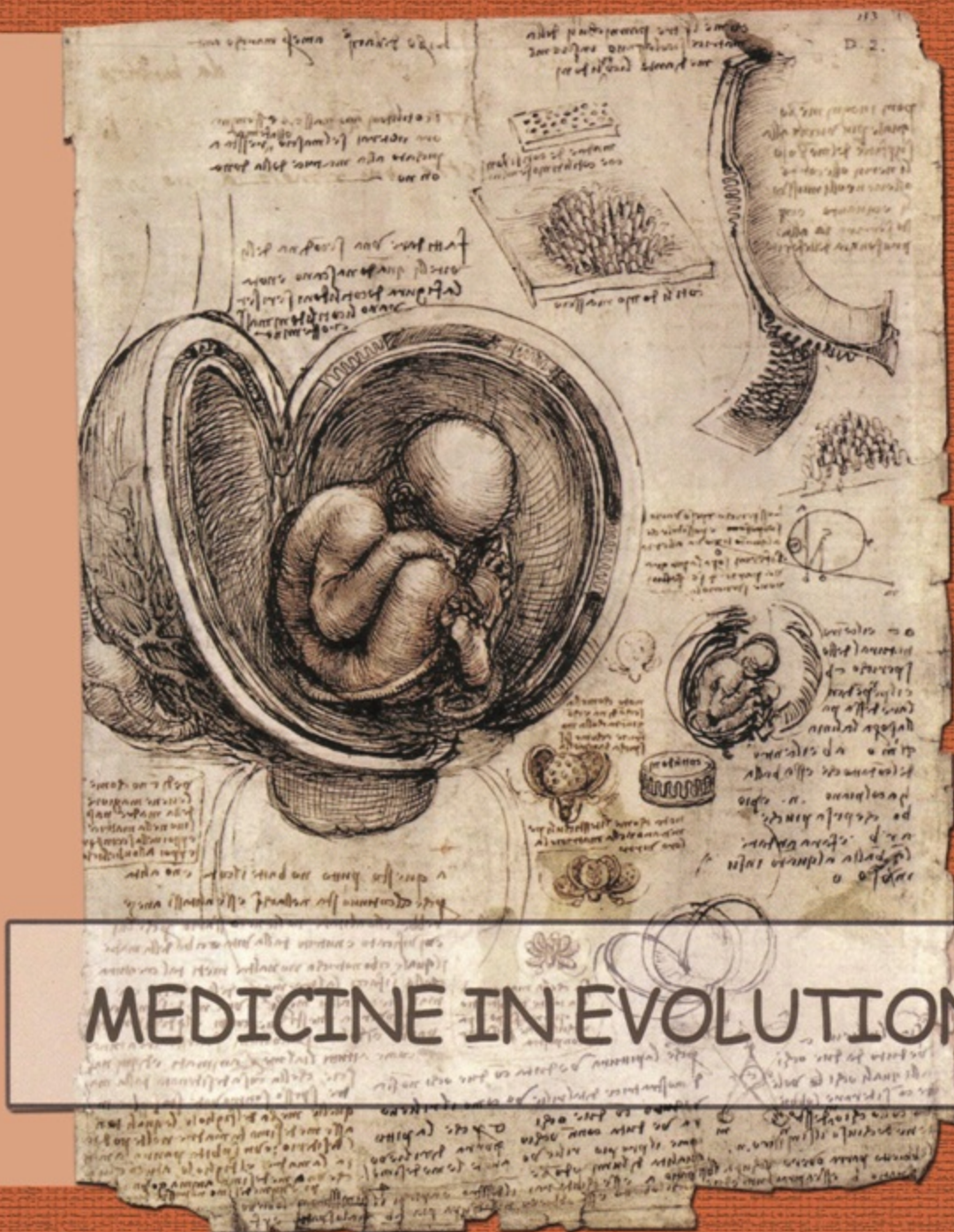


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MEDICINE IN EVOLUTION

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



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Oral-B

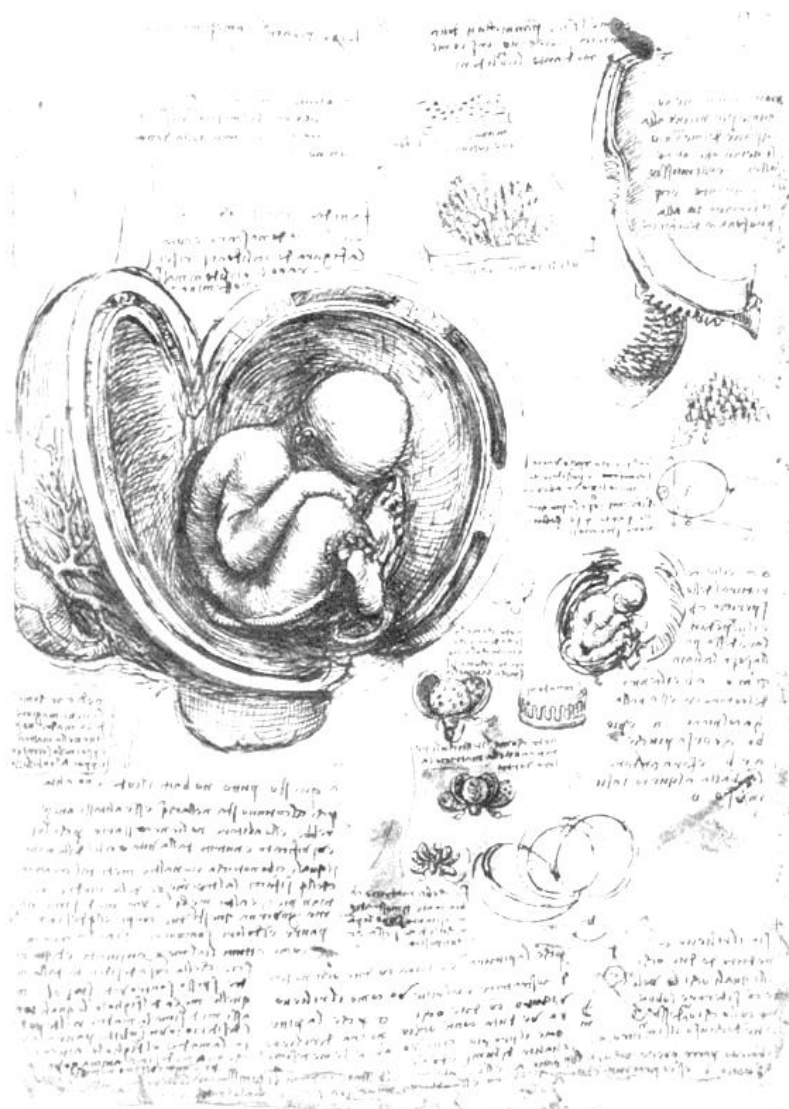


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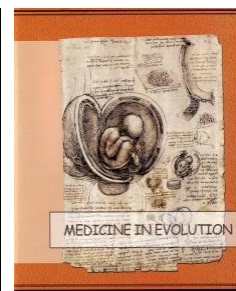
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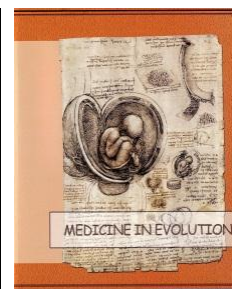
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Comparative study on the etiology of premature birth in Arad county at a 30 year interval in two different social periods



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Abstract

Objective: The study looks at the evolution of prematurity over 30 years by analyzing the parameters between 1976-1985 and 2006-2015. The evolution of the prematurity index as well as the structure of prematurity in the two periods, the etiologic factors of premature birth and the premature birth quality.

Methodology: The study refers to a selected batch of 46,111 births in the first period and 29,413 of the second period. In the first period, the index of prematurity was 6,87%, unlike the second period 2006-2015 when it was 8,06% but in the comparative data we took into account the definition of abortion when in the first period the birth was considered after a gestational age of 28 weeks, during the second period delivery being considered after 24 weeks of gestation.

The quality of birth assistance was also favorable due to the approach of premature cesarean births, with the caesarean index reaching 65.40% in 2016, which is evidenced by the number of deaths which from 611 fetal deaths in the first period of which premature 395 (64.64%) reached 77 deaths (3.24%) in the second period of which premature 48 (62.33%).

Conclusions: Birth support for premature birth has made clear progress in the last 30 years but at the same time the progress of neonatology has led to a drastic decrease in perinatal mortality.

At the same time, the study of the etiological factors of premature birth reveals significant changes in their structure considering that these changes occurred due to changes in the social structure of society inverting the proportion between the social factors and factors in the ongoing task.

Keywords: prematurity, etiology, fetal evolution.

INTRODUCTION

Premature birth offers the possibility of finding new unknown etiological factors of premature birth. These factors include the social factor that is influenced by the level of development of the country, the economical factor and, last but not least, the educational level of the population. (1,10)

In the etiology of preterm birth there are single or main etiological factors, determinants of premature birth and often associated factors, often unable to distinguish the causative factor of premature birth, also having in theory the "theory of fetal atavism." (3)

Consequently, premature birth is often a multifactorial phenomenon in which through everyday practice is difficult to identify the primordial trigger factor of premature birth. Papierinic was the one that has provided obstetricians with a birth risk score since 1969 to identify premature birth and remove the main risk factors in a pregnancy. (13,14,18,20)

Despite advances in pharmacology with regard to tocolysis medication and the advances made by neonatology over the last 30 years, the rate of prematurity has not changed but has greatly reduced perinatal mortality, an important role in reducing prematurity remains the prophylaxis of premature births by detecting and removing its etiological factors.

Socio-medical complex - prematurity, although its importance has been known since antiquity, still constitutes a major public health problem. (2)

Despite the success achieved so far, a decrease of prematurity of less than 2% of the total number of births has not yet been achieved, which leads to a very rigorous evaluation of the medical-biological methods used in order to establish new orientations.

The impossibility of decreasing generally below 3-4% is also not possible due to the presence of congenital malformations of the fetuses that cause the pregnancy to be interrupted prematurely. (4,5,6)

Regardless of the causes, premature birth is the result of early onset of the systemic uterine contractions that lead to premature labor being triggered. (7,8)

An important factor in triggering uterine contractions is Ca^{++} that causes activation of the actin-myosin complex. (7,9,10)

The increase in insulin-dependent and gestational diabetes mellitus, pregnancy-induced HBP as well as obesity may lead to premature labor induction, which implies the need for permanent fetal monitoring. (11,12)

MATERIAL AND METHODS

These elements led us to make a study of the evolution of the etiological factors of premature birth at a period of 30 years, 1976-1985 and 2006-2015, including two different social periods, namely the first period of socialism and the second period of liberalism, different periods in which the economic, social and health policies have changed. The first period is characterized by a birth-strength policy manifested by the absence of contraceptive means and the prohibition of abortion on demand and the second period characterized by a policy of abortion liberalization and the supply to the population of all modern means of contraception.

A great difference between the two analyzed periods is represented by the change in gestational age from which the notion of abortion is separated from that of birth, respectively in the first period 1976-1985 abortion is considered any birth that occurs below 28 weeks of gestation in the resulting of a product of conception below 1000g, in the second period the definition of birth was applied as a birth that takes place at 24 weeks of gestation resulting in a living product of over 500g. (6, 17)

The structure of prematurity in the analyzed periods shows an increase in preterm births of grade IV of eight times in the second period from 10 to 88 cases, the size being over 11 times. (Table I)

Table I. Structure of prematurity in the studied periods

	1976-1985		2006-2015	
Premature Gr.I	2412	76,9%	1725	72,75%
Premature Gr.II	626	19,96%	479	20,20%
Premature Gr.III	88	2,80%	84	3,54%
Premature Gr.IV	10	0,31%	83	3,50%

Of the total number of fetal deaths 611 representing 1.32% of the total number of births, 395 (64.64%) were premature, with the perinatal mortality index being 13.01%.

In the first period 1976-1985 there were 46,111 births, of which 3136 were premature births, resulting in a rate of prematurity of 6.87%. From these 1146 (35.54%) came from the urban area, the rest of 1990 (63.45%) being in rural areas. (14) In the second period analyzed in 29413 births, 2371 were premature births representing 8.06% 2 percent higher than in the first period under review. Of these, 1202 (50.69%) came from the urban area, with the remaining 1169 (49.30%) coming from rural areas. We find a drop in premature births in rural areas in the second analyzed period by over 14%, identifiable by increased living conditions in rural areas.

This change of structure is also linked to the declaration of certain villages as cities and thus to their reporting to the urban environment.

In order to study the etiology of prematurity compared in the two periods, we used our prenatal birth checkpoints that we designed and we had as criteria the clinical assessment of the premature birth risk set by the French neonatologist Papiernic and proposed for application to WHO experts at the Tourin's Perinatology Seminar in 1969.

For an objective assessment of the total files I consulted I formed an unselected group of 300 premature births from 2006-2015 which we studied in detail and compared the results of a similar batch from the period 1976-1985 for which we had the data published. (15) For an objective assessment, we removed from the 2006-2015 batch the premature births that took place under 28 weeks of gestation to apply the same definition of premature birth.

The records were completed at each premature birth and include data on:

1. The biological constitution of the pregnant woman (age, waist, weight, Rh, congenital genital malformations)
2. Social factors: economic level, educational level, professional activity, family relationships
3. Obstetric antecedents: curettage, large abortions in the past, premature birth, scar tissue
4. Factors related to pregnancy (twins, placenta praevia, pelvic presentation, cervical ischemic failure, pregnancy-induced metrorrhagia, pregnancy-induced HTA, treatment during pregnancy, overweight)
5. Pathology associated with pregnancy: cardiopathy, kidney disease, toxoplasmosis, mental illness, TB, lues, anemia, drug use, intoxication, epidemic hepatitis, positive HBS and HCV.

The records also contain data on the progress of labor and expulsion, how to resolve the birth, as well as data on the condition of the newborn premature at birth and during the first hours of life as well as data on the treatments performed.

Presentation of the material

The analysis of the results reveals a significant difference in parity, primiparous and secundiparous being approximately two times more in the second period of 50.99% compared

to 25.66% at the expense of the multiparous which in the period 1976-1985 with 16% were twice higher than in the period 2006-2015 when they were 7.33%. This also highlights the decrease in the number of births in the years 2006-2015, during which time abortion was liberalized and contraceptive means made available to the population through family planning centers.

