal, brix 3000, carie-care, papacarie, carisolv, enzyme, caridex.

There was no restriction on language or date of publication and the last literature search was performed on 24 February 2021.

We have selected the studies with more than one comparison:

1. Chemomechanical vs Control: 10, 12- 21, 23-25, 27-31
2. Carisolv vs Papacarie vs Control: 11, 22, 30
3. Sodium hypoclorite gel vs Brix 3000 vs Control: 26

Twenty-tree studies 10- 25, 27-31 reporting chemomechanical caries removal systems were included. Two studies 23, 26 involved the used of Brix 3000, and three 18, 19, 27 the use of Carie-Carie, eight 11, 12, 14, 22, 25, 28, 29, 30 the used of Carisolv and twelve 10, 11, 13, 15, 16, 17, 20, 21, 22, 24, 30, 31 the used of Papacarie.

All studies were considered to have an uncertain risk related to other biases. The criteria previously stated were considered to interfere with the outcomes assessed. The generally synthetized reports of the methodology in the included studies led to uncertainty towards the interference of additional biases.

RESULTS

These are the results for the first comparison: Chemomechanical vs Control

All alternative treatment approaches demonstrated longer treatment time. Specifically, this aspect was reported in one study using Brix 3000 [23], in two studies that involved Carie-care [18,27], in three using Carisolv [12,25,28] and in two studies evaluating Papacarie [12,45].Six studies reported caries removal related outcomes.

The final cavity of the conventionally treated tooth was wider. Carisolv produced significantly smaller free caries lesions in one [12] out of three studies and Papacarie [10] in one out of one study.

Regarding efficacy in caries removal and considering the several and different criteria described in the included studies, there was no statistical difference between effectiveness of caries removal with rotary instruments and Carie-care in one [18] out one study and Carisolv in two [25, 29] out two studies. However, in one study [25], Carisolv was statistically more effcient than the excavator.

The patient's pain perception or behavior during the intervention showed significantly better treatment experiences and fewer signs of discomfort or pain. However in the five studies starting treatment without anesthesia, patients receiving conventional treatments requested anesthesia more often than treatment with Carisolv [12,28] and with Papacarie [17, 20,21].

Five studies reported CFU dentin count after treatment. These studies showed significantly reduced total bacterial count. Two studies [13,14] reported similar reductions after conventional treatments and treatment with Carisolv and Papacarie, three studies reported higher reductions when using alternative approaches, such as Brix 3000 [23] and Papacarie [10, 21].

These are the results for the second comparison: Carisolv vs Papacarie vs Control

Carisolv and Papacarie showed longer treatment times. Papacarie was faster than Carisolv in one study [22] and significantly quicker than Carisolv in another study [30].

In one [22] of the included studies, Papacarie was significantly more effcient than Carisolv within the criteria used. In another study [30], there were less remaining caries in the Papacarie group selected than the Carisolv treated patients. None of the included studies reported the anesthesia requested by the patients during treatment. None of the included studies assessed the restoration´s performance. In two of the included studies [22,30], Papacarie induced significantly less pain and offered a more comfortable treatment approach, being the most accepted.

These are the results for the third comparison: Sodium hypoclorite gel vs Brix 3000 vs Control

Only one study [26] was included regarding this intervention. The study has an overall unclear risk of bias. Treatment with the sodium hypochlorite gel and Brix 3000 was significantly longer than that of conventional methods. There was no outcomes related to caries removal. The included study did not report the anesthesia requested by the patients during treatment. Treatment with Brix 3000 was significantly less painful than the conventional methods, followed by treatment with the sodium hypochlorite gel.

DISCUSSIONS

Alternative methods are preferable, because these methods allow more conservative treatments, being more selective in removing decayed tissue and preserving more healthy tissue. The chemomechanical agents are the most conservative treatment approach because of their specific action towards decayed dentin.

In the chemomechanical treatments, despite every method inducing less pain in patients compared to mechanical treatment, it is important to acknowledge the tendency for statistically significantly less pain reported when using the enzyme-based agents, as Carie-Care [18,27], Papacarie [10,13,17,22,24,30] and Brix 3000 [23,26].

The restorations performed by each method did not have significantly difference from each other in terms of longevity and survival. Further discussion in this matter is not possible because of the differences between the clinical restoration protocols in the isolation of the operative field.

CONCLUSIONS

Alternative methods for caries removal tend to prolong treatment time. These methods cause fewer requests for anesthesia during treatment.

Both conventional and alternative approaches are effcient in reducing cariogenic flora from the cavities. The marginal integrity of restorations did not prove to differ significantly between methods for caries removal.

Patients reported more pleasant treatment experiences with alternative treatment approaches than conventional. There was also registered a higher percentages for acceptance and preference in future treatments for alternative methods.

Chemomechanical solutions are the best option for minimally invasive treatments, with good control of their action and application.

Papacarie was the most studied solution in this treatment methods and presented effciency for caries removal and high patients' acceptance.

More studies are needed, comparing more than one alternative treatment simultaneously.

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A Cone-Beam Computed Tomography Study of the Greater Palatine Foramen

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Abstract

The greater palatine foramen (GPF) is located in the postero-lateral angle of the hard palate. We aimed at studying these topographical patterns of the GPF. A random retrospective Cone Beam Computed Tomography study was performed on 104 archived case files. There was recorded on each side the topographical type of the GPF. Edentulous sites were noted "E". Bilateral symmetry of the GPF was determined as "right-left" combinations of types. In 41 cases were found bilateral 4E types corresponding to the GPF located medially to the edentulous site of the third upper molar. In 19 cases was recorded the bilateral combination „4+4": the GPF was at the level of the third upper molars. Most existing studies did not document the bilateral combinations of GPF types. We demonstrate that if on one side the GPF has a certain topographical pattern it is not mandatory for the opposite one to have the same tooth-related topography.

Keywords: CBCT; hard palate; maxillary molar; maxilla

INTRODUCTION

The hard palate is built-up by the palatine processes of the maxillae and the horizontal plates of the palatine bones. On each side, the vault of the hard palate is completed by the alveolar processes of the maxillae. A major landmark of the hard palate in dentistry is the greater palatine foramen (GPF) which is located between the horizontal plate of the palatine bone and the body of maxilla.

A certain asymmetry of the GPF was found be Matsuda in 1927 (Matsuda, 1927). Although different studies evaluated by different methods the location of the GPF (Ajmani, 1994, Bahsi et al., 2019, Chrcanovic and Custodio, 2010, Fonseka et al., 2019, Ikuta et al., 2013, Langenegger et al., 1983, Methathrathip et al., 2005, Saralaya and Nayak, 2007, Tomaszewska et al., 2014, Wang et al., 1988, Westmoreland and Blanton, 1982, Von Arx and Lozanoff, 2016), few of these paid attention to the bilateral asymmetry of the foramen. It was therefore decided a Cone-Beam Computed Tomography (CBCT) study of the location and symmetry of the GPF.

Aim and objectives

The aim of this study is to identify the location and symmetry of the greater palatine foramen (GPF) in Cone Beam Computed Tomography.

MATERIALS AND METHODS

The archived cone-beam computed tomography (CBCT) files of 104 patients (43 male, 61 female) were retrospectively and randomly studied. The patients had been scanned for dental medical purposes using an iCat CBCT machine (Imaging Sciences International, Hatfield, PA, USA) (resolution of 0.250, FOV 130o, image matrix size of 640 × 640). The CBCT data were exported as DICOM files further was analysed with the Planmeca Romexis Viewer 3.5.0.R software, as in other studies (Carstocea et al., 2019, Rusu et al., 2020). The patients had provided written informed consent for all their medical data (including CBCT scans) to be used for research and teaching purposes, provided that the anonymity and confidentiality were maintained.

The tooth-related topographical types of the GPF were noted. It was recorded „E" if the respective anatomical site was edentulous. There were defined the following types/variables: (a) type „1", when the GPF was located medially to the interproximal septum between the first two upper molars; (b) type „2", the GPF located medially to the 2nd upper molar; (c) type „3", for the GPF located at the level of the interproximal septum between the 2nd and the 3rd upper molars; (d) type „4" for the GPF at the level of the 3rd upper molar; (e) type „5" for the GPF located distally to the 3rd upper molar. Bilateral evidence was recorded on a „right+left" types pattern.

RESULTS

From the 104 cases (N) that were documented, 63 cases (60.5%) had terminal (distal) edentulous maxillae, thus the position of the GPF was unrelated to a molar tooth or an interproximal septum. These terminal edentations were unilateral in 11.5% of cases and bilateral in 49% of cases. In male subjects (n1=43) there were found 4 (9,3%) unilateral such edentations and 18 (41.8%) bilateral ones. In females (n2=61) the prevalence of such distal edentulous maxillae were, respectively, 13.1% and 54% (fig.1).

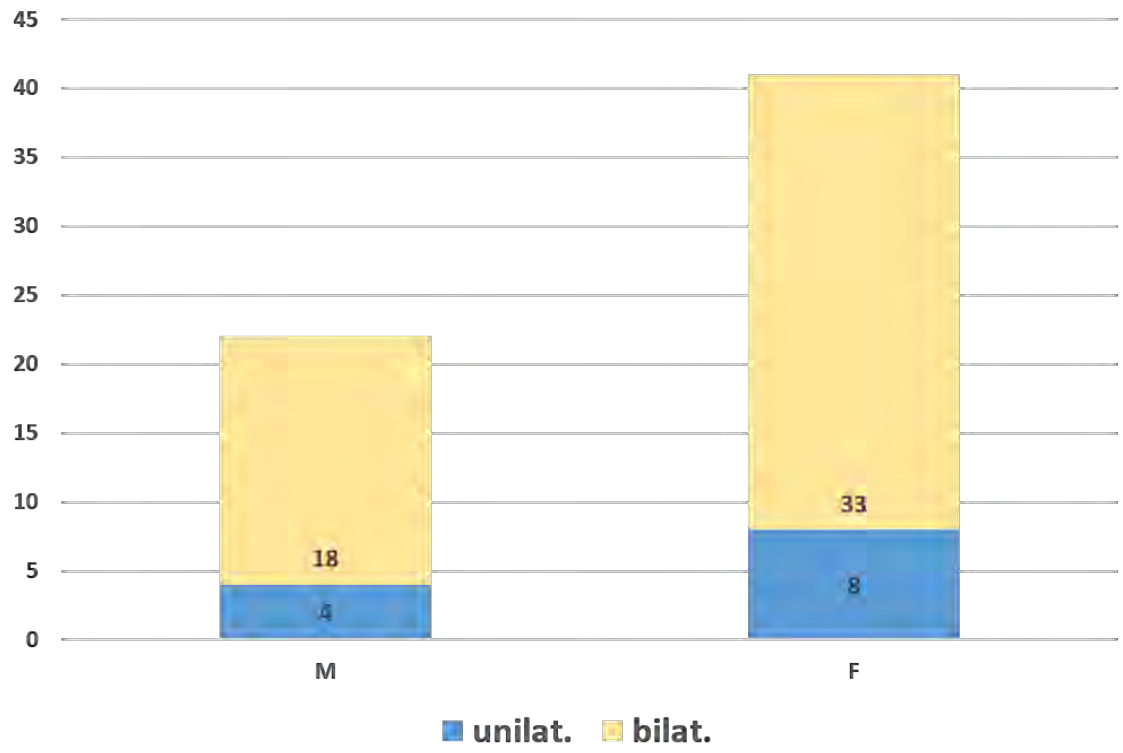

Figure 1. Unilateral and bilateral records of distal edentulous maxillae in males (M, n1=43) and females (F, n2=61)

In the general lot as well as for each gender was determined the topography of the GPF related to the upper teeth. The results of the bilateral evidence are presented in table 1 and fig. 2. There was no evidence on the presence of the GPF at the level of the interproximal septum between the first two upper molars.

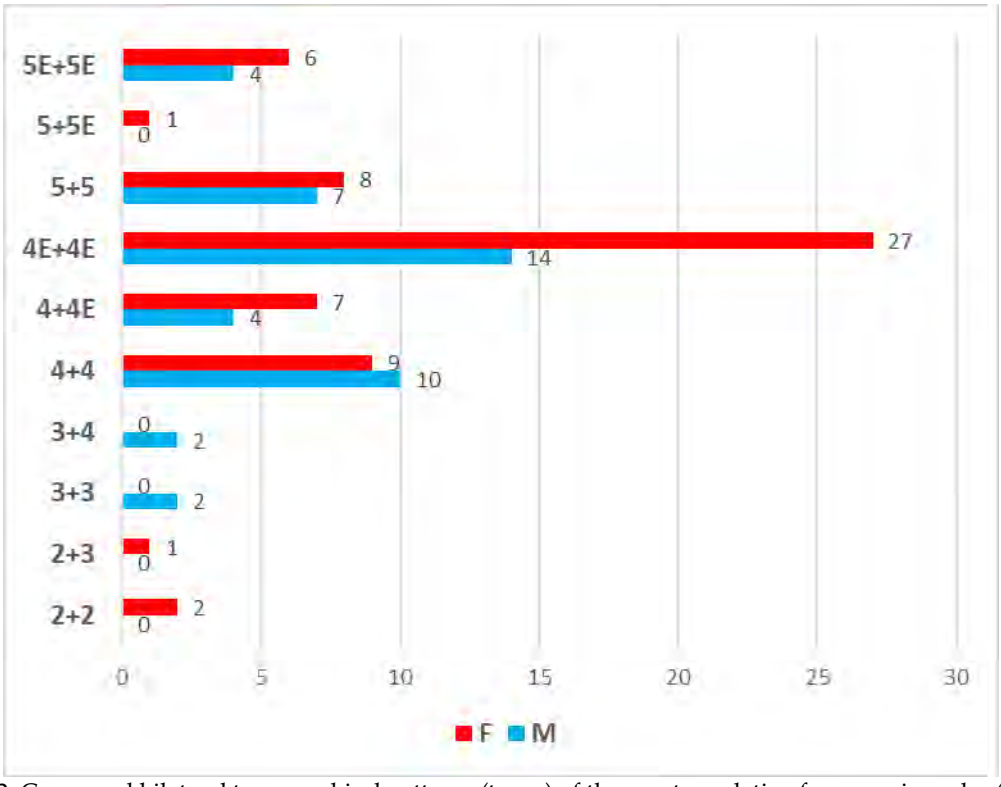

Figure 2. Compared bilateral topographical patterns (types) of the greater palatine foramen, in males (M) and females (F). E: edentulous

Table 1. Bilateral tooth-related topography in the general lot and gender-related. There was recorded the "right+left" pattern

	2+2	**2+3**	**3+3**	**3+4**	**4+4**	**4+4E**	**4E+4E**	**5+5**	**5+5E**	**5E+5E**
M (43)	0	0	2	2	10	4	14	7	0	4
F (61)	2	1	0	0	9	7	27	8	1	6
TOTAL (104)	***2***	***1***	***2***	***2***	***19***	***11***	***41***	***15***	***1***	***10***

In the general lot (N=104), 41 cases (39.42%) were recorded with bilateral 4E types (fig.3). This corresponds to the GPF located medially to the edentulous site of the 3rd upper molar. In 19 cases (18.27%) was recorded the bilateral combination „4+4": the GPF was located bilaterally at the level of the 3rd upper molar. In 15 cases (14.42%) was recorded the combination „5+5", GPF located distally to the 3rd upper molar. In 11 cases (10.58%) was found the „4+4E" combination, GPF medially to the 3rd upper molar on one side and to the edentulous 3rd upper molar site on the opposite side. In 10 cases (9.62%) was found the combination „5E+5E", thus GPF located distally to the edentulous site of the 3rd upper molar. The combinations „2+2" (fig.4), „3+3", and „3+4" were found in 2 cases (1.92%) each. The combinations „5+5E" and „2+3" were found in one case (0.96%) each.

In males (n1=43) prevailed the bilateral 4E pattern (32.56%). There were not found the combined types „2+2", „2+3" and „5+5E" (fig.5). In females (n2=61) also prevailed the bilateral 4E pattern (44%). The combinations "3+3" and "3+4" were not found in females (fig.6).

In the general lot (n=104) there were just 41 bilateral dentate subjects, 21 males and 20 females. The tooth-related topography in those subjects is presented in table 2. In most male cases (47.62%) the GPF was bilaterally located medial to the third maxillary molar (type 4) (fig.7). In most female cases (85%) the GPF was either medially to the third maxillary molar, or distal to it.

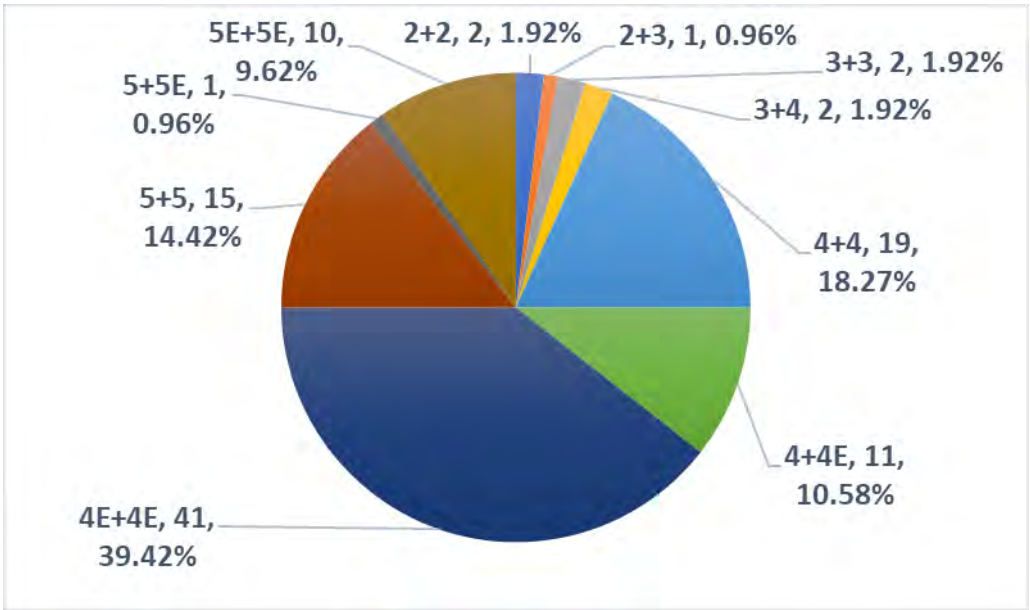

Figure 3. Combined bilateral topographical types of greater palatine foramina in the general lot (N=104). There are indicated the combined "right+left" type, the recorded values and prevalences

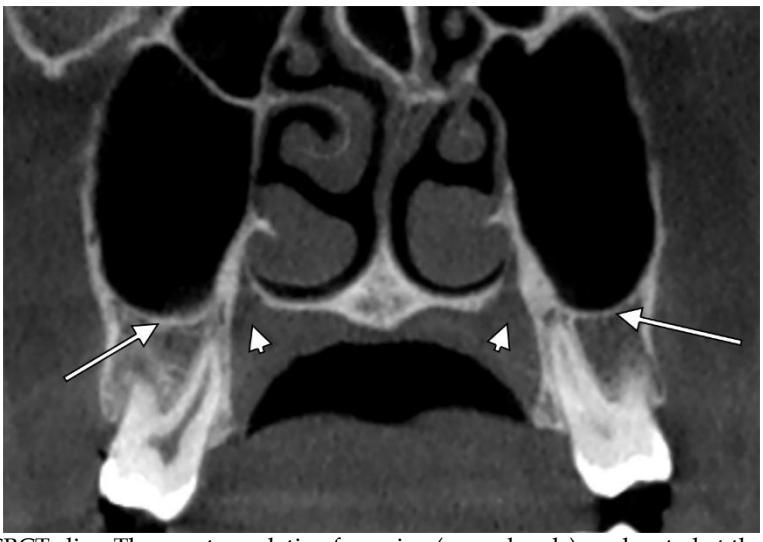

Figure 4. Coronal CBCT slice. The greater palatine foramina (arrowheads) are located at the level of the second maxillary molars (arrows)