Table II. represents the batches studied by parity

	1976 - 1985		2006 - 2015		Total	
	No.	%	No.	%	No.	%
Nuliparous	175	58,33%	125	41,66%	300	50%
Primiparous	75	15,33%	86	28,66%	132	22%
Secundiparous	31	10,33%	67	22,33%	98	16,33%
Multiparous	48	16%	22	7,33%	70	11,66%
Total	300	99,99%	300	99,98%	600	99,99%

After the gestational age they were born, we found an increase in gestational age at birth, and due to the increase in tocolysis due to the occurrence of more effective tocolytic medication than that used in 1976-1985, 87.31% of births taking place at a gestational age of above 24 weeks of amenorrhea.

Table III. represents the gestational age at which the birth occurred

Gestational age	1976 - 1985		2006 -2015		Total	
	No.	%	No.	%	No.	%
30-32 weeks	96	32%	38	12,66%	134	22,33%
34-35 weeks	92	30,66%	116	38,66%	208	34,66%
36-37 weeks	112	37,33%	146	48,66%	258	43%
Total	300	99,99%	300	99,98%	600	99,99%

In this context, we must also take into account the fact that during the second period of 2006-2015 premature births were considered to be all births above 24 weeks of gestation, cases which before 1989 were reported as abortions. In the first studied period, only 1 (0.32%) case was reported as a premature birth between pregnant women who gave birth before 28 weeks of gestation when during the period 2006-2015 on the group of 300 premature births analyzed 38 (12.66%) were born at a gestational age below 28 weeks with a birth weight less than 1000g.

In these conditions the structure of prematurity during the two analyzed periods reveals that in the first period of 300 births resulted 312 premature newborns, 12 (4%) of pregnancies were twins and during the second period of 300 premature births resulted 319 newborns, 19 (6.33%) of pregnancies being twins.

Table IV. on the structure of prematurity

Prematurity Degree	1976 - 1985		2006 - 2015		Total	
	No.	%	No.	%	No.	%
Gr. I	224	71,79%	146	45,76%	370	57,72%
Gr. II	77	24,67%	70	21,94%	148	23,08%
Gr. III	10	3,20%	65	20,37%	75	11,70%
Gr. IV	1	0,32%	38	11,91%	48	7,48%
Total	312	99,98%	319	99,98%	641	99,98%

We also mention that during the second period 2006-2015, a total of 29,413 births resulted in 2371 premature births, representing an index of 8,06%, where if we add 680 premature births sent for resolution at clinics in Timișoara, it results an index of prematurity for Arad County of 10.37%.

Of the 300 preterm births analyzed in the second period, two premature newborn babies died weighing less than 1000g and were premature of the fourth grade, whereas 77 premature newborns, representing 3.24% of the total premature births, died in the analyzed period, 53.47% of the total deaths per hospital, the index reaching 60-66% if we take into account the premature newborn deaths from Arad to Timisoara.

According to the APGAR index given at birth, we found that there is now a greater severity in the neonatology assessment of neonatal birth, with the APGAR index at birth below 4 being 5.26 times higher than in 1976 -1985 although the gestational age at birth was less than 38 times over the period 2006-2015.

Table V. with the value of APGAR given at birth

APGAR value	1976-1985		2006-2015		Total	
	No.	%	No.	%	No.	%
under 4	8	2,56%	43	13,47%	51	8,08%
5-7	84	26,92%	228	71,47%	312	49,44%
8-10	220	70,51%	48	15,04%	268	42,47%
Total	312	99,99%	319	99,98%	631	99,99%

Analyzing the two batches studied we find that the distribution of batches by weight corresponds to the structure of prematurity in the two analyzed periods.

Table VI. represents the birth weight of the newborn

Period	<1000g		1001-1500g		1501-2000g		2001-2500g		Total	
	No.	%	No.	%	No.	%	No.	%	No.	%
1976-1985	1	0,32%	10	3,20%	77	24,67%	224	71,79%	312	99,98%
2006-2015	38	11,91%	65	20,37%	70	21,94%	146	45,76%	319	99,98%

DISCUSSIONS

Analyzing the etiological factors in the 600 preterm births compared to the two analyzed periods on the five categories of etiological factors proposed by us, we find that during the first period the etiological factors related to the **biological constitution of the woman** were 25.66% more frequent than in the second period when they were only 10%. **Social factors** with an almost constant value of 17.66% compared to 20%, although we expected them to be more frequent in the first period when women were engaged with tiring professional work with tedious work and prolonged orthostatism and long daily journeys. In the first period, the illegitimate and undesirable pregnancy was another cause for concern because women often used abortion attempts by abortion-inducing maneuvers. However, during the second period 2006-2015, when the female population is less involved in tiring activities, disappearing large enterprises where they were employed and respecting maternity sick leave - the social factor appears as the predominant factor of premature birth in 20 %.

The third category analyzed by the obstetric antecedents reveals that in the second period they increased to double 32.66% compared to 19.66% of the first period although an important reason in the first period of trying to get rid of pregnancy through provoked abortion has disappeared. The increase in cesarean, on-demand abortions and cervical ischemic insufficiency are factors contributing to the increase in the percentage of this category of factors in the etiology of prematurity. Compared to the first period when scarring uterus was at a low frequency only 2% in the etiology of prematurity in the second period it was 10 times more frequently 21%.

Among **pregnancy-related factors** and pregnancy-induced hypertension representing 60% of these factors, adding to them we add twin pregnancy (almost equal to the two groups 12 (4%) and 19 (6.33%) twin pregnancies), pelvic presentation, urinary infection including 8-10% asymptomatic UTI.

The pathology associated with pregnancy recorded a 3% increase, cardiovascular disease being the most common.

Urinary infections, including asymptomatic UTI treated during pregnancy (5.33%) as well as pregnancy-induced hypertension, to which we add fertility 3% and thyroid diseases with 1.33% which are currently more commonly diagnosed.

Congenital malformations of the genitals and the fibromatous uterus having a rate of 2.33% are other etiological factors of premature birth that have increased in percentage due to the introduction of ultrasound ecography in pregnancy dispensaries after 1990.

Table VII. is the etiology of prematurity in the two different social periods

Criteria	1976 - 1985		2006 - 2015	
The biological constitution of the pregnant woman	77	25,66%	30	10%
Social factors	53	17,66%	60	20%
Obstetrical background	59	19,66%	98	32,66%
Factors related to the ongoing pregnancy	58	19,33%	70	23,33%
Pathology associated with pregnancy	17	5,66%	24	8%
Etiology completely unknown	36	12%	18	6%
Total	300	99,97%	300	99,99%

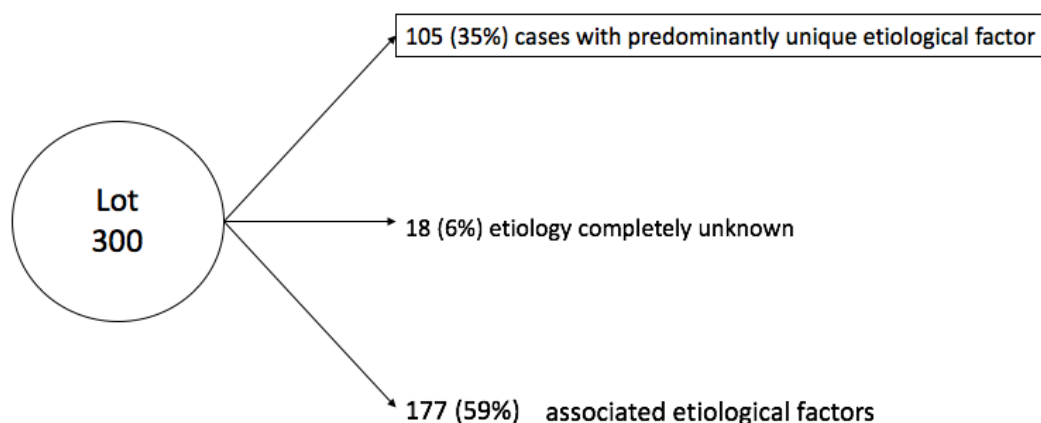


Figure 1. shows the systematization of etiological factors

We mention that this classification of etiology of prematurity is made by taking and appreciating the most important factor of etiology of prematurity, in 105 (35%) being able to detect a unique determinant factor. Taking into account this aspect of the 300 cases analyzed in 105 (35%) of the cases, we were able to detect a predominantly unique etiological factor, in 18 (6%) the etiology was completely unknown and in 177 (59%) cases it was associated with other etiological factors.

I. Factors related to the biological constitution of the pregnant woman		1976-1985		2006-2015	
	1.Primipair under 20 years	22	28,57%	6	20%
	2.Primipair under 18 years (underage)	10	12,98%	4	13,33%
	3.Primipair over 35 years	12	15,58%	3	10%
	4.Waist <155 cm	8	10,38%	3	10%
	5.Weight under 45 kg at the beginning of pregnancy	5	6,49%	1	3,33%
	6.Negative Rh	12	15,58%	9	30%
	7. Malformed uterus	8	10,38%	4	13,33%
	8. Total	77	99,97%	30	99,99%
II. Social Factors		1976 - 1985		2006 - 2015	
1976-1985 - 53 = 99,96%	1.Unlegitimate / unwanted pregnancy	7	13,20%	4	6,66%
2006-2015 - 60 = 99,97%	2.Tiring work	13	24,52%	9	15%
	3.Prolonged orthostatism	8	15,09%	10	16,66%
	4. Long daily journeys (shuttle)	9	16,98%	8	13,33%
	5. More than 3 floors without an elevator	6	11,32%	8	13,33%
	6. Children abandoned at the children's home or adopted	4	7,54%	4	6,66%
	7. Very low socio-economic level	5	9,43%	15	25%
	8.Lack of home	1	1,99%	2	3,33%
	9.Total	53	99,96%	60	99,97%

<u>III.Obstetrical background</u>		1976-1985		2006-2015	
1976-1985 – 59 99,96%	1. Uterus scar	12	20,33%	24	24,48%
	2. Premature births in a past	12	20,33%	20	20,40%
2006-2015 - 98 = 99,97%	3.Abortions	19	32,20%	15	15,30%
	4.Uterine curettage on request	10	16,97%	28	28,57%
	5. Cervical and ischemic insufficiency	6	10,16%	11	11,22%
	6.Total	59	99,96%	98	99,97%

IV. Factors related to the ongoing pregnancy		1976-1985		2006-2015	
1976-1985 – 58 = 99,96%	1. Pelvic presentation	7	12,06%	6	8,57%
	2. HTA induced by pregnancy	16	27,58%	20	28,57%
2005-2016 - 70 = 99,97%	3. Prematurely broken membranes	9	15,51%	10	14,28%
	4.Overweight	5	8,62%	5	7,14%
	5.Urinary infections	3	5,17%	2	2,85%
	6.Placenta <u>praevia</u>	6	10,34%	8	11,42%
	7.Twins	12	20,68%	19	27,14%
	8.Total	58	99,96%	70	99,97%

V. Pathology associated with pregnancy		1976-1986		2006-2015	
1976-1985 – 17 = 99,98%	1.Heart disease	6	35,29%	6	25%
	2.TB	1	5,88%	-	-
2006-2015 - 24 =99,98%	3.Thyroiditis	-	-	2	8,33%
	4.Respiratory insufficiency	1	5,88%	1	4,16%
	5.Diabetes	2	11,76%	1	4,16%
	6.Thrombophilia	-	-	3	12,5%
	7.Fibromatic uterus	1	5,88%	3	12,5%
	8.Iron deficiency anemia	6	35,29%	8	33,33%
	9.Total	17	99,98%	24	99,98%

VI.Unknown etiology

1976-1985 – 36 = 12%

2006-2015 - 18 = 6%

Statistical analysis

The data were presented as mean and standard deviations for Gaussian continuous distribution variables, Interval and Interquartile (IQR) variables for continuous Gaussian non-

distribution variables or percent (absolute frequency) for categorical variables. Continuous variable distributions were tested for normality using the Shapiro-Wilk test and for variance equality using the Levene test.

To assess the significance of differences between groups, the Student test (means, Gaussian populations), the Mann-Whitney U test (averages, non-Gaussian populations) and the Pearson chi-square or Fisher test were used.

Data were analyzed using the SPSS v.17 software (SPSS Inc., Chicago, IL, USA). A P value of 0.05 was considered the threshold for statistical significance, and a confidence level of 0.95 was considered for estimating intervals.

CONCLUSIONS

The structure of the etiology of prematurity has changed over the past 30 years with the structural and economic changes of society by moving to a new social structure.

The average rate of prematurity in Arad County is higher by almost 4%, increasing from 6,80% to 8,06% to 10,37% if we take into account also the county births solved in other hospitals outside the county.

Changing the social structure has led to a change from a prenatalist forced health policy to a liberal family policy through family planning of the moment of conception of the offspring.

The change in the economic structure of the society made the social factor to move to the third place, with 20% of the causes of the etiology of prematurity after obstetric antecedents 32,66% and factors related to the current pregnancy by 23,33%.

The pathology associated with pregnancy as the etiologic factor of preterm birth is greater by 3% than in the period 1976-1985 probably also because of the increase in diagnostic possibilities better than in the comparative period.

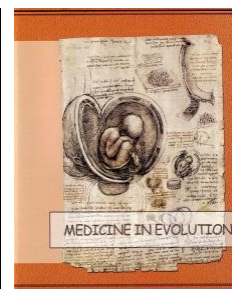
The completely unknown etiology of premature birth decreased by more than 50% from 12% between 1976-1985 to 6% between 2006 and 2015 probably due to the progress of modern obstetrics and positive diagnostic possibilities more precisely.

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Hepatitis C - the silent burden of an individual. Personal psychoemotional exhaustion syndrome



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Abstract

Aim and objectives: The approach to the psychosocial impact of hepatitis C and defining the personal psychoemotional exhaustion syndrome.

Material and methods: Analytical study, descriptive, retrospective, designed both from a theoretical part of the specialized literature, and from an applied part based on my own researches, conducted during 2010 - 2016, at local, regional and national level, by various multicentre, cross-sectional, ecological studies about the epidemiology and evolution of hepatitis C.

Results: The negative social impact for Romania 604.16 DALYs per 100,000 population, well above the regional average. The psychosocial effects were: damage of the central nervous system, fatigue at one time (between 20% and 80% of patients) and affected QALY. Hepatitis C induces neuro-inflammatory activity and brain dysfunction, manifested in depression or generalized cognitive impairment. The platelet from immune regulatory system, as a largest amount of serotonin, could be a linking element between mental stress conditions, psychiatric or somatic disorders. The platelets count and the hepatic fibrosis stage (severe fibrosis) have a direct correlative link.

Conclusions: Stress, linking element in validation of scientific hypothesis: DALY due to hepatitis C is very high in Romania. Risk behavior and social vulnerability, factors which act, simultaneously or independently, both for the onset of hepatitis C and personal psychoemotional exhaustion syndrome. The platelet, link elements between mental stress and the hepatic damage stage, via a bidirectional mechanism, is a hypothesis which requires additional studies. The new syndrome highlights individual psychoemotional potential, as well as personal resilience capacity.