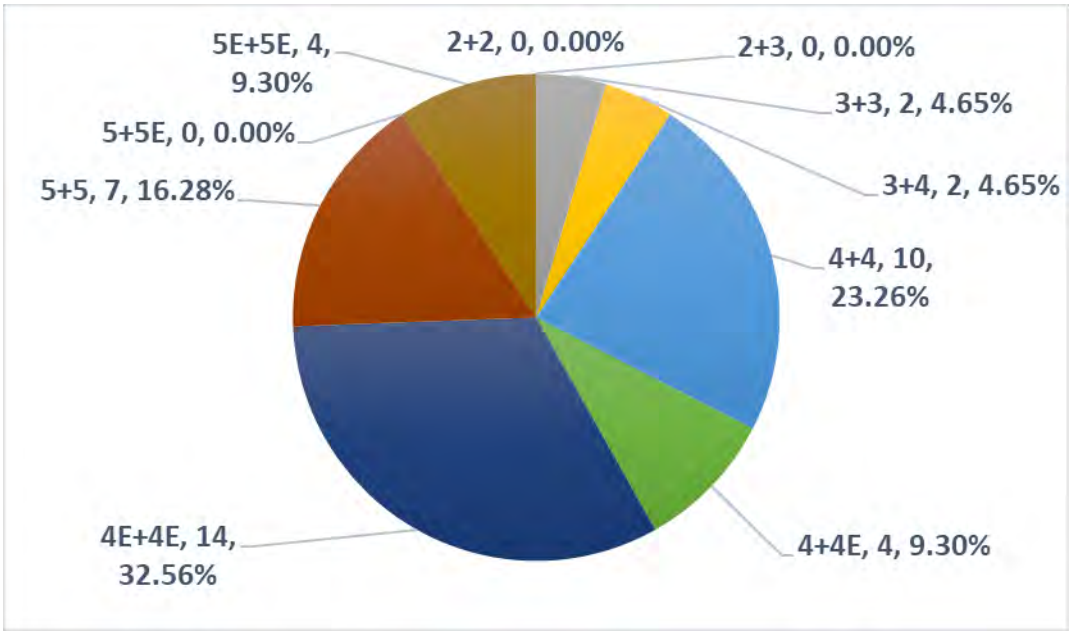

Figure 5. Combined bilateral topographical types of greater palatine foramina in males (n1=43). There are indicated the combined "right+left" type, the recorded values and prevalences

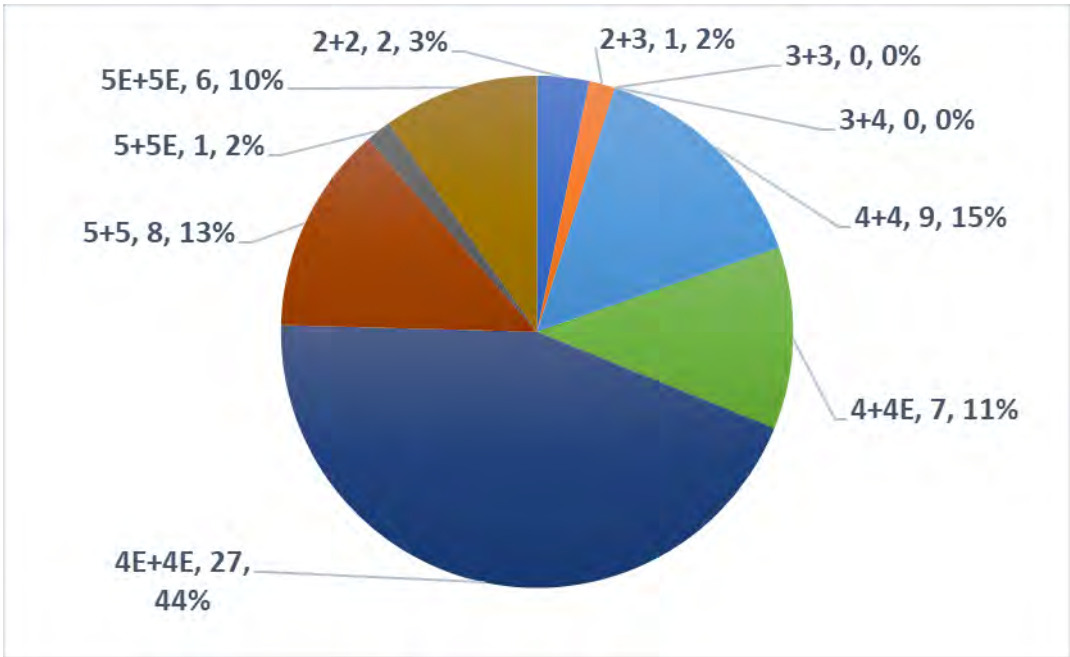

Figure 6. Combined bilateral topographical types of greater palatine foramina in the general lot (n2=61). There are indicated the combined "right+left" type, the recorded values and prevalences

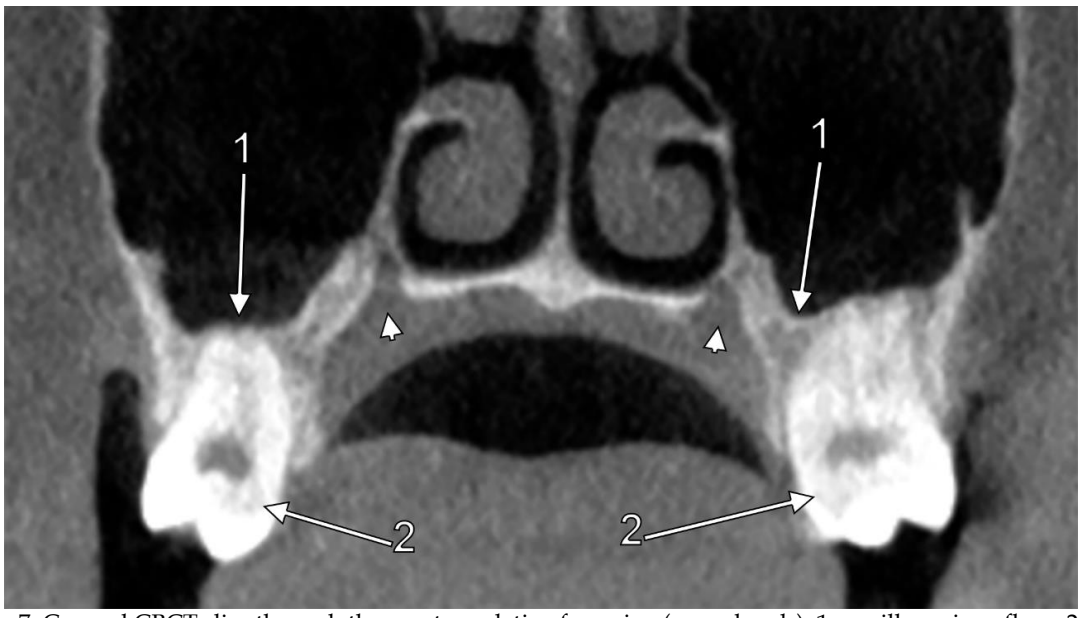

Figure 7. Coronal CBCT slice through the greater palatine foramina (arrowheads). 1.maxillary sinus floor; 2.third maxillary molars

DISCUSSIONS

Changes of the alveolar crest result after physiological resorption with age, use of prostheses, traumatic extractions, or alterations of the bone metabolism (Rapado-Gonzalez et al., 2015). Therefore, the usefulness of the distance between the GPF and the vestibular bone plate is limited (Rapado-Gonzalez et al., 2015). Bilateral asymmetry of the GPF could be determined by the sutural growth between the maxillary and palatine bones, as well as by an increase in the length of the palate during tooth eruption (Rapado-Gonzalez et al., 2015). As resulted from the present study, nor referring the GPF to a certain maxillary tooth seems reliable.

Different previous reports of the topography of the GPF did not indicate explicitly the edentulous/dentate status of the patients that were randomly investigated by CBCT (Bahsi et

al., 2019, Fonseka et al., 2019). Other authors explicitly indicated they used only fully dentate dry skull specimens (Wang et al., 1988, Westmoreland and Blanton, 1982) or CBCT cases (Ikuta et al., 2013). However, as shown by the present study, if patients are randomly selected, a good part of them have terminal maxillary edentations. Noteworthy, when edentulous alveolar sites of maxillary molars are found, the location of the GPF can be estimated with accuracy either in relation to other maxillary molars, or by using different other landmarks (Methathrathip et al., 2005).

When previous studies determined the tooth-related topography of the GPF, the respective authors did not investigate, or report the bilateral symmetry, or asymmetry, of the GPF (Bahsi et al., 2019, Ikuta et al., 2013, Wang et al., 1988, Dave et al., 2013), such as we did here. There are studies that did not relate the findings on the GPF topography to any side, right or left (Nimigean et al., 2013). Fonseka et al (2019) found that on each side prevailed the types 3 and 4 of GPF (Fonseka et al., 2019). The results of Fonseka et al (2019) correspond to those of Westmoreland and Blanton (1982). However, these authors did not document the bilateral combinations of tooth-related topographical patterns.

The GPF serves as anterior landmark for the pyramidal space which, in turn, is defined for surgical dissection to release the palatal flaps (Jung and Lo, 2020). Therefore, an anterior location of the GPF, such as in types 1-3, extends anteriorly this pyramidal space and facilitates the surgical dissection. The type 1, when the GPF is located medially to the interproximal septum between the first two upper molars, was found by Wang et al (1988) in 2% of cases, just on the left side. In the present study we did not find this tooth-related topographical pattern of the GPF.

CONCLUSIONS

We demonstrate that if on one side the GPF has a certain topographical pattern it is not mandatory for the opposite one to have the same tooth-related topography.

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Assessment of the degree of knowledge regarding dental hygiene of primary school children from Timișoara

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Abstract

Oral health is an integral part of health and well-being. It enables individuals to communicate more effectively, to enjoy a variety of foods and beverages, and to substantially increase their quality of life, self-confidence, and social life (1). Based on a pattern of illness, oral health professionals have focused on prevention and education focused on changing behaviours that were considered to be the cause of dental diseases. The theory behind this approach is that once individuals acquire the relevant knowledge and skills, they will change their behaviour and maintain a much better oral health (3). The purpose of this paper is to assess the degree of knowledge regarding dental hygiene of primary school children and the impact of the implementation of an Oral Health Education Programme for a representative sample of students from three schools in Timisoara.