Keywords: hepatitis C, DALY, platelet, mental stress.

INTRODUCTION

Hepatitis C is equally a ubiquitous disease, but also global. Global infection with hepatitis C virus (HCV) is about 170 million people, representing about 3% of world population [1].

From the diseases included in liver pathology, this disease starts to become, aggressive and silent, the main cause of death. Between the complications of the disease, the most powerful is hepatic cirrhosis and hepatic cancer [2].

The virological burden of the disease revealed that most common genotype in Romania is 1 with subtype b, responsible for nosocomial transmission, disease aggressiveness, length of treatment, resistance to standard treatment, relapse and the emergence of hepatic cancer, data confirmed by genotyping study conducted during 2004 to 2006 by a team of researchers of the National Institute of Medico- Military Research-Development" Cantacuzino"[2, 3].

The social environment is managed by the individual's ability to establish or destroy various human relationships, in a world where (ultra) technology offers different variants of symbolic communication, but which is, in fact, a simple illusion, the communication being in isolation [4].

According to the report of European Agency on Health and Safety at Work, in modern societies, work and family are the most important facets in both women and men' lives, and conflictive demands arising from them have turned out to be one of the five emerging psychosocial risks in today's occupational world [5].

Psychic uniqueness has as dominant premise the hereditary biochemical individuality of the human body, and psychosomatic medicine is performing the bidirectional mechanism [6].

The human psychic can be damaged, transiently or permanently, under the action of a force (stressor agent), generating a mental trauma and the human being looms the mysterious and fearless nothingness, on whose passionate denial he has built up his whole life belief. In another sense, nothingness represents the failure of life and values, the nonsense [7].

Until now there are no scientific studies to calculate and to validate the rate of "emotional" exhaustion or cross-sectional studies to validate the application limits of Maslach's burnout inventory [8,9].

Aim and objectives

The approach to the psychosocial impact of hepatitis C, in the context of alarming epidemiology and serious liver damage. Defining the personal psychoemotional exhaustion syndrome concept as a result of the "fight" between mental stress and illness.

MATERIAL AND METHODS

Analytical study, descriptive, retrospective, designed both from a theoretical part of the specialized literature, and from an applied part based on my own researches. The documentation was made from medical databases (PubMed/Medline, Embase, Psychinfo), using different search engines and data filtering. The search terms used were: "HCV", "hepatitis C", "burnout", "emotional exhaustion", „personal exhaustion", „posttraumatic stress disorder".

My own researches were conducted during 2010 – 2016, at local, regional and national level, by various multicentre, cross-sectional, ecological studies about the epidemiology and evolution of chronic hepatitis C infection (CHCI).

Data identified were layered, algorithm-based and have undergone processes of analysis and meta-analysis.

RESULTS

The current study proposes approach of causal factors, intrapersonal, individual, in a more complex, multifactorial and multidisciplinary manner.

The first research topic derives from the psychosocial impact of CHCI, in the context of alarming mortality and morbidity, the routes of transmission diversification and also the risk behaviors.

Another research topic was defining the concept personal psychoemotional exhaustion syndrome (PPEE) of the CHCI patient and creating the conditions to seize early, in real time, the primary symptomatology.

The third research topic establishes the psychosocial of PPEE in Romania and could serve as a start point for the future researches in the field.

By analyzing different epidemiological trends of HCV genotypes and subtypes, it showed that the mode of transmission (or certain medical practices or social behavior) has even greater significance than genetic variability of the virus [10].

Studies on risk behavior, conducted in different parts of the globe (Australia, USA) revealed a HCV prevalence of 35% (four times higher than the Australia's general population prevalence) for prison inmates and in the USA (Figure 1) a HCV prevalence of 48.8% in the study group, comparing to case-control. Association of tattoos with HCV infection was significant, with a prevalence rate of 35.2% among HCV carriers, comparing to 21.2% case-control. According as, 65.9% from HCV carriers were injecting drug users (IDU), comparing to 17.8% case-control [11].

Characteristic	HCV+ Patients (n = 1,930)	HCV- Controls (n = 1,941)	P
Age, years, mean \pm SD	55.2 \pm 9.0	55.6 \pm 11.3	0.33
Male sex	80.3	81.4	0.39
Race/Ethnicity*			<0.001
White	21.5	43.5	
Black	41.0	30.1	
Hispanic	19.8	17.8	
Other	17.7	8.6	
Born in the United States	69.7	73.6	0.003
Married	26.7	32.5	<0.001
>12 years education	35.9	22.7	<0.001
Income >\$15,000	46.7	55.5	<0.001
Currently employed	31.5	40.1	<0.001
IDU†	65.9	17.8	<0.001
Transfusion before 1992	22.3	11.1	<0.001
Intranasal drug use†	61.8	22.6	<0.001
Number of lifetime sexual partners			<0.001
0-2	13.6	17.4	
3-9	20.9	29.8	
10-25	38.2	24.9	
\geq 26	27.3	27.9	
Sex with a prostitute†	59.5	37.7	<0.001
Sex with a same-sex partner†	13.1	12.4	0.49
Incarcerated for >48 hours†	48.8	13.9	<0.001
Body piercing†	35.2	21.3	<0.001
Acupuncture†	21.7	14.7	<0.001
Drinks of alcohol per week			<0.001
None	69.3	55.8	
1-6	35.8	35.8	
\geq 7	6.4	8.4	

Figure 1. Comparative analysis of the study group and case-control according risk behavior in USA, 2013 (Popescu MC adaptation) [11]

To determine the social impact of the disease, World Health Organization (WHO) has proposed the use of three structural indicators: Healthy Life Years (HLY) - years of healthy life expectancy, Quality Adjusted Life Years (QALY) - years adjusted to quality as positive indicators and Disability Adjusted Life Years (DALY) - disability adjusted life years or disease burden as a negative indicator [2, 11].

Comparative estimate by country of HLY at birth, in 2011, revealed that there are very high differences (Figure 2) between countries, Romania ranking among the last places with 57.5 HLY for male gender and 57.1 for female gender [11].

On the other hand, in Europe, annually, it is estimated that approximately 1.2 million DALYs are lost due to hepatitis C, with an average of 134.5 DALYs per 100,000 population. Also in this region, the highest level of DALYs lost is registered in Eastern Europe where were 155 DALYs lost per 100,000 population.

	Healthy life years at birth (years)		Healthy life years at birth as a proportion of life expectancy at birth (%)	
	Men	Women	Men	Women
EU-27	61.8	62.2	79.8	74.8
DE	57.9	58.7	73.9	70.5
EE	54.2	57.9	76.1	71.3
IE	65.7	66.8	83.9	80.7
EL	66.4	66.9	84.5	80.5
ES	65.3	65.8	82.3	77.0
FR	62.7	63.6	79.6	74.2
IT	63.4	62.7	79.2	73.5
RO	57.5	57.1	81.0	73.0

Figure 2. HLY estimate at birth in EU (Popescu MC adaptation) [11]

From the study on the social impact of the disease in 2010, we determined DALY for Romania, that was 604.16 DALYs per 100,000 population, well above the regional average [2].

Another series of issues with social impact, specific CHCI, is the damage of the central nervous system. Between 20% and 80% of patients with CHCI presents fatigue at one time, affecting QALY [11].

Another phenomenon that occurs in patients with CHCI is social discrimination, virtually double discrimination, first due to the social and second due to the disease, for different types of activities such as health care system, predominantly, but also in the workplace or other social activities [10].

The recent studies revealed the evidences of adverse medical effects produced by anger, anxiety and depression, leading to chronic, toxic emotional dissatisfaction and higher vulnerability to develop various somatic disorders.

Counterpart, positive emotions produce a tonus of energy, cultivating optimism and hope, "miracle" drugs for many illnesses [12].

Acute and chronic (especially) mental stress decreases immunity of the body or disrupts the immune regulatory mechanism [13]. Also, HVC induce neuro-inflammatory activity and brain dysfunction, manifested in patients with depression or generalized cognitive impairment [11].

The researchers proposed the platelets, as part of immune regulatory system, as well as the largest amount of serotonin, to reach a link between mental stress conditions, psychiatric or somatic disorders [13].

On the other hand, in my own research, I have demonstrated the direct correlative link between the platelets count and the hepatic fibrosis stage, especially for severe fibrosis, with a progressive, aggressive and silent evolution to cirrhosis, hepatic cancer or death [11, 14].

In DSM (*Diagnostic and Statistical Manual of Mental Disorders*) the fifth edition, edited and published by APA (*American Psychiatric Association*), it does not find, defined or classified, burnout syndrome, respectively (emotional) exhaustion. Instead, we find other pathologies defined, such as: posttraumatic stress disorder (PTSD), depersonalization / derealisation disorder (DPD) or somatic symptoms and related disorders (SSRD) [15].

Etiological factors in the onset of PPEE include: emotional dissonance (the employees from police, church) [16]; work-family or family-work conflict (some employees from army, police, accounting, healthcare system) [5, 17, 18, 19]; excessive professional attachment (professions with the most intense social relationships: healthcare, educational, social assistance systems) [12, 20, 21, 22]; traumatic emotional experiences from the social environment (intimate and professional relationships); potentially addictive substances use (coffee, alcohol, energizing substances, drugs, psychotropic drugs); existence of another chronic disabling disease (individual or a close relative); intrapsychic conflict between Ego and Super-Ego, triggered by axiological thinking [22, 23].

Specific PPEE symptomatology has been approached multidirectional:

- somatic: acute/chronic fatigue, intermittent headache, tachycardia, muscle tone decrease, gastrointestinal function disorders, weight loss, various types of insomnia, a/hypomenorea, sexual dysfunction disorders, localized / generalized pruritus;
- psychological: emotional frustration, feelings of guilt, addiction tendency, irascibility, dissatisfaction, ambitions/demands disproportionate, psychoemotional immaturity, overcompensation, regression, selfdespise, inferiority complex, exaggerated fear, multiple phobias, psychoemotional flight;
- behavioral: eating behavior disorders (low/absent appetite, incomplete mastication, aerophagia), unhealthy diet, performing the job tasks with difficulty (frequent absences, program delays, lack of enthusiasm), poor communication, incompetent social interactions, poor and defective interpersonal relationships;
- consecutive morbidity: digestive (chronic gastritis, peptic ulcer, chronic colitis, etc.), cardio-vascular (essential high blood pressure), metabolic (diabetes mellitus, hypercholesterolemia, asthenic syndrome), endocrine (thyrotoxicosis), respiratory (asthma), neurological (migraine syndrome), rheumatological (rheumatoid arthritis), dermatological disorders/manifestations (excoriations, dermatitis, tattoo, piercing, signs of crucifixion, etc.), genital (functional sterility, impaired psychosexual maturation) [24].

PPEE's injury mechanism consists of several stages: 1) the action of the stressor (the shock), 2) the immediate adaptive reaction (the alert), 3) the proper adaptive reaction (the reaction), 4) the delayed adaptive reaction (the opposition), 5) the persistence of the stressor action (the chronicization), 6) the onset of PPEE (exhaustion of the body's defense mechanisms), 7) the death.

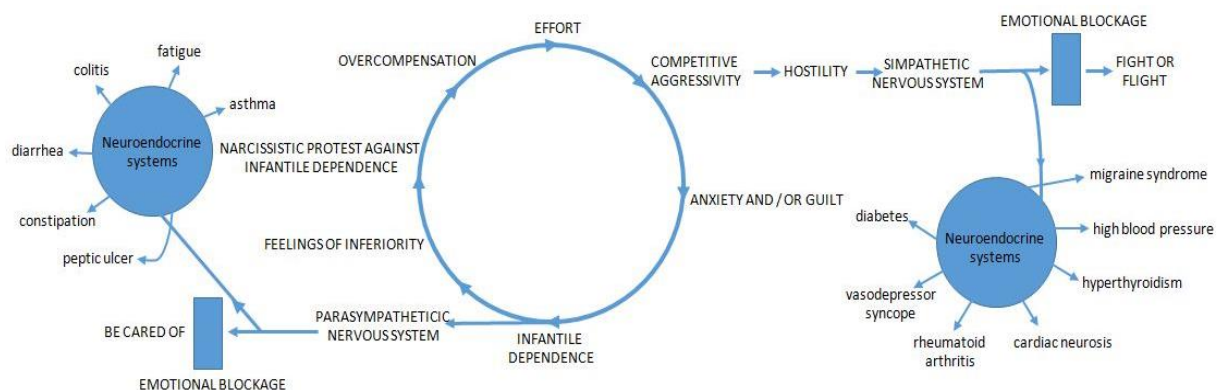


Figure 3. Comparative analysis, psychosomatic, „fight“ or „flight“ reaction versus emotional blockage (Alexander F. adaptation) [24]

From the psychosomatic point of view, the human (body), facing the imminent danger, has a “fight” or “flight” type reaction [24]. In preparing the approach of the stressor agent occur both automatic behavior, coordinated by the vegetative nervous system (sympathetic and parasympathetic), and also voluntary behavior, coordinated by the intrinsic motivations (desire for power, independence, self-assertion, etc.).

Thus, it can be described three possible successive reaction variants of adapted human body:

- the succession of reaction through 1 to 4 from the mechanism described above, after which the body relaxes, returns to the normal functioning, a possible explanation being the convergence between Ego and Super-Ego in accomplish the mission;
- the succession of reaction through 1 to 3 (eventually 4) from the mechanism, followed by the emotional blockage, which results in strong psychosomatic reactions of different organs (Figure 3), similar to consecutive morbidity described in the PPEE symptomatology. The autonomic nervous system continues the course unhindered, trying to complete the action [24], in a “virtual” way, and the Super-Ego stops its realization. Thus, the conflict created degenerates into attending of the reaction through 4 to 6 (eventually 7);
- the succession of reaction through 1 to 4 from the mechanism, followed by the “real” completion of the action, but in a chronic way, repetitive (the reaction 5). Thus, the human body which does not have sufficient resources or does not have developed resilience capacity [7], will develop PPEE (the reaction 6) or even dies (the reaction 7).

DISCUSSIONS

The mortality and the morbidity tributary to CHCI is expected to grow dramatically among the next 50 years, taking into account the fact that incidence of hepatitis C new cases decreased significantly starting with 1989 [11].

The study of global mortality of hepatitis C, in 2013, have emerged the global increase of deaths in 2013 to 7.3951 million, compared to 1990, with average growth of 321,526 cases per year, due to poverty, increasing social disparities on a global scale, poor nutrition or unhealthy diet, chaotic lifestyle or pollution in large cities [2].

Most studies and researches conducted to date analyzed all three subscales of burnout syndrome at the same time: emotional exhaustion, personal depersonalization / derealisation, professional inefficiency, according to Maslach’s burnout inventory, with predominantly highlighting the effects on the workplace and the professional career development [8].

Apparently, the women are more prone to develop PPEE than the men [22, 25], but other studies in the literature are conflicting this, distribution probability of PPEE developing being almost equal by gender [26]. Instead, for men, the need for independence increases the susceptibility of PPEE developing, especially, for the professions where this is demanded [21].

Statistical differences reported in other studies can be explained in the light of a degree of an “emotional honesty”, in data reporting and personal situations, of women comparing to men which frequently masks the emotions, showing a pattern of “positive dissociation” or of „personal efficiency” [12, 26].

On the other hand, the conflicts between Ego and Super-Ego and intrapsychic process of axiological thinking crystallization, can lead to situations where the axiological receiving conscience is insufficiently cultivated or it is contaminated, disturbing even the values it contains. An example is the “pseudo-value” attitude, which is a great danger, thus the human being not only loses his meaning, but he is deepening in the meaninglessness of his life, he is brutifying, he is stopping to be human, he is falling into hopelessness, he is suiciding or killing [23].

From a psychosocial point of view, certain behaviors like “fight” or “flight” can trigger /speed up the PPEE onset. Thus, I have raised some questions / hypotheses:

1. How does accomplish the “fight” with the danger for the Romanian?

1.1. Does he “fight”-ing according to the courageous and unbeatable savior's myth?

In the past, many times, the “fight” with the danger was unfolding according to the virile and insensitive savior's myth. Nowadays, the savior (especially the professional one from emergency medical services, psychologist, fireman, serviceman, etc.) attend classes, trainings, knows how to act effectively and to prevent the onset of burnout syndrome or PPEE [7].

1.2. Does he act through agitated, inappropriate behavior like “stray sheep”?

Many times, he becomes the potential victim of risk behavior (injecting drug use, unprotected sex, etc.) or enters into a vicious circle of turning exhaustion straight to PPEE, burnout syndrome and even depression [7,10].

A particular phenomenon for the risk of PPEE developing, called by psychiatrists and psychologists “The Italian Syndrome” is triggered by positive intrinsic motivations (opportunity, prosperity, increasing the quality of life, “escape” from toxic or violent intimate relationships), but it is hiding certain risks and traps: social vulnerability, inadequate social behaviors, CHCI, people often reaching socially stigmatized [10, 27].

1.3. Or does he act through automatic behavior like “flock”?

Thus, enter into a vicious circle of potential risk behavior (signs of crucifixion, intranasal or injecting drug use, unprotected sex, etc.), especially, if the leader (“shepherd of the flock”) is malicious. We can exemplify the cathartic crisis triggered among the unbelievers by the Anglican preachers, between 1720-1760, with the purpose of religious conversion or, more recently, the controversial case of MISA (Movement for Spiritual Integration in Absolute) from Romania [7,10, 28].

2. Where does shelter the Romanian who “is fleeing away” in the face of danger?

2.1. In work, becoming “workaholic” and candidate for burnout syndrome?

The burnout subject has been widely discussed, studied and reviewed in the literature, and in the latest studies, the emotional exhaustion subject, as the central element of the burnout syndrome [8].

2.2. In the family arms, in an avoidance and regressive behavior?

The family or friends of the traumatized person manifest, many times, noisy compassion, hiperprotection, then they get tired, they become cold and aggressive and the “victim” is self-isolating [7], she interrupts connections with close people, installing communication barriers and ending in a vicious circle delimited by feelings of guilt, shame, low self-esteem, social exclusion, with the epicenter fixed on the triggering traumatic event (the stressor agent).

2.3. Or in a new (intimate) interpersonal relationship with toxic potential, the ability to analyze rational and objectively risks / benefits being strongly affected by the PPEE prodrome?

The results of sociological and behavioral research, they analyzed statistically intrapersonal conflict work-family, have demonstrated a positive correlation between the unsatisfactory individual family environment, susceptibility of PPEE developing, due to the job demand [12] and insufficient intrapsychic energy to carry out the resilience process.

For some employees in the military profession, interpersonal relationships, family / intimate, have become so inadequate, that they have defined this phenomenon, quite often, as, family paradox”, the family is not just a source of support, but also a source of stress [5].

Future studies about the negative impact of PPEE will be required on behavioral /social/socio-professional factors and, equally, about social discrimination, social stigma of CHCI patients, in a complex, multifactorial and multidisciplinary approach.

CONCLUSIONS

1. Hepatitis C is one of the serious liver diseases with a strong psychological, emotional and sociological impact.
2. DALY due to CHCI is very high in Romania compared to other countries, and the use of stress as a linking element can lead to the testing and validation of a new scientific hypothesis.
3. Risk behavior and social vulnerability are two factors that can act simultaneously or independently, both for the onset of CHCI and even PPEE.
4. The platelet as linking element between mental stress and the hepatic damage stage, via a bidirectional mechanism, a hypothesis which require additional scientific studies.
5. The new PPEE model emphasizes individual psychoemotional potential, as well as on personal resilience capacity.
6. . Mental stress of everyday life and its psychosocial impact can trigger PPEE both for adult patient and for child's parent with CHCI, who already pay a real cost, unquantifiable: the emotional cost.
7. Prophylaxis of CHCI and PPEE should be done through public education programs, as early as possible, by including in the curriculum of civic education courses the notions of: communicable disease, risk behavior, vaccine (protection through vaccination), hope, optimism, „healthy”laughing.

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Malignant melanoma of the gastrointestinal tract: an unusual localization



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Abstract

The presence of melanoma in the primary digestive tract is unusual and disputed, mainly due to the lack of evidence confirming the existence of digestive mucosa melanocytes elsewhere than the esophageal, rectal and anal mucosa. We hereby analyze a series of cases diagnosed with malignant melanoma of the digestive tract, along with the differential diagnosis and a literature review.

Keywords: melanoma, mucosa, gastro-intestinal tract, immunohistochemical investigations.

INTRODUCTION

Melanoma is one of the most common and aggressive forms of neoplasm found in the skin, with risk factors related to ultraviolet radiation exposure, combined with skin type and genetic predisposition [1]. Commonly, melanoma occurs predominantly in the skin, at the cutaneo-mucosal junctions, or in the uvea, making the gastrointestinal (GI) occurrence of the lesion unusual and extremely rare.

We hereby report a series of twelve (n=12) cases diagnosed with malignant gastrointestinal melanoma over a period of 12 years, 10 of which showed no history of malignant or atypical cutaneous melanocytic lesions.

MATERIAL AND METHODS

After a research of the “Victor Babes” National Institute of Pathology database for digestive melanomas, 12 cases (Table 1) diagnosed between 2015 and 2017 were encountered. For the selected cases, we retained: histological diagnosis, digestive localization, history of primary melanocytic tumor, gender and age of the patients, morphological and immunohistochemical features.

Table 1. Clinical features of the cases

No	Sex	age	site
1	F	62	anal
2	F	8	anal
3	B	54	anal
4	B	65	colon
5	B	79	appendix
6	F	84	small bowel
7	B	75	small bowel
8	B	50	small bowel
9	B	66	rectum
10	F	73	anal
11	F	62	small bowel
12	F	82	anal

The Hematoxylin-Eosin (HE) slides, and immunohistochemical (IHC) tests were re-examined by 3 pathologists experienced in tumors with unknown primary location, cutaneous melanomas, and tumors of the digestive tract. For optical examination we used Leica DM 750 microscopes equipped with Leica ICC50W digital cameras, and for the morphological and comparative study we used the Aperio AT2 Digital Whole Slide Scanner and the Aperio-ImageScope V12.01 viewing software. The immunostaining was performed using the indirect protocol for paraffin embedded tissue sections, with commercial antibodies - primary monoclonal antibodies like MITF (Dako M3621) and MelanA (Roche-Ventana A103 clone), as well as polyclonal antibodies like Vimentin and S100 (Roche-Ventana). Endogenous peroxidase activity blockage was obtained by incubation in 3% hydrogen peroxide; antigen retrieval was achieved by heat induced protocol (HIER); furthermore, we used Avidin-biotin complex (ABC) method for staining, with Mayer hematoxylin counterstaining.

RESULTS

Presentation of the cases

Case 1: A 62-year-old lady with a history of lymphoma, presented for rectal bleeding. Clinical findings revealed a 4 cm palpable mass with a vegetative appearance, with patches of

ulceration and hemorrhage. She underwent surgery. After histopathological processing of the specimen, the tumor was diagnosed as malignant melanoma. IHC tests were positive for MelanA, HMB 45, S100, MITF and Vimentin. The Ki 67 proliferation index was ~ 70%.

Case 2: A 8-year-old girl who presented for a polypoid perianal pigmented lesion measuring 0.74 cm in diameter histologically diagnosed as malignant melanoma after resection (Fig 1, 2). The patient had no history of melanocytic lesions. The lesion was S100, MelanA, HMB45, CyclinD1 positive, with a Ki 67 index of 20%.

Case 3: A 54-year-old male who presented for rectorrhagia. A colonoscopy uncovered a 2 cm lesion of the rectal mucosa, which was biopsied. Histopathological report describes a poorly differentiated malignant proliferation. After performing the IHC tests, we excluded a carcinomatous or sarcomatoid proliferation as the tumor cells were AE1-AE3, DOG1 and CD117 negative. Moreover, S100, HMB45 (Fig 3) and Vimentin stained positive in tumor cells, with a Ki67 index of 40%. The tumor was diagnosed as malignant melanoma, without being able to determine the primary or metastatic nature of the tumor. Consequently, as no primary lesion was identified, the tumor was, though, classified as primary ano-rectal malignant melanoma.

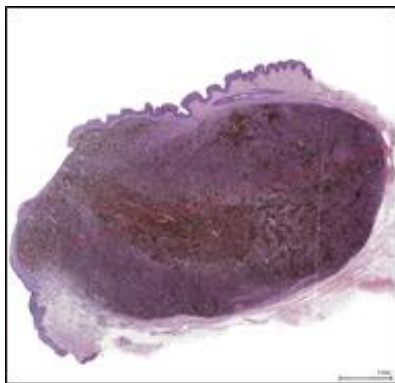


Figure 1. Excision specimen showed a nodular pigmented mass, HE, 10x

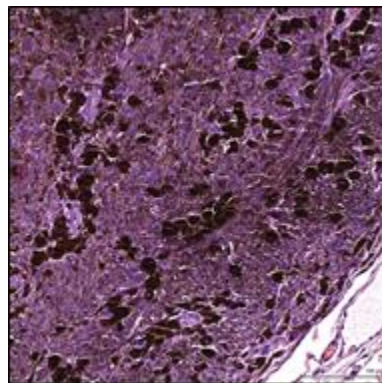


Figure 2. Heavily pigmented neoplastic cells, HE stain, 200x

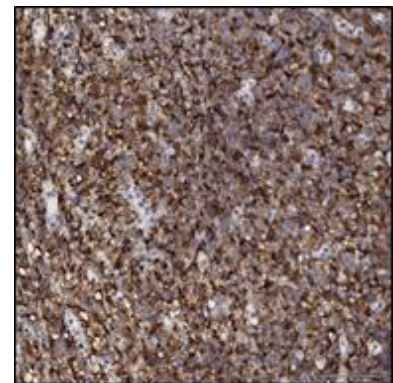


Figure 3. Neoplastic cells positive for HMB45 staining, 200x

Case 4: A 64-year-old man diagnosed at colonoscopy with a colonic pigmented mass measuring 1.8 cm, thus raising the suspicion of malignant melanoma. The histopathological and IHC examinations (S100, VIM, Melan A and HMB45 positive) confirmed the clinical suspicion. In the absence of a primary tumor, it was diagnosed as primary intestinal malignant melanoma.

Case 5: A 79-year-old man was admitted with epigastric pain. An emergency appendectomy was performed. Microscopic examination revealed a proliferation of round cells within the periappendicular fatty tissue (1.9 cm in diameter). The proliferation had an infiltrative appearance with a high mitotic rate (Fig 4). The histopathological suspicion was of a non-Hodgkin lymphoma. The performed IHC tests did not confirm the lymphomatous nature of the tumor proliferation as CLA, L26/CD20, CD3 and CD38 were negative in all tumor cells. MNF116 was also negative, whereas S100, Melan A, HMB 45 were all positive in tumor cells, thus guiding the diagnostic towards an appendicular metastatic melanoma.

Case 6: A 84-year-old female presented with a swollen abdominal mass and persistent pain. Clinical examination raised the suspicion of a tumor; hence a segmental small bowel resection was performed. The pathological examination revealed a 2 cm pigmented nodular tumor with epithelial morphology infiltrating the intestinal wall. The IHC tests (Melan A - Fig. 5, S100 - Fig 6, HMB45) confirmed the diagnostic of a metastatic malignant melanoma.

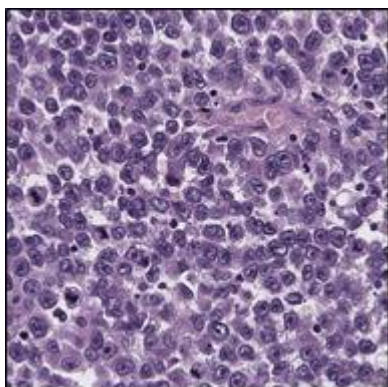


Figure 4. High mitotic count, HE stain, 400x

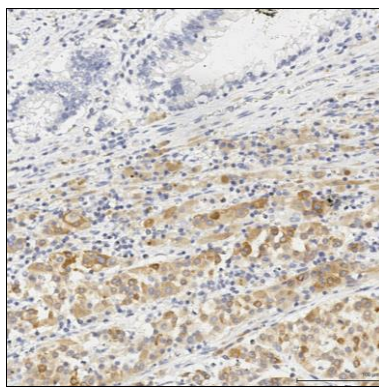


Figure 5. Melan A positive expression in tumoral cells, 200x

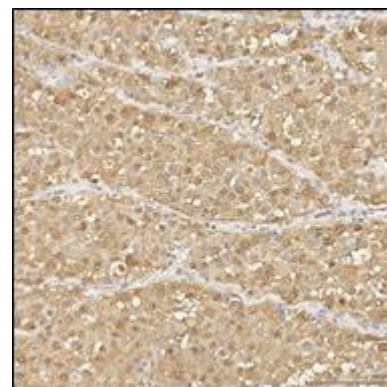


Figure 6. S100 positive expression, 200x

Case 7: A 75-year-old man presented with a small bowel mass (2.2 cm) with the suspicion of GIST at computed tomography scans. The patient underwent segmental intestinal resection. The microscopic examination of the tumor revealed an ulcerated epithelioid cell proliferation with a high mitotic count. IHC testing for mesenchymal differentiation was negative. Instead, the tumor proved intense positivity for MelanA, HMB45, S100, and Vimentin, confirming the diagnosis of a malignant melanoma originating in the small intestine. We also highlight that no other melanocytic malignant tumor was found.