Keywords: dental hygiene, primary school, education, Timisoara

INTRODUCTION

Oral health is an integral part of health and well-being. It enables individuals to communicate more effectively, to enjoy a variety of foods and beverages, and to substantially increase their quality of life, self-confidence and social life (1). Although overall improvements have been made in oral health over the last 30 years, inequalities in society have been a major challenge to public health, as disadvantaged and low-income groups face a disproportionately high level of diseases in the oral cavity (2).

Based on a pattern of illness, oral health professionals have focused on prevention and education focused on changing behaviours that were considered to be the cause of dental disease. This "lifestyle" has dominated preventive practices over the years around the world. The theory behind this approach is that once individuals acquire the relevant knowledge and skills, they will change their behaviour and maintain a much better oral health (3). It turned out that globally, children who have dental problems are 12 times more likely to be absent from school than those who take care of the oral cavity. More than 50 million school hours are lost annually due to diseases in the oral cavity. It was concluded that through the oral health programmes implemented in the school, those who must learn are not only children, but also teachers, families and other members of the community. Diseases of the oral cavity, such as tooth decay, gingivitis and periodontal disease affect more than 80% of children worldwide (4).

In accordance with the National Education Law no. 1/2011, in Romania the educational system is coordinated by the Ministry of Education, Research and Youth (MECT). According to this law, kindergarten is optional between 3 and 6 years, the preparatory class becomes compulsory starting with 2012 and starts at the age of 6, and schooling is compulsory until the 10th grade, inclusively. Each level of education has its own form of organization and is subject to the legislation in force (5).

Primary education, being the first stage of compulsory education has as main objective the creation of equal opportunities for all children for a cognitive, emotional and psychomotor development in a balanced way, adapted to individual needs. From a socio-emotional point of view, during this period the child gains confidence in his / her own strength, increases self-esteem, initiative and desire for success. During this period, measures should be identified aimed at preventing, compensating for inequities manifested in students from disadvantaged backgrounds at the beginning of schooling, the early identification of learning difficulties and individualized intervention. (6).

Following a National Oral Health Report based on a study involving children and young people, conducted in 2012, it was concluded that oral diseases are an important public health issue, which involves a considerable social and economic cost. Dental disorders cause pain and suffering among children and young people, followed by absenteeism from school activities. Another negative effect is the psychological and social impact that these conditions determine among the young population. Favouring factors are primarily poor hygiene, inadequate nutrition, lack of attendance at dental offices and lack of knowledge about oral health. The handiest measure to improve the oral health of students is health education taught by specialists in educational institutions, correlated with hygiene techniques and their control.

Poor oral hygiene and lack of regular visits to the dentist are associated with gum disease and tooth decay, the main etiological factor being dental plaque. A diet high in sugar and fat and low in fibre, vitamins and essential minerals is associated with periodontal disease, diseases of other tissues in the oral cavity and tooth loss.

Aim and objectives

The purpose of this paper is to assess the degree of knowledge regarding dental hygiene of primary school children and the impact of the implementation of an Oral Health Education Programme for a representative sample of students from three schools in Timisoara ("Grigore Moisil" Theoretical High School, "Nikolas Lenau" Theoretical High School and "Carmen Sylva" National Pedagogical College from Timişoara).

The objectives of this study are to assess the degree of understanding of dental hygiene habits among boys and girls, the significance of school and the environment in which children work on the ability to understand dental hygiene habits and the impact of an education programme for oral health in the primary cycle.

MATERIALS AND METHODS

This cross-sectional study was conducted on a sample of children, aged between 8 and 11 years, consisting of girls and boys, students at three different schools in Timisoara the "Grigore Moisil" Theoretical High School, the "Nikolas Lenau" Theoretical High School and the "Carmen Sylva" National Pedagogical College from Timişoara).

For a period of four weeks, for one hour a week, children were taught lessons on dental anatomy, mixed dentition, proper nutrition, the importance of dental hygiene and the negative consequences of negligence, and at the end of the class the children will be assessed by means of a ten-question test on the subject taught at that time.

A total of 234 children from the second, third and fourth grades of the above-mentioned schools were assessed. Out of the total number of students, 127 were girls and 107 were boys, so comparisons were made between genders, between classes and between the schools involved in the study.

The verification of the efficiency of the presentations and at the same time of the students' interest for the presented subject was made at the end of each presentation, through a short test, consisting of 10 questions with answers, referring to the essential aspects of the presentation. The degree of difficulty of the tests was correlated with the degree of understanding of the children from the three different classes. The way of scoring them was done with grades between 5 and 10.

To analyse the test results, all the grades obtained by the children in the four weeks were collected in a Microsoft Office Excel document. Then a series of statistical tests were applied: the ANOVA one way test, t-Test, Scheffe post-Hoc test and Freidmann test.

RESULTS

According to the grade of origin, it resulted that out of the total number of children who participated in oral health education classes, a number of 74 (31.6%) are in the second grade, 75 students (32.1%) in the third grade and 85 students (36.3%) of the 4th grade.

77 (32.91%) are students of the "Carmen Sylva" school, 79 (33.8%) students of the "Grigore Moisil" school and 78 (33.3%) students of the "Nikolaus Lenau" school.

Figure 1. Percentage distribution of children by grade

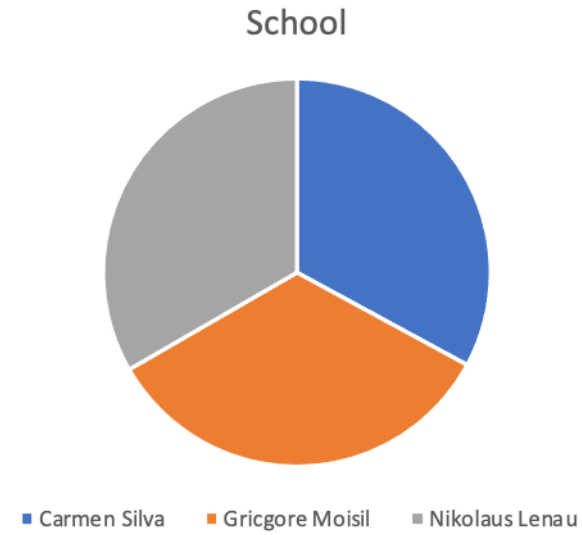

Figure 2. Percentage distribution of children by school

Of the total number of children who took part in the study, 127 (54.27%) were female and 107 (45.73%) were male.

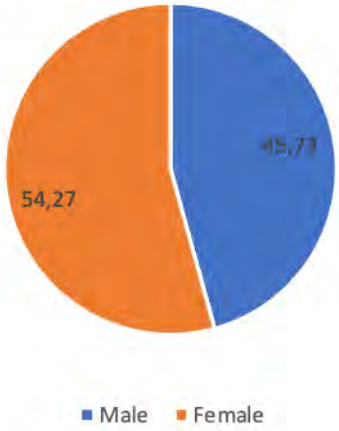

Figure 3. Percentage distribution of children by gender

Out of the total grades, the arithmetic mean of the grades obtained by the children in the four weeks was 8.55 for girls and 8.37 for boys.

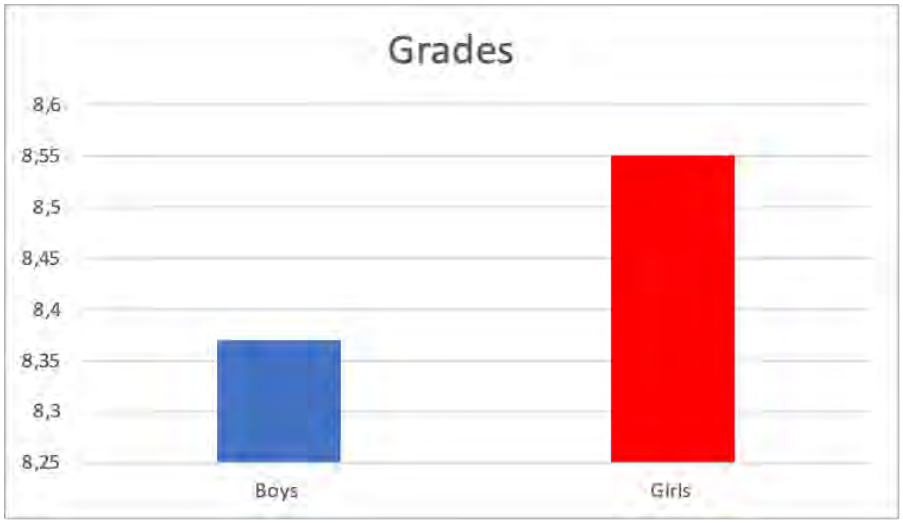

Figure 4. Diagram representing the averages of the grades obtained by girls and boys, respectively

To find out the evolution of the children's results over time, we applied the Freidmann test on the results of tests on oral health. The Freidmann test is a non-parametric test used to find differences in treatments at multiple trials. It is used instead of the ANOVA test when the data distribution is not known. The application of the test showed that the differences between the marks obtained in the 4 tests are significant (Friedmann test, $p<0.001$).

Table 1. Evolution of test results over time

Moment	N	Average grades	Standard deviation	Minim	Maxim	Average rankings
test1	234	8,48	1,436	5	10	2,51
test2	234	7,84	1,388	5	10	1,87
test3	234	8,76	1,314	5	10	2,78
test4	234	8,79	1,330	5	10	2,84

In test 2 they obtained significantly lower marks, in test 3 they obtained significantly higher marks than in test 1 ($p = 0.018$) and insignificantly lower than in test 4 ($p = 0.659$) and in test 4 they obtained significantly higher marks than in test 1 ($p=0.006$)

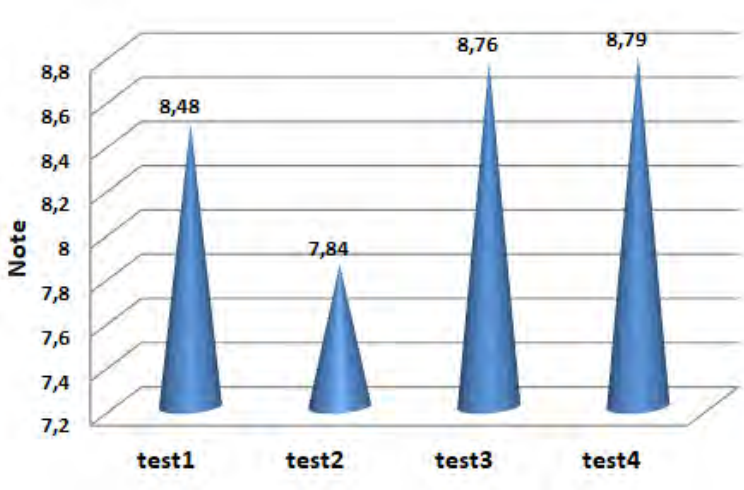

Figure 5. Evolution of test scores compared to time

DISCUSSIONS

Schools are an influential framework for secondary socialization. Students can be easily accessed during the school years, a period that lasts from childhood to adolescence. These years are influential when developing health-related behaviour, attitudes, and a lifelong lifestyle. Children are fond of learning during this period, and earlier, habits are established. Health programmes implemented in schools are important for promoting the oral health of children and young people.