Case 8: A 50-year-old patient with malignant melanoma history (located on the scalp), presented with abdominal pain and discomfort. The colonoscopy exam revealed an ulcerated area in the small bowel (1 cm). The biopsy showed ulcerated superficial intestinal mucosa fragments with non-pigmented hypercellular malignant cell infiltration arranged in strands and consisting of rounded, oval or elongated cells, with moderate pleomorphic aspects, eosinophilic cytoplasm and basophilic oval nuclei, IHC tests showed positivity for Vimentin, S100, MelanA and MITF (Fig 7). MNF116 was positive in glandular epithelial cells of the remaining mucosa and CLA was positive in small reactive lymphocytes. The Ki67 proliferation index was 75%.

Case 9: A 66-year-old male patient with no history of malignant melanoma presented in the surgery department for rectorrhagia. Endoscopy revealed a 1.4 cm rectal tumor mass. Histopathological examination of the excision specimen showed an ulcerated 1.4 cm size tumor, consisting of round cells with eosinophilic cytoplasm, vesicular nuclei and frequent mitoses, arranged in a solid pattern with extended necrosis and focal presence of brown pigment. IHC tests showed diffuse positivity in tumor cells for Vimentin, S100, MELAN A and HMB45. AE1/AE3 and Chromogranin were negative whereas Ki67 was positive in 70-75% of the tumor cells.

Case 10: A 73-year-old female patient with no history of malignant melanoma was admitted in the surgery department for anorectal bleeding. Clinical examination revealed a 1.8 cm size protrusive mass, excised with the suspicion of carcinoma. Microscopically, we found a polypoid proliferation at the anorectal junction, consisting of a population of round to oval cells, spindle in certain areas, arranged in fascicles and large strands, with frequent atypical mitoses (~32 mitoses /1mm²), areas of tumor necrosis and invasion within the muscular layer of the mucosa, with a maximum thickness of 7 mm. The IHC tests were positive for MelanA, HMB45, and negative for CK34BetaE12, CEA, CK5/6 and Synaptophysin. Ki67 proliferation index was 70%.

Case 11: A 62-year-old female patient with a history of cutaneous melanoma was diagnosed with a 2.3 cm mass located in small bowel on a routine endoscopy (Fig 8). After excision and histopathological processing, it was addressed to INCDVB with the suspicion of poorly differentiated carcinoma. At microscopic examination, a proliferation consisting of

average to large size cells organized in strands, with nuclear pleomorphism and frequent mitoses was revealed. The IHC tests were positive for Vimentin, S100, MelanA and HMB45. AE1/AE3 was negative in tumor cells.

Case 12: The last reported case is of an 82-year-old female patient presenting for recurrent rectorrhagia. At colonoscopy examination a polypoid tumor of the anal canal (1.45cm in size) was identified and excised, with the suspicion of achromic melanoma. The histopathological examination describes a fragment of anal mucosa showing an epithelioid cell proliferation with increased size nuclei (Fig 9). The IHC tests showed negative expression for AE1-AE3, Chromogranin and Synaptophysin. S100, Vimentin, MITF and MelanA were positive, with a Ki67 index of 80%, thus confirming the diagnostic of malignant melanoma with possible anorectal origin.

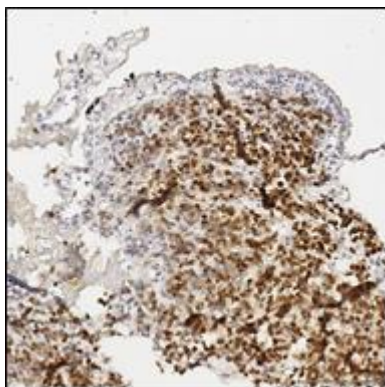


Figure 7. MITF positive staining, 200x

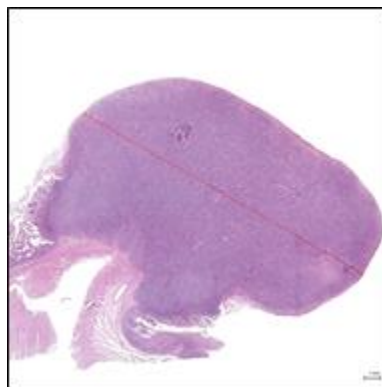


Figure 8. Excision specimen show a 2cm nodular mass, HE stain, 10x

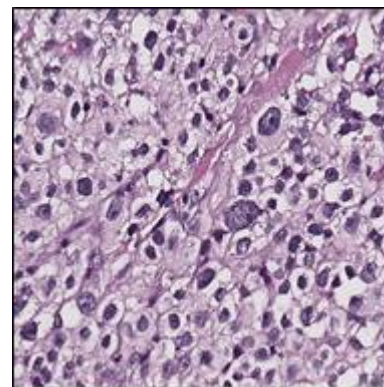


Figure 9. Highly pleomorphic cells, HE stain, 400x

The data for the 12 cases we analyzed partially correlates with those in the literature. The average age of the patients was 63 years, with a median age of 65 years. Sex distribution was equal. An exceptional case is the 8-year-old child diagnosed with perianal melanoma. 83% of patients came from the urban area, probably due to higher addressability and accessibility to medical services. Only 2 patients have reported a history of malignant melanoma.

The largest diagnosed lesion was 4 cm in size, the rest of the tumors measuring around 2 cm or less. The most common location was the anal canal (41%), followed by the small bowel (33%), colorectal localization (25%) (Table 1).

All the excision specimens were nodular type, and most tumors (9 cases) had an epithelioid pattern, with 3 cases presenting as mixed epithelioid and fusiform proliferations. More than half of the cases did not show pigmentation, making the endoscopic diagnosis more difficult. Additionally, ulceration, in 5 cases, and inflammation, in 8 cases, completed the histological appearance, aggravating the prognosis.

Overall IHC tests showed melanosomal protein specific markers positivity, with HMB45, Melan A and S100 being the most frequently used markers for confirming the diagnosis. If any suspicion of epithelial, neuroendocrine or mesenchymal proliferation was raised, appropriate markers for differential diagnosis, were added.

DISCUSSIONS

Malignant gastrointestinal melanomas can present either as primary or metastatic tumors. Although recent studies documented the presence of mucosal melanocytes in oral [2], esophageal [3], rectal and anal mucosa [4], the upper respiratory tract [5], vagina and cervix [6], the existence of primary gastrointestinal melanoma is still controversial given the absence of studies demonstrating the existence of melanocytes for the rest of the digestive tract mucosa. The theories that support the above-mentioned hypothesis refer to an ectopic

migration of melanocyte precursors from the neuronal crest. In 1984, Tabaie proposed the concept of APUD cells theory in which he postulated that tumor cells are derived from the cells of APUD system [7]. Another theory extended by Mishima considers that primary melanoma of the GI tract could originate in Schwannian neuroblastic cells found within the autonomic intestinal innervation tract [8].

The recent literature review by P. Ernfors [9] discusses the so-called migration of melanoblasts from the epidermal ridges and demonstrates, the evidence of an alternative path to the one proposed by Mintz. Also, it has been demonstrated the existence of site-specific cell development niches, asserting the appearance of melanocytes corresponding to the detachment of cells from terminal nerve fibers at the dermal level, event that coincides with the expression of MITF and SOX10 and inhibition of FOXP3 expression. In addition, it is highlighted the stem cell behavior of Schwann precursors cells which will further suffer either a melanocytic or glial differentiation. Furthermore, it is considered that the inhibition of FOXP3 prevents both migration and differentiation of melanoblasts [10]. Consequently, the terminology and classification of melanocytic tumors partially overlaps with those derived from primitive neuroectodermal crest and also with peripheral nerve sheath tumors, in which endoneural fibroblasts and Schwannian cells are found.

The gross aspects of the lesions may vary from pigmented nodule with mucosal growth and ulcerated center (described as “bull's eye image” on X-ray), to an achromic nodule or a tumor mass with varying degrees of necrosis and melanosis [11]. Regarding anal site, tumors are often polypoid, mostly ulcerated and sometimes pigmented.

Histologically, the tumors are represented mostly by nodular proliferations, with fusiform or epithelioid cells in varying proportions. These melanocytic tumors should be differentiated from other common gastrointestinal proliferations with similar morphological features like lymphomas, poorly differentiated carcinomas, neuroendocrine tumors, leiomyosarcomas, GNET (Malignant gastrointestinal neuroectodermal tumor), GIST (Gastrointestinal stromal tumor), GANT (Gastrointestinal Autonomic Nerve Tumor) or MPNST (Malignant Peripheral Nerve Sheath Tumor). The most similar immunophenotype is that of clear-cell sarcomas (originally called digestive melanomas) [12].

There are biological differences between cutaneous and mucosal melanomas revealed by molecular tests. Unlike in cutaneous melanomas, BRAF mutations are rarely seen in mucosal melanomas, while c-KIT mutations, which are rare in cutaneous melanoma, appear in up to 50% of mucosal melanomas [13]. Antonescu et al. [14] found that 15% of anal melanomas had c-KIT mutation, showing that this mutation was associated with imatinib sensitivity in vitro.

Also, a discordance between the phenotype and the localization is seen at a molecular level regarding the mutations encountered in uveal tumors (GNA11) and mucosal tumors, thus showing a more frequently RAS (K and N) mutations with the involvement of PI3K and MAPK tumorigenic path. Molecular biology studies have led to provisional molecular classifications [15] in “sun” signature melanomas. Also, these studies led to the identification of specific mutations for uveal melanomas (GNAQ/11) and determination of the mutagenic load on tumor categories, characterized by increased mutations and aneuploidy in cutaneous melanomas, and by euploidy and reduced mutational heterogeneity in mucosal melanomas. From a diagnostic point of view, they allow the “decryption” of metastases with unknown primary site, including those with full regression.

A significant feature in the follow-up and treatment of these patients is the lack of a validated clinico-pathological staging system, although, solutions have been suggested in various publications. Thus, Thoenke proposed in 2004 [16] the following staging variant: Stage I - primary localized melanoma; Stage II - metastasis in regional lymph nodes; Stage III - distant metastases. The maximum thickness of tumor invasion or anatomical invasion cannot be used due to the lack of analogous structures in the mucosal epithelium that could

correspond to the skin structures. However, some reports show that the depth of the invasion correlates with prognosis for head and neck mucosal melanomas [17]. Tumor volume and mitotic activity are more consistent parameters [18].

CONCLUSIONS

Recent data on molecular biology along with clinical features suggest that mucosal melanomas are a separate entity from cutaneous melanomas with prognostic and therapeutic implications. Literature review highlights a rapidly changing vocabulary, making it difficult to identify and meta-analyze the reported cases. The linkage with lesions like GNET and the reclassification of melanocytic lesions (due to molecular signature) restrict the list of potential suspects from being named *bona fide* primitive digestive melanomas. While waiting for a diagnostic key - a specific test - the term "digestive melanoma" is, in our opinion, proscribed to a similar outcome as "melanocarcinoma".

To summarize, gastrointestinal melanoma is an extremely rare neoplastic lesion of the digestive tract. There are no specific symptoms, nor specific imaging data. A basic approach to the diagnosis involves a complete morphological examination of the immunophenotypic profile using IHC markers, followed by FISH testing or by a direct genomic screening to further classify the lesion and apply personalized therapy options with mutation-specific inhibitors. Mutation testing is necessary to achieve a definitive diagnosis and to reclassify emerging nosological entities. We were led to conclude that the integrating role of the pathologist is often crucial in establishing the definitive diagnosis.

Conflict of interest: The authors declare that they have no conflict of interest.

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Dental Hygienist

Full title: European Training Platform for Continuing Professional Development of Dental Hygienist

Start: 2015/09/01

Finish: 2018/08/31

Programme: ERASMUS+

Sub-Programme: Key Action – Strategic Partnership

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Oral health is a determinant factor for quality of life, essential for well-being, and an integral part of general health.

Our mission is to promote oral health and the cost effective prevention of oral diseases in Europe. In the EU, the socio-economic burden of oral diseases is considerable: they affect the majority of school-aged children and adults and account for 5% of public health spending". The European Platform for Better Oral Health.

The dental hygienist is the key provider of preventive oral care in order to promote and improve the oral health of individuals, families and groups in society. The European inequality in access to oral health care can be tackled by harmonisation of dental hygienist education on ground level and increasing access to continuing education.

The goals of EuHyDens are:

- ✓ Demonstrate the importance and role of dental hygienists in the society by improving skills and knowledge.
- ✓ Harmonization of dental hygienists qualifications in Europe.
- ✓ Recognition of the dental hygienist profession in all EU-member states.
- ✓ Mobility of dental hygienists and cross-border cooperation among stakeholders
- ✓ Strengthen the position of dental hygienists by encouraging entrepreneurship activities and by promoting communication and mobility among the dental hygienists within the EU-nations.



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Erasmus+

Patient's positioning protocol for dental photography



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Abstract

Introduction: Dental photography has become nowadays an indispensable tool for everyday dental practice. Since it plays a crucial role in diagnosis and treatment planning, as well as laboratory communications and forensic documentation, the recorded information has to reach high levels of accuracy.

Objective: Using a standard protocol for dental photography we have the possibility to reproduce the initial position, whenever necessary, during the dental treatment.

Material and methods: In order to monitorize the patient's position related to the Cartesian axes, we have used three water-level devices, two of them were fixed on a face shield frame and the other one on the camera.

Discussion: Precise patient positioning during photo-session is fundamental not only to Digital Smile Design but also for a successful clinical documentation. All the data recorded is the base on which we will formulate the diagnosis, treatment strategies, and follow-up the outcomes. At this stage, any mistake will compromise the following steps, just like the "domino effect".

Conclusion: Standardized protocols, as part of quality management, are vital in creating controlled and replicable results. Extending the photographic protocol with these additional elements allows the dentists to use accurate patient recordings and facilitates the integration of dental photos in their everyday routine.

Keywords: *dental photography, digital smile design, patient orientation, photographic protocol*

INTRODUCTION

In modern dentistry, a complete therapy plan includes a series of patient's intraoral and extraoral photographs, therefore clinical photography has become an integrated part of daily practice. The evolution of photographic process has changed the way dentists can diagnose, treat and communicate with their patients¹. Furthermore, dental photography is a useful tool for communication between doctors and technicians, or other referrals, and it could be a reliable instrument for marketing and promoting the practice. Last, but not least, it could help to transform routine practice into a source of satisfaction, as it is a wonderful way to appreciate the results of current therapy, pleasing to both the clinician and the patient.