Oral health education can be provided either by the traditional method of teaching, or by the use of self-educational brochures or audio-visual aids or by combining two or more means. Other methods may be involved to effectively transmit health education. Oral health education programmes exposed by the traditional method have been effective in improving children's knowledge. However, the children were not able to put into practice and positively influence their oral health behaviour because they did not practice what they learned. The person who teaches these programmes in schools is either a dentist or a dental hygienist. In order for a teacher to have knowledge related to oral health education, he / she participates in a one-day seminar (4).

Another study in which researchers were oriented towards the concept of behaviour in oral hygiene, structured the research on three dimensions: the first - information and

knowledge, the second - the practice of oral hygiene, and the third - the relationship with the dentist. Based on these dimensions, the research presented an overview of the behaviour of children in Timis County.

The three main dimensions: frequency, time of day and duration of brushing teeth provide a clear picture of the actual behaviour in terms of oral hygiene. Research shows that depending on children's responses, more than 50% brush their teeth at least twice a day. According to the data, children who have such behaviour have been instructed on how to wash by their parents or by the dentist. These children belong to the third and fourth grades, grades associated with a higher level of education. Moreover, the same category of children may behave appropriately in terms of tooth brushing time (at least 2 minutes), frequency (morning and evening) and correct brushing method.

Consequently, we can assume that the training process has effects not only in terms of knowledge, but also in terms of the actual behaviour of the application of appropriate oral hygiene methods. Informed children are more likely to behave appropriately in terms of oral hygiene and this is why a strategy of informing people from an early age could lead to better and more visible results over time (2).

Teacher involvement in oral hygiene education (OHI) has a positive impact on children. Another study found a significant improvement in OHI among children, which clearly demonstrates that teachers' perseverance causes a change in the children's behaviour. Personal assessment by the teacher could indirectly motivate the child to perform better and produce a change in his / her behaviour. (12).

Over the last 25 years, interest in health promotion and disease prevention has grown significantly. Prevention should be considered a personal choice because it is effective and economical. Dental health education (DHE) is an important and integral part of prevention and health promotion. It is a process that informs, motivates and helps people to adopt and maintain OHI practices as well as a healthy lifestyle. The main objective of DHE is to motivate individuals to seek and understand the purpose of these practices in order to take responsibility for the maintenance of their oral health. (11).

Future improvements in oral health and the reduction of inequalities depend on the implementation of public health strategies that focus on the determinants of diseases in the oral cavity. Several complementary actions carried out in partnership with the relevant agencies and the local community are needed, as prevention and medical education alone will not achieve lasting improvements in oral health. In addition, these approaches are very expensive and depend on the availability of staff trained in OHI practices. In both developed and developing countries, public health strategies are based on a common approach to preventing the risk of disease in the oral cavity, and the gains are significantly higher in oral health. (13).

CONCLUSIONS

This study, conducted on a sample of 243 children, aged 8-11, from three schools in Timisoara, aimed to raise children's awareness and responsibility for their own dental health and to enable children to develop appropriate skills and practices for the prevention of dental diseases. Attempts have also been made to establish positive values and attitudes towards dental health in primary school children.

The results of this study support the implementation of Oral Health Education Programmes at an early age. The objectives of the study were achieved. There was no significant difference in the interest in girls 'and boys' knowledge of oral health. Both boys and girls were equally interested, as evidenced by the results of the weekly tests. Also, in the comparisons between schools, children from the “Nikolas Lenau” High School obtained lower results than their colleagues from the other two schools under study. There were also different results depending on the degree of difficulty of the tests, in the second week at all

schools the test results were significantly lower. The theme of the second week's test was about “Food and its importance”.

The implementation of an oral health education programme within the school curriculum would influence the comprehension capacity of primary school children and would have a positive impact on their development and prevention skills in terms of not only oral health but also the health of the whole body.

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Clinical significance of non-surgical periodontal therapy

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Abstract

The removal of etiological factor such as plaque and tartar is of great importance in order to obtain smooth tooth surfaces free of pathogenic microflora consisting in the removal of all roughness on the tooth surface, especially on cement, which would favour the deposits of bacterial plaque which is the main aetiological factor of the periodontal disease. This paper aims to highlight the importance of scaling and proper oral and dental hygiene for periodontal health. Most patients subject to periodontal treatments require more frequent prophylactic treatments, every three months, instead of the usual six months, because their disease is more likely to reactivate. The working methodology consisted of the analysis of a group of 20 patients with a mean age of 43.7 years, 56% males and 44% females, who were applied a questionnaire consisting of 25 questions, and were then subject to an oral and dental examination, followed by scaling.

Keywords: Prophylaxis, scaling, bacterial plaque

INTRODUCTION

Prophylaxis is the key to the medical profession, it can be performed correctly only by identifying the causes of the disease and then eliminating them. The aetiopathogenetic concept of periodontal disease has oriented periodontal therapy towards methods of diagnosing the disease, treatment possibilities and, more importantly, the need to prevent this chronic condition with irreversible effects over time.

Measures to prevent periodontal disease include daily brushing and flossing to remove plaque from the teeth and gums, regular visits to the dentist for professional prophylaxis, and regular periodontal examination. The dentist should be informed about any history of diabetes and the current condition. Periodontal disease can affect patients with cardiovascular disease due to the harmful bacteria around the teeth. These harmful bacteria and the inflammatory mediators they produce can help clog the blood vessels of the heart and other vital structures. The first stage of treatment for periodontal disease is usually a comprehensive prophylaxis that includes scaling to remove bacterial plaque and tartar deposits formed below the gum line. The roots of the teeth will also be smoothed over the entire exposed surface (planing) to remove bacterial toxins and allow the gum tissue to heal and reconnect to the tooth [1,2].

In addition to prophylactic treatment, scaling is considered the first line of non-surgical periodontal treatment. Scaling also has beneficial effects at an aesthetic level, by removing various extrinsic stains, while providing a feeling of "cleanliness". It is recommended to perform prophylactic scaling at least twice a year (at least 6 months apart). The presence of tartar maintains gum inflammation and aggravates the evolution of periodontal disease.

Beyond the individual predisposition of patients, oral and dental diseases have, for the most part, a microbial aetiology. However, lifestyle plays an important role in the development of caries and pulp diseases, periodontal disease and oral and maxillofacial cancers. It includes the habits of oral and dental hygiene, increasing the resistance of enamel by fluoridation, a diet rich in carbohydrates, alcohol and tobacco consumption and the frequency of visits to the dentist.

The removal of etiological factors such as plaque and tartar is of great importance in order to obtain smooth tooth surfaces free of pathogenic microflora consisting in the removal of all roughness on the tooth surface, especially on cement, which would favour the deposits of bacterial plaque which is the main aetiological factor of the periodontal disease.

Recent research indicates that cement exposed to the action of plaque, tartar and periodontal pockets infiltrates with endotoxins, maintaining a source of continuous gum irritation. Scaling in general or the one with abrasive air reduces the toxic products in the cement and delays the deposition of the soft plaque, implicitly of tartar. Prophylactic and curative treatment of acute and chronic diseases consists in performing scaling that ensures the healing of the marginal periodontium and the oral mucosa (gingivitis, periodontitis, gum stomatitis), which also takes place in order to prepare an operating field that allows performing dental procedures under proper conditions by the antimicrobial effect of destroying bacterial cell walls with a mix of water, air, powder (baking soda, glycine) and pressure (biokinetic energy), thus reducing the amount of endotoxins present in periodontal pockets.

Measures of primary or secondary prophylaxis of periodontal disease, correlated with the methods of oral hygiene education, contribute to the promotion, maintenance and restoration of periodontal health. In conclusion, we must pay great attention to scaling, not postpone or neglect it, because along with brushing techniques and regular visits to the dentist, it is one of the elements absolutely necessary for a proper oral hygiene.

Aim and objectives

This paper aims to highlight the importance of scaling and proper oral and dental hygiene for periodontal health. Most patients subject to periodontal treatments require more frequent prophylactic treatments, every three months, instead of the usual six months, because their disease is more likely to reactivate.

MATERIAL AND METHODS

The working methodology consisted of the analysis of a group of 20 patients with a mean age of 43.7 years, 56% males and 44% females, who were applied a questionnaire consisting of 25 questions, and were then subject to an oral and dental examination, followed by scaling. The instrumentation used consists of: forceps, mirror, dental probe, periodontal probe, ultrasonic scaler, scaling insert with abrasive air for the portion above the gum (Air Flow), insert for the portion below the gum (Perio Flow), set of Gracey curettes.

During the personal research we recorded the data gathered in individual charts, which helped to obtain statistical evaluations meant to provide an overview of the oral health of the adult population that were presented in March at a general Dental Practice in Timisoara.

RESULTS

The study conducted shows that the reasons for presentation were different, 15 of the patients studied went to the dental practice because of the pain, followed at a considerable distance by those with gum bleeding, followed by those with masticatory and physiological disorders. (Fig. 1).

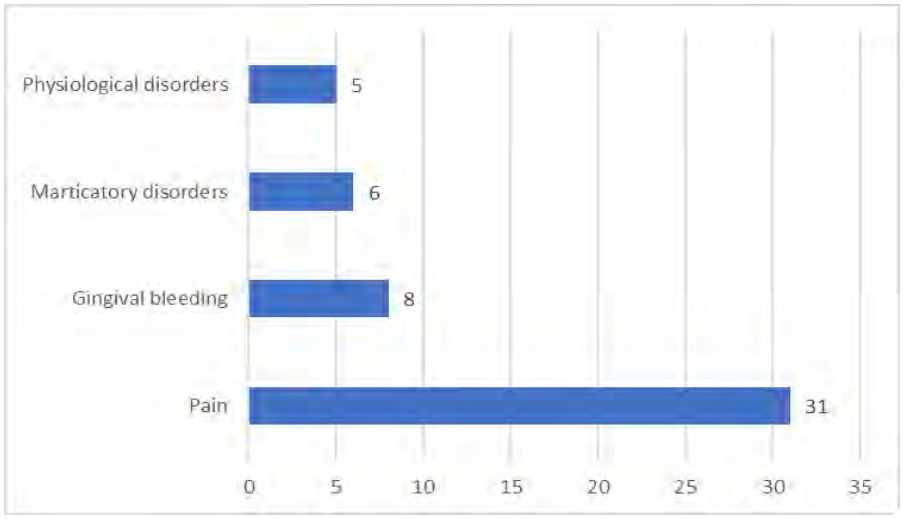

Figure 1. Reasons for going to the dentist

According to the study, among the symptoms existing in the personal history, 11 of the persons participating in the study had as a symptom a discomfort when brushing, followed at a considerable distance by those with food debris between the teeth and then those with gingivitis, followed by those with mobile teeth.

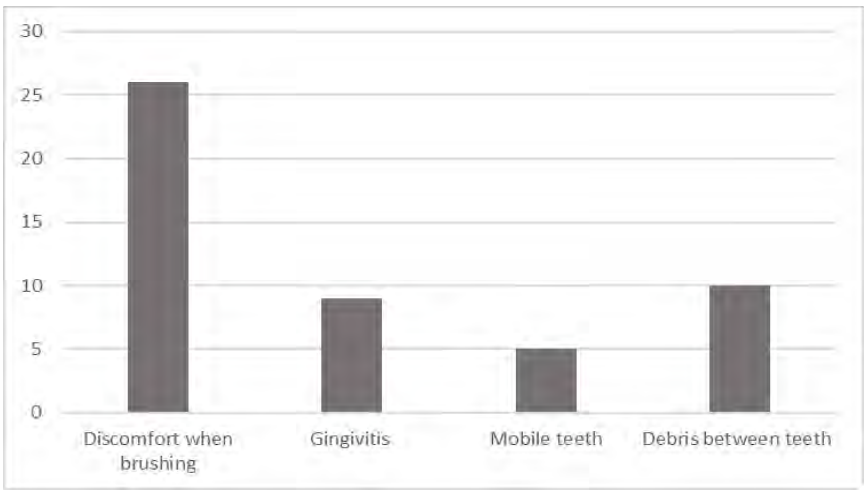

Figure 2. Symptoms in personal history

We notice in Figure 3 above that the most frequent vicious habits are the use of toothpicks followed by the habit of interposing objects between the teeth and, at a considerable distance, teeth grinding and clenching.

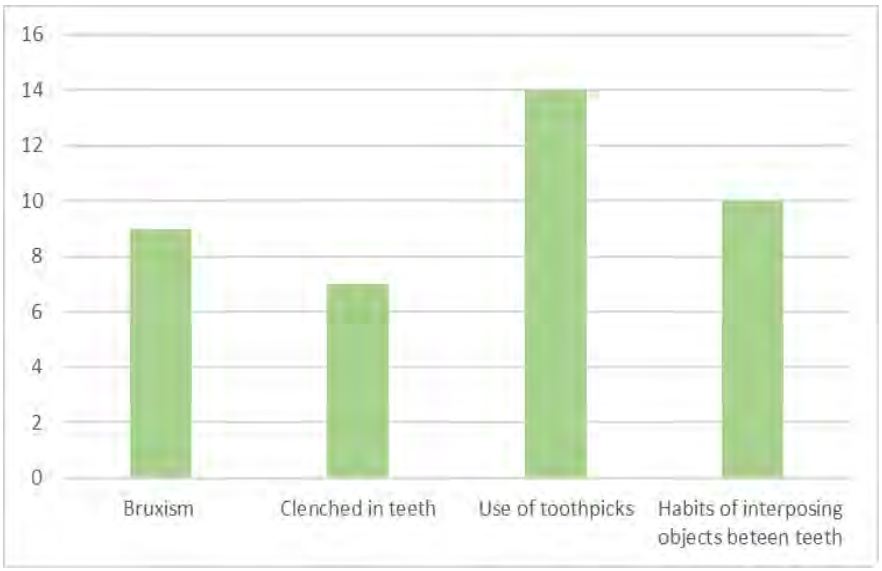

Figure 3. Vicious habits present in the people included in the study

The frequency of brushing teeth is not one that indicates a proper oral hygiene, most people usually wash only once a day, followed by those who wash twice a day. The number of people who do not use to brush their teeth at least once a day is worryingly high. Of those who brush only once a day, most brush their teeth after waking up, followed by those who brush their teeth after lunch.

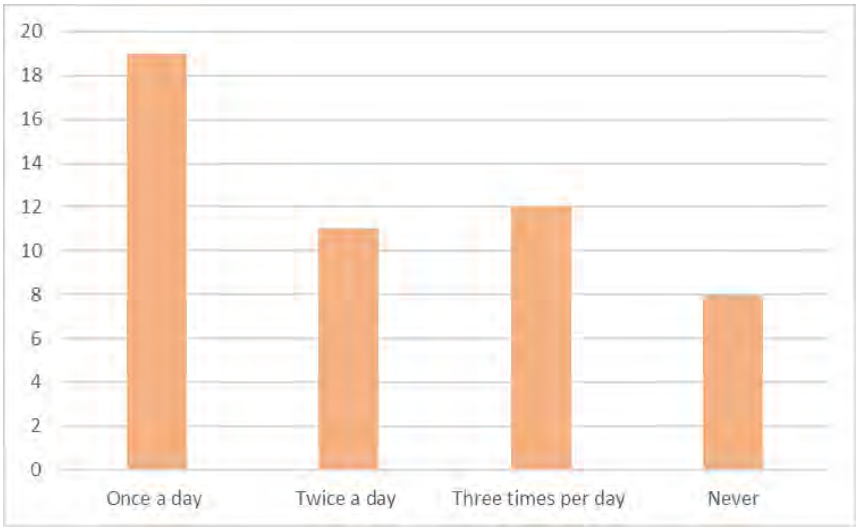

Figure 4. Frequency of tooth brushing

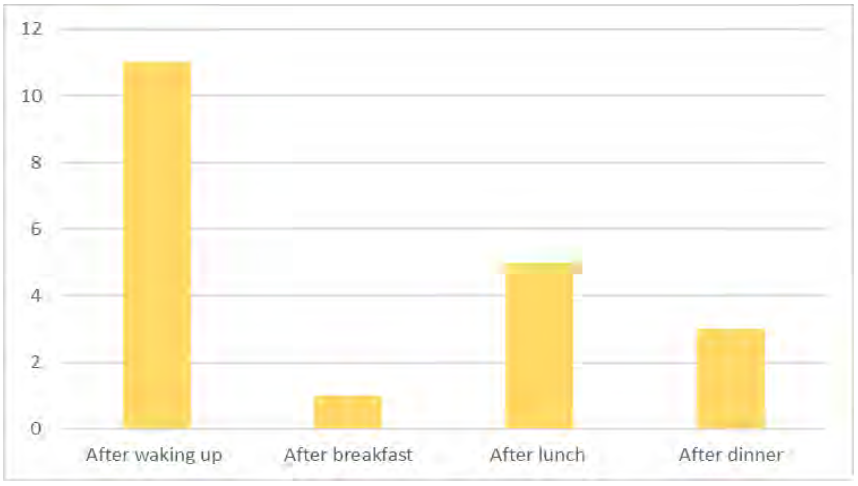

Figure 5. Toothbrushing time of the day

The average time spent brushing is 1.10, with most of them spending one minute to do this, and only 5 people say they spend 3 minutes for each brushing. 64% of the adults studied use the horizontal brushing direction, followed by those who wash correctly, using the vertical technique: 22%, and 14% wash their teeth with circular moves.

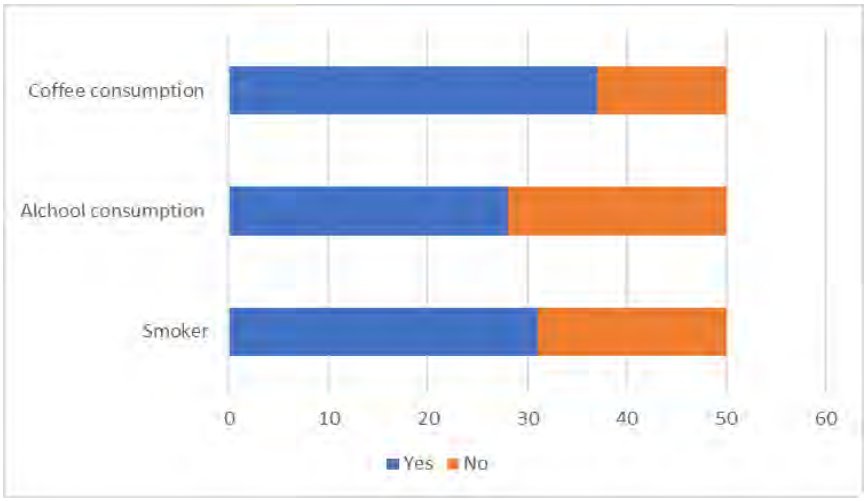

Figure 6. Coffe/alcohol/ cigarettes consumption of the study group

Coffee consumption is the most common addiction in the study group, followed by smokers and then alcohol consumption. Very often there is a combination of the three addictions, or between coffee consumers and smokers.