Aim and objectives

Excellence in dentistry involves strictness and control. Evaluation of data recorded by photography is an indispensable part of the decision-making process and treatment monitoring, as well as part of the final evaluation of the results. If not all pictures are taken at the same incidence, or/and the patient's posture varies, the difference between initial clinical findings and the intermediate or final results may not be distinguishable². In addition, if the purpose of dental treatment is aesthetic and the photographs are supposed to be used for Digital Smile Design (DSD), the importance of the patient's position in front of the camera is even higher. The risk of failure is increased by setting this position in empiric ways.

Our proposed new method aims to determine the proper posture of the patient for dental photography and the proper angle of the camera, with the advantage of reproducing them whenever is necessary. Using a standardized protocol we can achieve predictable results every time we need a photographic documentation.

In the aesthetic field, most of the time, the pictures of the patient are vital for designing an ideal smile. Using either dedicated software for DSD or just a common PowerPoint/Keynote software, some specific intraoral and extraoral photographs are required. These photographs must provide the real dimension and shape of the teeth (Fig.1) in order to generate efficient and predictable clinical procedures like wax-up, mock-up and finally prosthetic elements³. A slight inclination of camera or patient's head could lead to significant distortion of reality (Fig. 3-5).

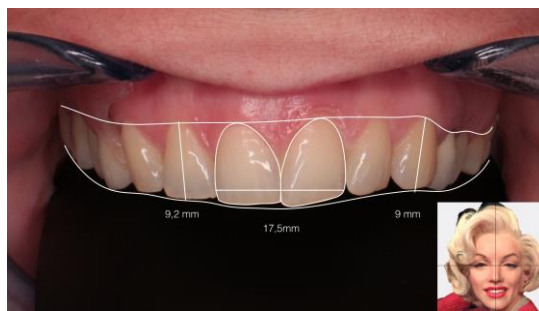


Figure 1. Shapes and dimensions of teeth in proper patient's position



Figure 2. Slight right rotation of patient's head



Figure 3. Slight left rotation of patient's head



Figure 4. Slight extension of patient's neck



Figure 5. Slight flexion of patient's neck

MATERIALS AND METHODS

In order to monitorize the patient's position related to the Cartesian axes we have used three water-level devices (Fig.6), two of them are fixed with metallic clips on a face shield frame (Fig.7) and the other one on the camera (Fig.8).



Figure 6. Water-level devices



Figure 7. Face shield frame



Figure 8. Water-level device on camera

For extraoral pictures the patient should be asked to stand with his head in Natural Head Position, with eyes looking straight into the camera lens. We must make sure that the patient's interpupillary and Frankfurt lines are parallel to the horizon⁴. One of the water-level devices is fixed on the frame parallel with interpupillary line and the other at the same spatial relation with the Frankfurt line. In this simple way the photographer watching the air bubble will notice every small deviation from the desired position of the patient (Fig.10-11).



Figure 10. Setting the proper frontal position of the patient

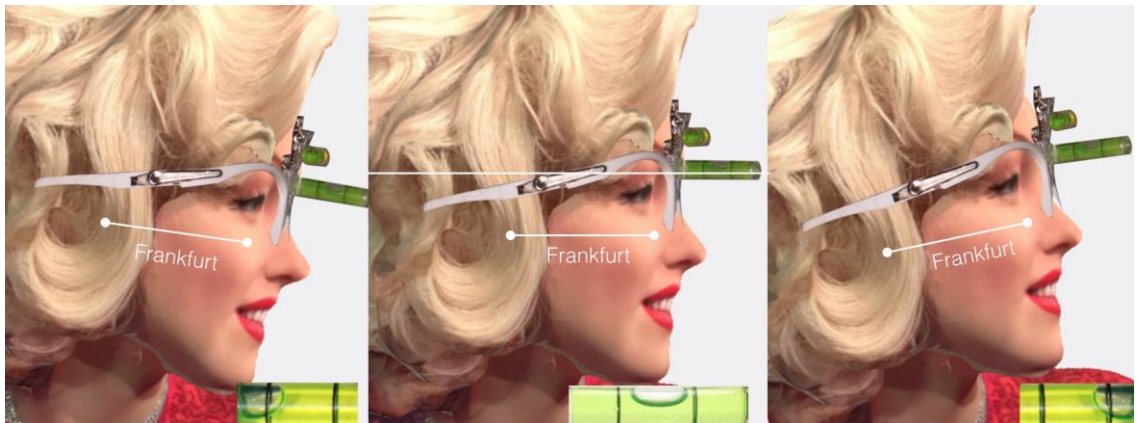


Figure 11. Setting the proper lateral position of the patient

For all the necessary views, the camera should always be at 90° horizontally and vertically to the subject, with the lens at the same level with the patient's eyes, along the vertical axis of the face⁵ (Fig.12). In order to keep this position, the third water-level stuck on camera could be used, but only if the pictures are not taken using the viewfinder. Otherwise a camera tripod with built-in water level could be used instead.

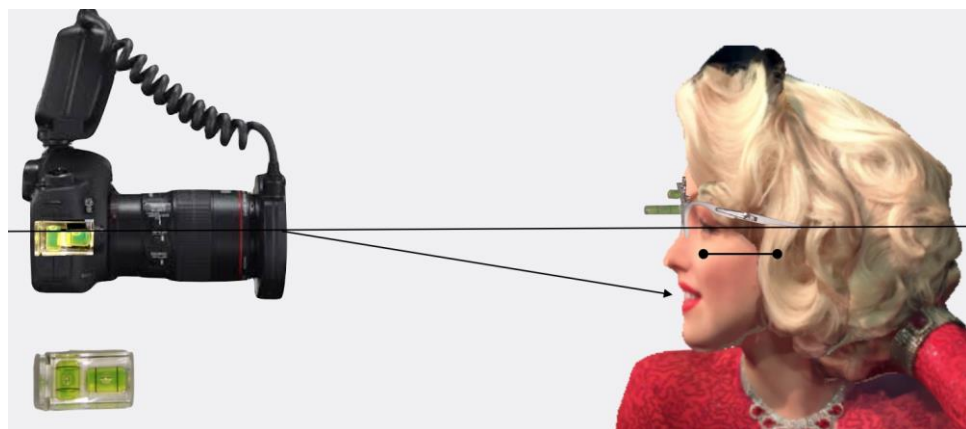


Figure 12. Setting the correct angle of camera

For smiling and intraoral views, using the build-in horizontal and vertical grid lines, the operator can establish the optimal positioning of the camera (Fig.13).

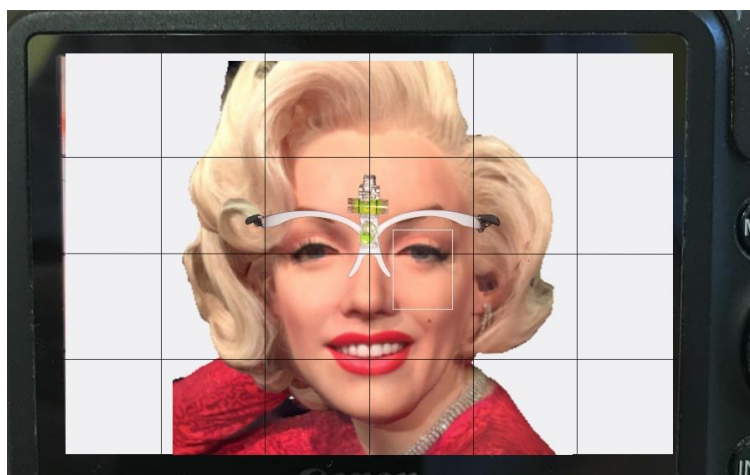


Figure 13. Setting the correct angle of camera through display

RESULTS

By means of presented devices the operator makes sure that interpupillary line is always levelled as well as the Frankfurt line. Any slight rotation or tilting of the head would be observed on water-level indicators and could be corrected right away, before taking any shots.

DISCUSSIONS

When pictures are taken to the patient sitting in a wrong position, there are three different possibilities:

- the deviation can be solved by using an image editing software (only in frontal views, if the distortion is in frontal plane, or in case of lateral views if it is in sagittal plan)
- the medic notices a problem when studying the pictures, so the patient will be called in for another photo session
- the worst case scenario - the physician doesn't notice the deviation and starts the treatment which had been planned on a wrong information base. In this case, the consequences would vary depending when the error was detected and related to the value of the distortion.

Taking into consideration all of the above, the physician has to spend extra time to solve the problem, with or without laboratory work remakes. Each remake of dental work means a waste of time and money for both physician and technician, and even more an unpleasant impression for the patient. From this point of view the use of water-level devices makes the completion of photographic workflow worthwhile and it will avoid any kind of inconvenience following improper patient's position.

CONCLUSIONS

The need for proper clinical photographic records of the patient has become more obvious and essential for proper treatment-planning and follow-up. They allow the clinicians to carefully study the existing patient's hard and soft tissue patterns and monitoring them in subsequent follow-ups. The wrong head posture can result in confusion regarding the

patient's initial clinical situation or intermediate ones and can lead to wrong treatment plans or, even more, improper dental treatment.

Probably after years and years of practice the experienced clinicians are able to control the patient's position by feeling, but, at least for less experienced physicians, this complement of photographic protocol can be a simple and valuable tool.

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The use of intraoral scanning and digital models in orthodontic treatment with aligners. A case report.



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Abstract

Digital impression techniques reduce the patient discomfort and are more time-efficient, thus creating a better patient experience. Intraoral scanning can be used in orthodontics to create clear aligners, which are indicated in mild orthodontic malocclusions.

The purpose of this case report is to present an orthodontic treatment with aligners, which were custom-made based on the patients' intraoral scans, designed to gradually shift the teeth in the desired position.

Keywords: Intraoral scanning, aligners, orthodontics.

INTRODUCTION

Intraoral scanners are equipments used for capturing digital impressions in dentistry, developed with the goal to overcome the difficulties correlated with conventional techniques. [1]

According to current literature, digital impressions have a number of advantages that create a better patient experience: less patient discomfort, time-efficiency, simplified clinical procedures and a better and easier communication with the dental technician, but also with the patient. Intraoral scanners can capture all dental arch information needed, which can be immediately assessed by the doctor [2,3].

Intraoral scanning can be used in orthodontics to create clear aligners, which are indicated in mild orthodontic malocclusions. Conventional brackets have the disfavor of being inesthetic, which lead to the popularity of clear aligners, especially with adult patients. [4,5]

Clear aligners can be produced using the conventional impression technique, but it is considered a tedious process because of the frequent impressions and setups required in order to create new aligners. Intraoral scanning helps create a digital impression of the patients' teeth, in order to virtually simulate the treatment, which makes it easier to inform the patients of the final result. Based on the digital setup, a sequence of clear aligners is produced, which gradually correct the position of the teeth. The number of the aligners varies based on the complexity of the case. The aligners are custom-made and manufactured at the same time, in a series. [5]

Clear aligners are indicated in mild to moderate orthodontic crowding and spacing, or in case of a relapse from an older orthodontic treatment. The aligners should be removed only during meals and for oral hygiene. [5]

The purpose of this study is to present an orthodontic treatment with aligners, which were personalized based on the patients' intraoral scans, designed to gradually shift the teeth in the desired position.

CASE REPORTS

A female patient presented for orthodontic treatment. Her chief complaint was the aspect of the maxillary incisors, considering they were not perfectly aligned. Intraoral examination revealed permanent dentition, class I molar and canine relation and very slight malocclusions. She also presented mild crowding of the teeth, especially in the lower arch. (Fig. 1)

The treatment chosen was clear aligners, due to the patient's refusal of fixed appliances.



Figure 1. Initial intraoral photographs of the upper and lower arch

The digital impressions of the upper and lower arches were performed using the 3Shape TRIOS intraoral scanner(Dentcof), thus creating a computerized simulation of the

patients' dental arches. The digital impression file was transmitted to the lab by digital transfer.

A digital setup was created: a virtual simulation of the treatment, including 5 stages of gradual corrections. 5 dental models were 3D printed, each with gradual modifications of the position of the teeth, the last dental model representing the desired result (Fig. 2, 4).



Figure 2. Comparison between intraoral aspect and 3D printed dental model – stage 2



Figure 3. Initial intraoral photographs with the first stage of aligners

Clear aligners were created on these 3D printed models, for each stage of the treatment (Fig. 3). The patient was shown all the dental models and was made aware of the potential result of the treatment. The patient received all 5 sets of aligners, and was instructed to wear them sequentially, at least 20 hours a day.

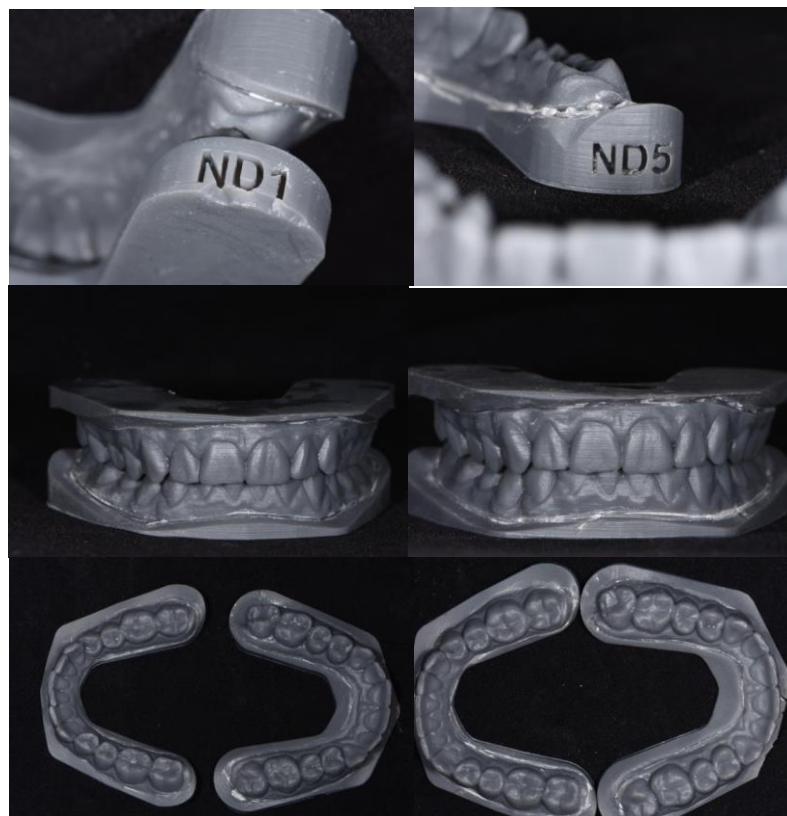


Figure 4. Dental models – comparison between the first and last stage of the treatment

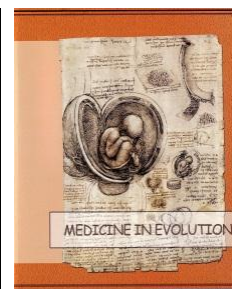
RESULTS

Intraoral scanning makes the process of creating a digital setup and manufacturing of custom-made aligners much easier, faster and comfortable for the patient. In the future, the demand for orthodontic aligners will increase and the results will be more predictable.