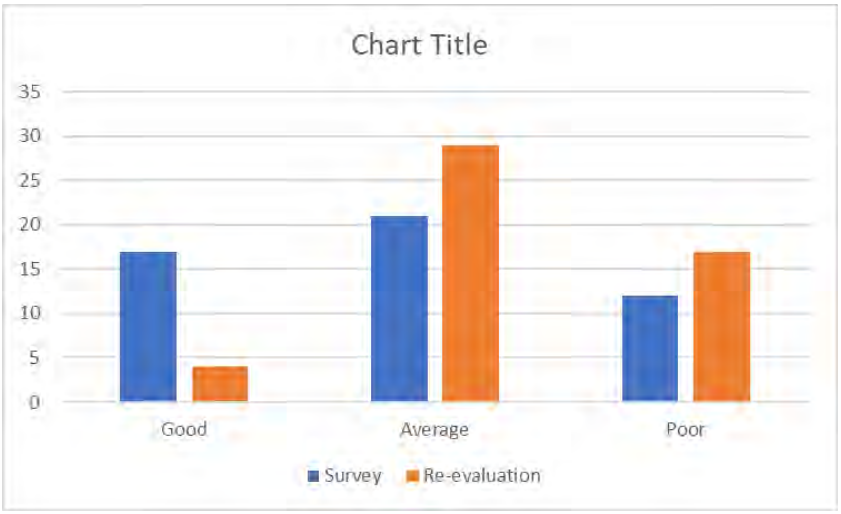

Figure 7. State of oral and dental health of interviewees compared to the results of the oral and dental assessment performed

Most of the interviewees stated that they had an average state of health, followed by those who stated that they had a good state of health, but the examination revealed an average state of oral and dental health, followed by those with poor health and fewer in good health. 64% of those studied never had a professional scaling or brushing in their personal history. The examination revealed that 40% of those examined had periodontal disease.

The use of the abrasive air scaler in the treatment of periodontal disease has provoked many contradictory discussions. The abrasive air scaling treatment is intended to be independent, although at present it is considered only complementary to the conventional scaling and root planning. Studies show very good results in removing plaque from the pockets with a decrease in depth of up to 1.22 mm in 4-6 weeks, although at the microbiological level it is inferior to conventional SRP.

In patients subject to scaling with abrasive air, seven of them had plaque gingivitis, at the re-evaluation (after 2 weeks) five of them had good oral hygiene, normal gum colouration, disappearance of gum oedema, firm consistency of the gums and the absence of tartar, and the other two had failed to apply a proper brushing technique, so their gum inflammation persisted.

We also had satisfactory results in patients who already had periodontal disease when they came to our clinic and who, after three weeks, the ten of them no longer had gum oedema, had moderate periodontal pockets, no bleeding during the examination and satisfactory oral hygiene. Of course, there were also patients who needed corrective therapy and I referred them to a specialist.

Periodontal disease prophylaxis with abrasive air scaling can be achieved very easily, with very good results. It removes plaque completely below and under the gums, delays its deposition due to its moderate abrasive effect, and removes roughness from the tooth surface.

It removes extrinsic staining very easily; in a short time, the aesthetic effect is clearly superior to that given by ultrasonic scaling, and patients are very satisfied with this aspect, but also with how smooth the teeth are and the freshness they feel after scaling.

CONCLUSIONS

Scaling with abrasive air in patients with periodontal disease has many clear advantages over conventional methods, reducing the degree of periodontitis and even

leading to the healing of early periodontal disease if combined with toothpaste and mouthwash specially created for it. Here are some of the many advantages that scaling brings in dental and periodontal health: special aesthetic effect, reduces or eliminates tartar and bacterial plaque, leaving the place clean; allows access to the proximal areas, depressions, grooves, cracks, periodontal pockets much easier, is very useful in identifying cavities; it is not an unpleasant procedure for patients, baking soda is biocompatible; the device is portable and very easy to use. Scaling is ideal for the prevention of periodontal disease, but in its treatment, it has been proven that at a microbiological level conventional SRP is the treatment of choice, and scaling is complementary.

Our study showed that most of the persons involved had a poor dental hygiene, brushed once a day (9 people), there were also 11 people who brushed their teeth twice a day and twelve who brushed three times a day. The vast majority brushed their teeth after waking up, and only for after lunch. The presence at the doctor is not for aesthetic reasons, most patients with periodontal disease are smokers and/or have an alcohol addiction and do not care of their physical appearance, so that 15 of the people studied came to our dental clinic due to the pain, followed at a considerable distance by those with gum bleeding, which were 5. The disease risk, i.e. the probability of it happening at a given moment in time, must be taken into account, so that these lesions in the tooth and periodontium would not occur. Periodontal prophylaxis and oral health in general play a particularly important role in preventing caries and periodontal disease, while the periodic dental exam and scaling are particularly useful.

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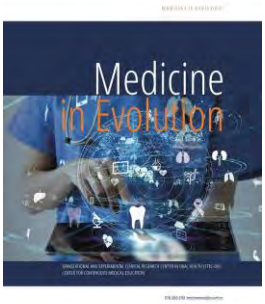
Minimally invasive treatment of dental dyschromia



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Abstract

Dental dyschromia is one of the main reasons why patients request treatment in the dental office. Dental dyschromia represent the alteration of the physiological color of teeth. This paper shows 2 minimally invasive treatment alternatives for dental discoloration – external and internal bleaching. The main purpose of bleaching techniques is to restore the esthetic aspect of teeth. Good knowledge of external and internal bleaching techniques protocol and materials are necessary, in order to obtain a good result.

Keywords: dental dyschromia, minimally invasive treatment, dental aesthetics

INTRODUCTION

Along with the shape of the teeth, their color is one of the important elements of the aesthetics of the smile.

Dental dyschromia represent the alteration of physiological color of teeth, on the whole coronary surface or only on certain parts of it. The discoloration can be localized (it affects a certain number of teeth) or generalized (it affects the whole dentition).

Dental dyschromia can be classified as (1,2):

- intrinsic dyschromia (given by hereditary or acquired factors): amelogenesys imperfecta, dentinogenesys imperfecta, enamel dysplasia, dental fluorosis, Tetracycline dyschromia, post trauma or post infection dyschromia.
- extrinsic dyschromia (given by chromogenic substances, that bind to the tooth surface and modify its colour)
- mixed etiology dyschromia.

Modern treatment alternatives take into consideration the etiology of the dyschromia and are minimally invasive; one of them is represented by external and internal bleaching procedure (3).

Aim and objectives

The purpose of this paper was to emphasize the aesthetic potential of the bleaching materials, by restoring the aspect of smile (correction of teeth discoloration in the aesthetic area).

MATERIAL AND METHODS

This paper presents 2 case reports of intrinsic dyschromia, that were treated with help of bleaching procedures (one with external bleaching and one with internal bleaching).

For the external bleaching procedure (on vital teeth) one used Opalescence Boost 40% and Opalescence PF 16% (Ultradent Products, USA) (Fig.1).

Figure 1. Materials used in external bleaching procedure

For the internal bleaching procedure (for nonvital teeth) one used Opalescence Endo (Ultradent Products, USA). (Fig.2)

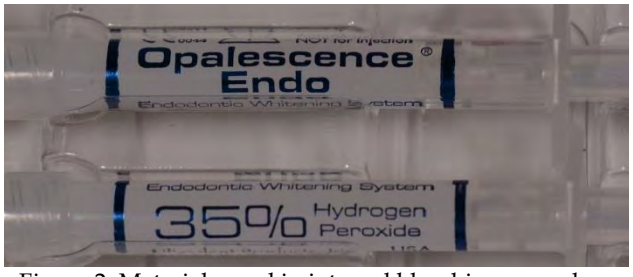

Figure 2. Materials used in internal bleaching procedure

First patient (female, 23y) presented a uniform and discrete discoloration (Fig 3), a favourable situation for the external bleaching procedure. The gel (Opalescence Boost 40% Hydrogen Peroxide) was applied on upper and lower teeth (Fig.4,5) for 30 min – in office bleaching.

Figure 3. Initial aspect of smile

Figure 4. In office bleaching of the upper teeth with Opalescence Boost

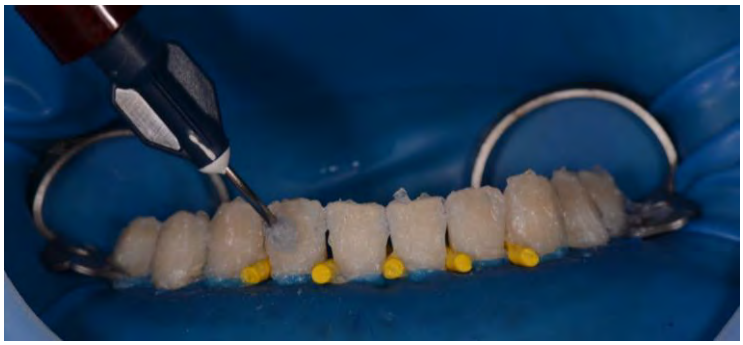

Figure 5. In office bleaching of the lower teeth with Opalescence Boost

The second patient (female, 34y) presented a single tooth intrinsic dyschromia (tooth 1.2), after endodontic treatment,. The treatment option was the internal bleaching, with Hydrogen Peroxide 35 % (Opalescence Endo, Ultradent).

Figure 6. Initial aspect of smile

Before starting the internal bleaching procedure of non vital teeth, it is very important to check the integrity of the root canal treatment and to realize the root barrier. Only then it is safe to apply the gel inside the tooth (Fig.7). The maximum efficacy of the gel is in the first 48 hours. After 72 hours the bleaching gel becomes ineffective.

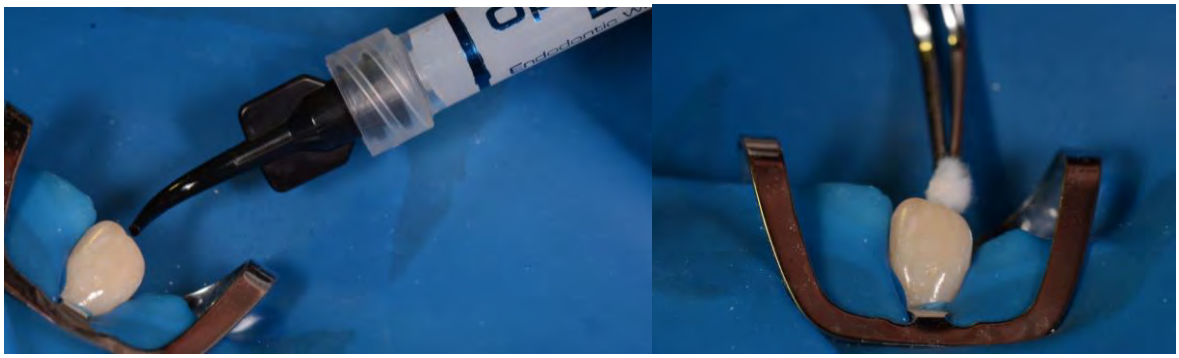

Figure 7. Aspect from the internal bleaching procedure

RESULTS

In case of both patients, the treatment had good results. The patients were satisfied with the new appearance of their smile.

In case of first patient, the results were obtained after 30 min in office bleaching and 10 days home bleaching, in trays.

Figure 8. Aspect of smile at the end of external bleaching treatment

In case of second patient, the results were obtained after 3 sessions of internal bleaching and 7 days home bleaching, in trays.

Figure 9. Aspect of smile at the end of internal bleaching treatment

DISCUSSIONS AND CONCLUSIONS

Bleaching treatments are a minimally invasive therapeutic option for dental dyschromia. The success of the treatment of dental dyschromia depends on the correct diagnosis and etiology of dyschromia, but also on the choice of the right bleaching technique.

The treatment plan must always be correlated with both the etiology of dyschromia and the degree of pigmentation of the dental tissues.

Home bleaching treatment (with Carbamide Peroxide 16%) has more stable results over time (4,5).

The direct restorations does not react to the bleaching treatment and, therefore, they need to be replaced after the treatment. The patient must be informed about that, before starting the treatment. It is safe to do the restoration after 7-14 days from the end of bleaching treatment.

Dental tenderness may occur, but it is reversible.

Possible side effects of whitening gels can be avoided, as long as the gel amount and concentration and mode and frequency of whitening are performed under medical supervision (2,5).

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Non – invasive therapeutic approach in dental dysplasia – Molar Incisor Hypomineralisation Syndrome

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Abstract

Aim and objectives: Dental dysplasia is a structural or developmental defect that can be classified into two types based on the etiology: environmental and genetic. Environmental dysplasia can affect the enamel and dentine and can occur before or after birth. They are the result of several environmental conditions that emerge before or during the development of the dental structures, prior to the eruption of the teeth, from a chronological aspect.

Materials and Methods: The research focuses on the descriptive approach of MIH Syndrome clinical treatment cases (A-F). Non-invasive treatment involving CPP-ACP and Varnish was used to treat the patient.

Results: The contemporary treatment strategy to treating these defects is based on the collection of a series of data, beginning with determining the etiological causes for an early diagnosis and minimizing the scope of carious lesions as much as feasible. After 6 months we observe an improvement of the oral hygiene.

Conclusions: The approach of a non-invasive treatment idea, resulting in keeping the dental tissues as healthy as possible and free of cavities, is the key to success in correcting any structural defect.

Keywords: MIH Syndrome, CPP-ACP, GC Tooth Mousse, MI Varnish GC, Non- invasive

INTRODUCTION

MIH (molar incisor hypomineralisation) is a common developmental dental disease that manifests itself in childhood. One or more first permanent molars (FPM) are affected by well-defined regions of hypomineralised enamel. Although associated opacities on front teeth are less likely to cause practical problems, they can cause aesthetic and psychological concerns. [1]

MIH can have a wide range of severity. It might range from minor opacities to complete posteruption. It may be asymmetrical, although the contralateral molar is more likely to be impacted if an FPM is badly afflicted. The degree of hypomineralization in afflicted incisors is generally less severe than in affected molars. [2]

The structural changes occur infrequently and have varied degrees of severity on the incisors. [3] Defective enamel is white cream or golden brown in color, normal thickness, smooth on the surface, and has a noticeable border adjacent to normal enamel. [4] The opacities are confined to the incisal or cuspal third of the crown, with just a few cases affecting the cervical one-third. Because of post-eruptive mineralization, the surface enamel is hypermineralized. [5]

Due to lower hardness and elasticity modulus, as well as the presence of disorganized and weakly attached prisms, the dental enamel of teeth affected by MIH is fragile and easily fractured, making the enamel porous, which favors greater microbial proliferation and, as a result, the establishment of caries disease, whether or not associated with other factors. In most cases, there is sensitivity to cold, heat, or mechanical stress, and brushing is typically uncomfortable, therefore the kid avoids it. [6]

Aim and objectives

The purpose must conduct out in order to improve the accuracy of diagnosis of the syndrome in order to be able to choose the most benefit situation for treatment, given that 21st century dentistry refers to the non-invasive and less invasive approach.

MATERIALS AND METHODS

The basic idea of the study emphasizes the establishment of the correct diagnosis given that we refer to the signs and symptoms of the patient regarding the oro-dental health. In order to make the early diagnosis, a scoring index of MIH Syndrome was implemented with indices from 0 to 4 depending on the evolution of clinical signs. (figure 1).

Index	Definition
0	Normal enamel translucency – Absence of MIH
1	MIH • Absence of hypersensitivity • No post-eruptive breakdown
2	MIH • Absence of hypersensitivity • Post-eruptive breakdown
3	MIH • Hypersensitivity • No post-eruptive breakdown
4	MIH • Hypersensitivity • Post-eruptive breakdown

Figure 1. MIH – Index [7](Personal pictures – Dr. Brăilă E.)

Depending on the index it belongs to, the MIH Syndrome has 6 stages of treatment ranging from non-invasive treatment to radical treatment. (figure 2,3).

	MIH – 1	MIH – 2	MIH – 3	MIH – 4
Therapy A	Prophylaxis			
Therapy B	Resin sealing / Infiltration			
Therapy C	Temporary restoration - short duration			
Therapy D	Temporary restoration - long duration			
Therapy E	Permanent restoration			
Therapy F	Extraction			

Figure 2. Treatment MIH [7]

Figure 3. The phases of therapy in order

The modern therapeutic approach is based on the accumulation of a series of information with the purpose of early diagnosis of anomalies and finding important treatment strategies in limiting the extension of caries processes. The key to success in treating any structural anomalies refers to the approach of the modern concept of non-invasive or minimally invasive, resulting in the preservation of dental tissues as healthy as possible, free of caries.

Therapy A is a non-invasive therapy that includes prophylaxis that can be completed at home and also later in the dental office.

At home diet control, following the instructions of oral hygiene, use of desensitizing toothpastes with an increased fluoride content of at least 1450 ppm F, reduces caries risk and tooth sensitivity. Increases the strength of dental structures is done by local applications of fluoride - gel / cream 900 ppm F / 1450 ppm F.

In office in terms of professional cleaning once every three months, local fluoride applications 1 every 3 months, using MI Varnish (GC) 22600 ppm F that seals dental tubules. It desensitizes the teeth and leaves a film of varnish on the surface.

Non-invasive treatment - Therapy A, with CPP-ACP (GC Tooth Mouse) and MI Varnish (GC), was used to treat patients prophylactically. (figure 4)

Figure 4. Therapy A, with CPP-ACP and varnish

RESULTS

The treatment plan was established by using a toothpaste with a content of 1450 ppm F. In the dental office, professional cleaning and local application of gels based on CPP-ACP and Varnish was used. After 6 months, the improvement of dental hygiene and also the dental sensitivity at the level of 1.6 was observed decreased. (figure 5).

Figure 5. Occlusion in frontal, right lateral /and left lateral view before and after treatment

DISCUSSIONS

Many theories exist to explain how enamel hypoplasia develops in the permanent teeth. [6] Many variables, including asthma, pneumonia, upper respiratory tract infections, otitis media, antibiotics (amoxicillin), breast milk dioxins, and fevers during childhood, had a role in the development of teeth in children with MIH.[8]

Fluoride varnish was first utilized as a topical treatment for enamel remineralization. The CPP included in the material can release a high concentration of calcium and phosphate, maintaining a supersaturated mineral environment, minimizing demineralization and enhancing enamel remineralization because the MIH tooth is mineral poor. According to Ozgül et al., the activity of the substance utilized (CPP-ACP linked fluoride) explains the reduction in sensitivity in this case study. [6,8] Our research findings identifies with Ozgul et al., research explanations that a significant improvement in children dentine sensibility from the first application to the last one is observed.

Fluoride Varnish was the treatment of choice in moderate instances, and it resulted in enamel hardening, which can help prevent cavities. The treatment of MIH-affected teeth was advised for all patients who were treated by this disease. [9,10]

Abdalla [11] learns this while mandibular PFMs were impacted by MIH more frequently than maxillary PFMs, maxillary incisors were substantially more affected than mandibular incisors. His research also revealed the necessity for all dental practitioners in Sudan to get education on the diagnosis and management of MIH in order to assist them in early detection and effective therapy of this illness.

Ghada and Shaimma [12] specifies that fluoride varnish approach gives a slight decrease in color but being less invasive than other approaches, while resin infiltration is masking white spot lesions much better. In our study we observed some decrease in color, and a significant improvement in children dentine sensibility from the first application to the last; this is also in accordance with Chin et al., 20009 [13] that found a limited improvement of white spot lesion and the instability of color over time.

Definitely, further studies with longer periods of follow up and other clinical techniques and approaches must be taking in consideration in treating children with MIH syndrome.

CONCLUSIONS

This study backs up the theory that individuals with MIH damaged teeth who benefit from treatment in conjunction with oral hygiene improvement, show significant reduction in hypersensitivity. Furthermore, after treatment, the number of food restrictions decreased. The approach to the modern concept of non-invasive treatment, resulting in the preservation of dental tissues as healthy as possible and free of caries, is the key to success in correcting any structural defect.

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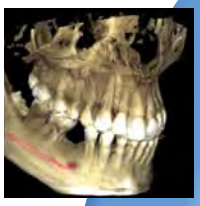

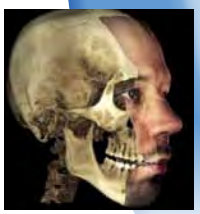

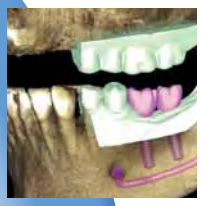

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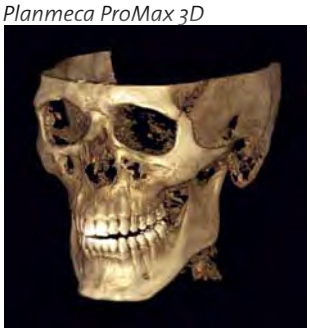

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