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Orthodontic preparation for the surgical treatment of a Class III malocclusion with mandible asymmetry. A case report.



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Abstract

Class III malocclusions are considered to be one of the most complex and challenging orthodontic problems to treat. Patients with class III malocclusion frequently display skeletal and dentoalveolar discrepancies, which lead to a distortion in facial appearance, but also functional and temporomandibular problems.

A skeletal Class III usually requires a combination of orthodontic treatment and orthognathic surgery, especially when it is associated with poor facial esthetics and varying dentoalveolar and functional problems.

The orthodontic preparation for the surgical treatment of skeletal Class III malocclusion includes joint planning between an orthodontist and an oral and maxillofacial surgeon, in order to address the esthetic and functional needs of the patient.

In this case report, we present the presurgical orthodontic preparation of an adult patient with skeletal class III malocclusion and an asymmetric mandible.

Keywords: Class III malocclusion, orthodontics, surgical, orthodontic preparation

INTRODUCTION

Class III malocclusions are considered to be one of the most complex and challenging orthodontic problems to treat [1,2]. Class III malocclusions have a multifactorial etiology, genetics representing an important part of it, but also functional factors [2,3].

Patients with class III malocclusion frequently display skeletal and dentoalveolar discrepancies. The distinct features of a dental Class III consist of molars and canines in Class III relation, proclined maxillary incisors associated with retroclined mandibular incisors, an anterior crossbite and often a reverse overjet. A skeletal Class III is associated with a protruded mandible, a retruded maxilla or a combination of the two. Other cephalometric features include an obtuse gonial angle and an excessive vertical mandibular growth [1,2,3].

These discrepancies cause a disharmony in the mandible and maxilla, which leads to a distortion in facial appearance, but also functional and temporomandibular problems. These alterations make the patient seek orthodontic treatment. [2,3,4]

There are different treatment approaches, based on the diagnosis. Generally, a dental Class III can be solved using only orthodontic treatment, but a skeletal Class III usually requires a combination of orthodontic treatment and orthognathic surgery, especially when it is associated with poor facial esthetics and varying dentoalveolar and functional problems [2,6]. The treatment plan is established considering the age of the patient, diagnosis, ability of the clinician and the cooperation of the patient. [5,6]

The orthodontic preparation for the surgical treatment of skeletal Class III malocclusion includes joint planning between an orthodontist and an oral and maxillofacial surgeon, in order to address the esthetic and functional needs of the patient. [5]

In this case report, we present the presurgical orthodontic preparation of an adult patient with skeletal class III malocclusion and an asymmetric mandible.

CASE REPORT

A 21-year-old female patient presented for orthodontic treatment, with the chief complaint of an unesthetic facial and dental appearance.



Figure 1. Initial extraoral situation

Clinical frontal examination disclosed an asymmetric face, due to the deviation of the mandible to the left and an increased chin height. Lateral view revealed a concave profile, a flat cheekbone contour, a protruded mandible and also a protrusive lower lip, associated with a slightly retruded upper lip. (Fig. 1)



Figure 2. Initial intraoral photographs

Intraoral examination revealed asymmetrical arches. In the sagittal plane, the molar class was not assessable, due to the absence of 3 of the first molars, except for 1.6. The patient also presents a Class III canine on the right and an anterior crossbite. The vertical plane reveals a -1 mm overbite. The transversal plane shows a lower dental midline deviated 3 mm to the left, cusp to cusp relationship of the lateral teeth on the right side and crossbite of the lateral teeth on the left side. (Fig. 2.)



Figure 3. Initial panoramic radiograph



Figure 4. Initial frontal cephalometric radiograph

The initial radiograph revealed the mesial inclination of the second molars, due to the loss of the first molars (Fig. 3). Also, an asymmetry is evident on the initial frontal cephalometric radiograph, which shows the mandible is deviated to the left (Fig. 4.)

Cephalometric analysis revealed a retruded maxilla. The ANB angle was -1 and the Wits analysis was -3 mm, both of which suggest a skeletal class III malocclusion. The patient also presented a dental compensation through upper incisor proclination. Soft tissue examination on the lateral cephalogram revealed a concave profile, increased nasal prominence and a protrusive lower lip. (Fig 5,6)

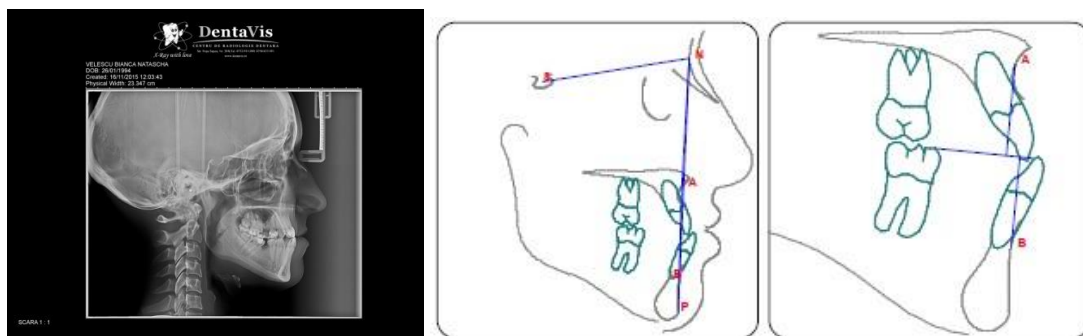


Figure 5. Initial profile cephalometric radiograph and tracing

Descriptor	Type	Mean	8d	Patient	Graph	Comment
SNA	Deg	82.0	2.0	77.41	-(°)	Maxilla retruded
SNB	Deg	80.0	2.0	78.3	-(°)	
ANB	Deg	2.0	2.0	-0.89	-(°)	Class III relationship
POGONION	mm			0.27	-()	
ANGLE CONVEXITY (DOWNS)	Deg	180.0	5.0	184.15	-(°)	
WITS	mm	0.0	1.0	-3.09	-(°)	Class III Skeletal problem

Figure 6. Cephalometric Steiner analysis

The dental, skeletal and soft tissues characteristics suggested a skeletal class III diagnosis. The treatment chosen was a combination of orthodontic treatment and orthognathic surgery, in collaboration with the Department of Oral and Maxillofacial Surgery.

The presurgical orthodontic phase was initiated by bonding metal brackets and using 0.012 inches NiTi archwires in both arches. These were followed by progressively heavier NiTi archwires, until 0.018 inches NiTi archwires and the alignment stage was concluded. Afterwards, rectangular stainless steel archwires were placed in both arches, in order to level and close the spaces in the maxilla and mandible, until 0.017" × 0.025" stainless steel arch wires.

During the course of presurgical treatment an alignment of the teeth and closure of spaces in the arches were obtained. The lateral cusp to cusp relationship of the lateral teeth on the right side was corrected, but the midline deviation and crossbite of the lateral teeth on the left side, due to the deviation of the mandible, would be solved by orthognathic surgery.

The patient was sent to make a preoperative cephalometric radiograph and a CBCT (Fig.8,9) and was then referred to the maxillofacial surgeon for an assessment and afterwards surgery.



Figure 7. Preoperative intraoral photographs, after orthodontic preparation

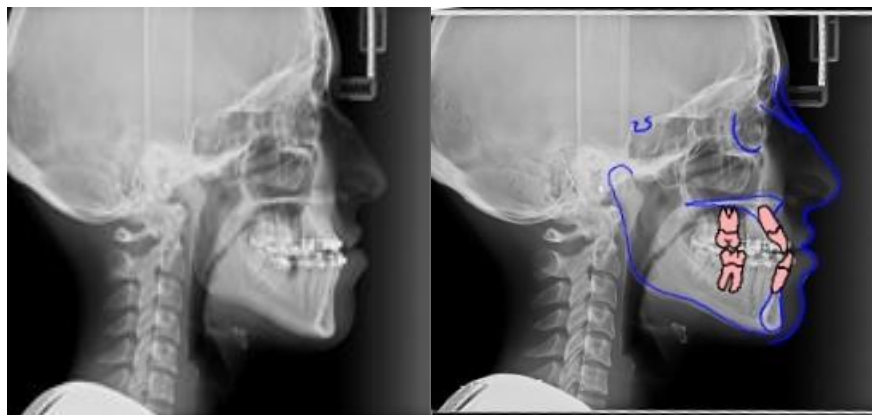


Figure 8. Preoperative profile cephalometric radiograph and analysis overlay

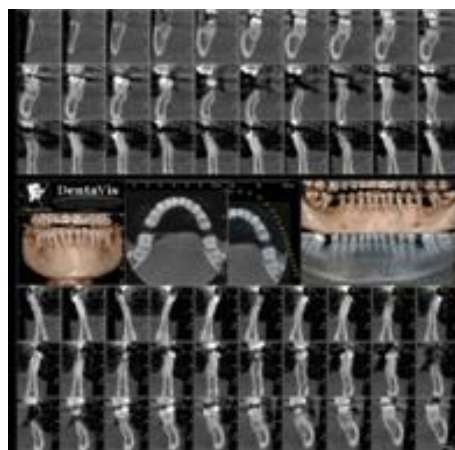


Figure 9. Preoperative CBCT, after orthodontic preparation

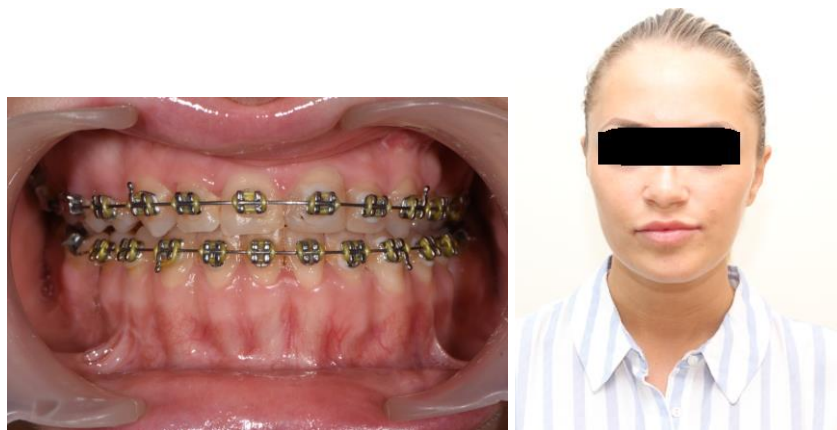


Figure 10. Final result

DISCUSSIONS

This case report describes the treatment of a female patient with Class III dental and skeletal relationship. A combination of orthodontic treatment and surgery was the best option, considering the diagnosis and the age of the patient.

Presurgical orthodontic preparation was used to achieve the closure of spaces, alignment and leveling of the arches, thus making the orthodontic treatment easier after the surgical phase.

A good collaboration between the orthodontist and the surgeon is imperative, in order to achieve a satisfactory outcome.

Acknowledgment

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The importance of teaching oral health to children from kindergarten



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Abstract

Teaching children how to have a proper oral hygiene since their early years will undoubtedly influence their health throughout life. Although there are some isolate cases, temporary teeth are healthy when they erupt. Aim: The purpose of this scientific paper is not only to learn and to be aware of the importance of the oral hygiene from infancy, but also to create a positive attitude regarding the personal health. The prophylaxis should be started since the eruption of the first teeth and it should be developed with special methods depending on the age. Material and method: young children from kindergarten, aged from 4 to 6 years. The methods and the working techniques were the conversation, the explanation, the demonstration, storytelling. Conclusion: every extraction of deciduous tooth is premature and every prophylaxis method which will be used will greatly reduce the number of den to-maxillary anomalies.

Keywords: deciduous teeth, oral hygiene, prophylaxis.

INTRODUCTION

Research on the spreading and the medical implications of dental diseases and evolution thereof in time is the most appropriate way of establishing effective measures in the prevention and control of such diseases. Linking morbidity of teeth to various dental conditions is indispensable for studying risk factors, prophylaxis, a proper tracking of patients and the allocation of technical and logistical resources.

Prophylaxis, early diagnosis and timely treatment are paramount in the effort to contain the costs of dental problems. The costs of neglecting them are also high in terms of financial, social and personal implications. Aggravated disease may require more complex, costly and perhaps more traumatic treatments, such as surgical treatments, root canal treatment, extractions, dental treatments under narcosis, hospitalization. It has been reported that investments in dental prophylaxis and health promotion have resulted in a decrease in health care costs, proving to be particularly effective in the long term [1,2,3].

Preschool education is a fundamental stage in the development of human being and at the same time a core component of education. This stage includes children aged from 3-4 years.

By teaching children to maintain their health through a rigorous hygiene, healthy eating and a balanced program of physical exercise and rest, we are bringing-up healthier generations consisting of better informed young people.[4,5].

In order to instil healthy habits to children, a sustained effort is required from all the actors involved in their education, and the school - the second family in which children spend their active time - contributes actively substantially to their education with the support of teachers [6,7,8].

Aim

The main goal of this study was to promote oral health among preschoolers, through special programs aimed at:

Increasing the level of medical knowledge of the preschoolers through:

- promoting a healthy lifestyle,
- protection of the environment,
- disease prevention;

Instilling and developing healthy behaviours to promote health;

Shaping a positive attitude and creating an active position towards individual health and public health issues in order to attract the preschool population to an active participation in the process of maintaining and improving the health condition of the community.

Objectives

The study proposed the following objectives:

To identify the main aspects of dental morbidity specific to temporary dentition

To study the morbidity of the temporary molars by caries, considering, on the one hand, the vulnerability of these teeth to caries, and on the other hand the importance of keeping them in the dental arch;

To assess the level of knowledge of children and parents thereof about:

- temporary teeth,
- methods of dental caries prophylaxis,
- the importance of regular check-up at the dental office,

To assess the level of knowledge of children and awareness of parents thereof in terms of children' skills in keeping their oral health – tooth brushing, the correctness of dental

brushing, the use of special methods to prevent dental caries - in comparison with what was found in the oral check-up of each child [9],

To implement a health education programme in order remediate any deficiencies that were found in this study.

MATERIAL AND METHODS

When selecting the target group surveyed, we decided to include children from all the kindergartens age groups, namely the lower, the intermediate and the upper group, because:

They all have the age corresponding to temporary teeth;

During this period children develop attitudes, habits and behaviours related to the preservation of oral health, oral and dental health hygiene and the integrity of the masticatory apparatus;

As they are forming a collectivity, the oral health education programme is easier to implement and monitor.

In order to have the best representation for the city of Oradea, two kindergartens were selected in the study on the following grounds:

Kindergartens should be located in different areas of the city;

Children should come from families with different degrees of training, education, living standards, and various social situations.

Within each kindergarten, only one group of children was selected for each level of pre-school education.

Thus, the resulting sample surveyed, following the selection criteria presented above, included a number of 180 pre-school children.

The working technique consisted of:

- a. Intraoral examination of pre-schoolers surveyed;
- b. Application of the questionnaire method on the sample surveyed (in pairs: child + parent);
- c. Implementation of a prophylactic and oral health education programme.

Main teaching methods used in informative and educational activities with children

Exposition

The exposition is the presentation of new oral knowledge in well-structured parts that guarantee increased efficiency by conveying an appropriate amount of information in a certain time unit.

The exposition is a straightforward, direct and rapid conveying path of knowledge.

We used as favourite options:

Simple narrative (story telling)

- Simple narrative, formulated in an expressive language,
- It is very suitable for lower age groups.

Explanation implies a revelation of truth based on a deductive argumentation.

The explanation is generally an answer to the questions: "Why?", "From what cause?", "For what reason?" that is a "Why (x)..." type question, where (x) is the description of the phenomenon that we intend to explain and to understand.

Heuristic conversation

Heuristic conversation is a dialogical method of incitement of children through questions and is based on Socratic method that is the art of revealing the truth through a series of questions asked appropriately.

Through this method, children were invited to make an incursion into their own cognitive universe and make a series of connections to facilitate the disclosure of some aspects of the topics submitted to discussion. Questions are invitations to action, they are "ferment" of mental activity, and very useful tools to get information.

Didactic demonstration

The didactic demonstration consists of presenting objects, phenomena, substitutes thereof or performing actions to be incorporated by children in order to providing a concrete-sensorial support that will facilitate the knowledge of some aspects of reality or the replication of some actions that are based on practical components.

Teaching exercise

Teaching is a way to carry out some mental operations, actions and/ or matrices to acquire or enhance someone's knowledge and skills.

This method has, in principle, an algorithmic nature because it involves certain rigorous, prescribed sequences that repeat exactly. The exercise therefore involves a sequence of actions that resume quasi identically and cause the emergence of automated action behaviour of pupils and students. In addition to training and enhancing skills, the exercise method also has other purposes such as: going in depth with understanding of notions, rules, principles and theories previously learned; consolidation of knowledge and skills already acquired; development of mental operations and grouping thereof in operational structures; enhancing the operative capacities of knowledge, skills and habits; preventing forgetting, and avoiding interference tendency (forgetting process).

Role play

Role play is an interactive, very stimulating method use by children to train gladly. Role play is an active teaching/ learning method, a form of applying psychodrama - a psychotherapeutic method invented by J.B. Moreno in 1921, and used more often in education/ training after 1934. Role play is based on actions of stimulating relationships, activities, functions, professions, statuses, phenomena, work news, followed by the analysis of representations, which is an important subcategory of games used as stimuli. It puts pupils and students in situations where they become "actors" of social life, for which they also prepare themselves. By playing certain roles, they will form certain skills, abilities, attitudes, behaviours, and beliefs.

In the use of role play, aspects of human interaction are stimulated always so that this method can be used to achieve certain goals.

RESULTS AND DISCUSSIONS

Following the oral examination of the preschoolers included in the target group surveyed, we found that only 15.64% of the children (i.e. 38 children) were caries free - a very low percentage that raises some serious questions, substantiates this study, and explains the necessity of a prophylactic programme for pre-school age population.

The caries morbidity in children is of 87.5% in 4-year-old children, then it rises to 93.75% in 5-year-old children;

The complicated cavities in temporary teeth are present in 19.75% of cases and affect a single tooth (in the case of 41 children), two teeth (3 children), and three teeth (4 children).

Temporary teeth treated previously were found in surveyed children in 12.75% of cases as follows: 15 cases - one filling, 5 cases - two fillings, 5 case - three fillings, and one case with four fillings.

Evaluation of the level of knowledge of children and the parents thereof regarding the six-year molar and methods of dental caries prophylaxis

We made use of some some laic, popular terms when formulating the questions included in the questionnaire to facilitate the understanding thereof by the population groups to whom we addressed.

By means of the question no. 10 of the questionnaire addressed to children, which coincides with the question no. 14 of the questionnaire addressed to the parents, namely - "When will the first permanent molar erupt?" - we made a clear picture of the knowledge both children and their parents had concerning the six-year-old molar.

Table 1. Knowledge of the six year molar

Answer		At the age of 3	At the age of 4	At the age of 5
Children	Answers no.	2	3	5
	%	0.82%	1.23%	17.69%
Parents	Answers no.	6	1	13
	%	2.46%	0.41%	23.45%

Another issue dealt with in the questionnaires was the evaluation of the knowledge about prophylaxis of dental caries, starting with the assessment of the type of diet children have, the toothpaste paste they use, as well as the knowledge of the specific dental caries prevention methods.

The answers to the question about the foods most frequently consumed by children were coded in three categories, as follows:

- predominant consumption of sweets,
- predominant consumption of mixed food,
- a diet preventing caries, involving a higher consumption of raw fruits, vegetables, dairy products, eggs, meat.

We found that the mixed diet was predominant, both from the answers given by the children i.e. 76.95% and the answers provided by parents thereof i.e. 67.90% (that is there are no significant differences of answers between children and their parents). The balance tips a diet preventing caries, rather than a higher consumption of sweets both in children's answers i.e. 18.10 % vs 4.93%, and parents, respectively 25.92% vs. 6.17%

By reviewing the answers regarding the nutrition of children who declare they do not have dental caries (123 respondents), 66.25% are favourable to a mixed diet, and 8.64% to a diet preventing caries, and these answers were given by both children and parents. It should be borne in mind that in these cases neither children nor parents declared a predominant consumption of sweets.

Regarding the knowledge of specific methods of caries prevention, parents responded affirmatively in 84.36% of cases , and negatively in 14.40% of cases (35 respondents), and 1.24% of parents (3 respondents) did not know how to answer the question.

We were able to notice also the very low level of addressability to the dentist, respectively specialized nurse for the purposes of acquiring correct dental brushing technique and skills i.e. in the case of only 4.52% of the children and 6.58% of parents. The addressability to the dentistry in general and the dentist in particular was an issue formulated in several questions in the questionnaire addressed to parents but also in the questionnaire targeting the children.+6+9

Instead, the answers regarding the last visit of the children to the dentist come as consequence of this low addressability and they are consistent with the aforementioned state of play. Thus, the reasons for which children come more frequently to the dentist are as follows:

- Pain – in 34.56% of children's and 30.04% of parents' answers;
- Extraction of temporary teeth and scraps thereof - in 28.39% of children's and 24.69% of parents' answers;
- Treatment of dental caries - in 9.46% of children's and in 30.86% of parents' answers.

While the answers above have shown a low addressability to dentistry, this was not due to poor or lack of accessibility to dental services, answers like "Dental office is too far away" or "We could not afford" being very few – i.e. 2.05%, and 3.70%, respectively.

The family is responsible for the health lifestyle of the child because it is the first source of information regarding oral health [10]. One way to increase the child's interest in oral health is to provide updated information, education and permanent motivation of parents. At the same time, the school has important potential resource to instil healthy habits

to children due to the considerable time that children spend at school [11]. The results of this study show that the healthy habits of adults and the level of knowledge thereof are important factors in the health education for children.

CONCLUSIONS

1. Oral examinations of children in the surveyed group revealed that only 15.64% of children were caries free;
2. Complicated teeth caries in temporary teeth are present in 19.75% of cases surveyed;
3. Temporary teeth previously treated were met in the children surveyed at a rate of 12.75%;
4. Presence of dental anomalies and the association thereof with unhealthy habits was found in 63 of the children examined;

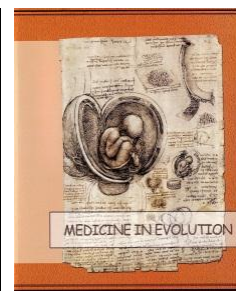
The oral prophylactic programme for preschoolers, parents and educators has risen the awareness of the importance of oral and dental health hygiene, diet factor, and regular dental check-ups; the programme has been very effective and we believe that oral health education for children in early age should be considered because parents can promote oral health education and they should prevent and treat child dental problems for the likely extended benefits for child educational achievement and psychosocial development.

Parents have lack of knowledge about their child's oral status, and to a certain extent poor awareness or at least poor ability to promote good feed habits. The oral health status of young children would increase if the "dental knowledge-level" of parents could be expanded.

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Study about the bacterial prevalence from periodontal pockets in smokers and non-smokers



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Abstract

To examine and compare the bacterial load from periodontal pockets in smokers and non-smokers. Our study included 77 people, which presented cronical periodontitis, with no less then 2 periodontal pockets of 4mm depth or more. The members of the study were divided in two groups, one of 43 smokers, and the other of 35 non-smokers. The length of attachment loss PA and probing depth PD were measured. The bacterial load of periodontal pockets was examined. The technique used was PCR- polymeraze chain reaction which in this case permitted the evaluation of eleven periodontal pathogens. Values for bacterial prevalence were obtained for PD = 4, 5, 6, 7mm. Raised values of prevalence both in smokers and nonsmokers were found for Porphyromonas gingivalis, Fusobacterium nucleatum și Treponema denticola. Campylobacter rectus and Eubacterium nodatum were a little higher in nonsmokers but with statistical unsignifiant values. Tannerella forsythia had increased values in smokers.

Keywords: bacteria, periodontitis, smoking.

INTRODUCTION

To examine and compare the bacterial load from periodontal pockets in smokers and non-smokers.

MATERIALS AND METHODS

Our study included 77 people, 40 men and 37 women, with 46.6 medium age. All of them presented cronical periodontitis, with no less then 2 periodontal pockets of 4mm depth or more. The members of the study were divided in two groups, one of 43 smokers, 20 men and 23 women, and the other of 35 non-smokers, 20 men and 15 women.

The periodontitis was diagnosed by clinical and radiological signs, like congestion, oedema, bleeding, existence of periodontal pockets and gingival attachment loss, mobility and bone loss. There were excluded those that quited smoking, treated themselves with antibiotics during last year, those with diabetes mellitus, leukemia, neutropenia, genetic diseases, because of the influence on periodontal simptoms that could modify the results of the study.

The length of attachment loss PA and probing depth PD were measured with a gradual periodontal probe.

The bacterial load of periodontal pockets was measured at 4 mm or more. The tooth was isolated with cotton rolls, wiped with a sterile cotton roll, then a sterile paper point was introduced in the periodontal pocket, and maintained 30 seconds. The paper point was introduced in a sterile tube, sent in the analysis kit, and then sent by post to the laboratory. The technique used was PCR - polymeraze chain reaction which in this case permitted the evaluation of eleven bacteria: *Actinobacillus actinomycetemcomitans* (*Agregatibacter actinomycetemcomitans*), *Porphyromonas gingivalis*, *Tannerella forsythensis* (*Bacteroides forsythus*), *Treponema denticola*, *Prevotella intermedia*, *Peptostreptococcus micros*, *Fusobacterium nucleatum*\periodonticum, *Campylobacter rectus*, *Eubacterium nodatum*, *Eikenella corodens*, *Capnocytophaga* species (*gingivalis*, *ochracea*, *sputigena*).

Finally, the prevalence of bacteria was calculated, all the results being statistically processed.

RESULTS

Table 1. Bacterial prevalence of the entire group at: PD=4(n=31), PD=5(n=25), PD=6(n=16), PD=7(n=5)

Average prevalence	PD=4	PD=5	PD=6	PD=7
Aa	0,323	0,680	0,937	0,400
Cr	0,613	0,480	0,562	0,800
Cs	0,161	0,200	0,250	0,000
Ec	0,677	0,360	0,562	0,400
En	0,387	0,440	0,312	0,400
Fn	0,839	0,960	0,937	1,000
Pg	0,419	1,000	0,937	1,000
Pi	0,645	0,720	0,500	0,500
Pm	0,677	0,520	0,750	0,800
Td	0,419	0,800	1,000	1,000
Tf	0,645	0,840	0,750	1,000

The bacterial prevalence of the group with PD=4 is the highest for *Fusobacterium nucleatum*, then *Peptostreptococcus micros* and *Eikenella corrodens*, folowed by *Tannarella forsythia*, *Prevotella intermedia*, *Campylobacter rectus*, *Treponema denticola*, *Porphyromonas gingivalis*, *Eubacterium nodatum*, *Actinobacillus actinomycetemcomitans*.

At PD=5 more prevalent were *Porphyromonas gingivalis*, *Fusobacterium nucleatum*, *Tannarella forsythia* and *Treponema denticola*, lower values were for *Capnocytophaga* species and *Eikenella corodens*.

Members of the group with PD=6 presented with higher frequency *Treponema denticola*, *Actinobacillus actinomycetemcomitans*, *Porphyromonas gingivalis*, *Fusobacterium nucleatum* and with lower frequency *Eubacterium nodatum* and *Capnocytophaga* species.

At PD =7 can be found especially *Porphyromonas gingivalis*, *Fusobacterium nucleatum*, *Treponema denticola*, *Tannarella forsythia*.

Table 2. Bacterial prevalence in smokers and non-smokers with PD=4

Prevalence %	SMOKER	
	YES	NO
Aa	44,4	27,3
Cr	55,6	63,6
Cs	0	22,7
Ec	66,7	68,2
En	44,4	36,4
Fn	88,9	81,8
Pg	22,2	50
Pi	77,8	59,1
Pm	77,8	63,6
Td	22,2	50
Tf	77,8	59,1

The bacterial prevalence in smokers at PD=4 showed higher population of *Fusobacterium nucleatum*, *Prevotella intermedia*, *Peptostreptococcus micros* and *Tannarella forsythia*. Unsmokers showed more frequent: *Fusobacterium nucleatum*, *Peptostreptococcus micros*, *Campylobacter rectus* and *Eikenella corrodens*.

Table 3. Bacterial prevalence in smokers and non-smokers with PD=5

Prevalence %	SMOKER	
	YES	NO
Aa	77,8	42,9
Cr	38,9	71,4
Cs	11,1	42,9
Ec	27,8	57,1
En	27,8	85,7
Fn	94,4	100
Pg	100	100
Pi	66,7	85,7
Pm	50	57,1
Td	77,8	85,7
Tf	88,9	71,4

The most prevalent bacteria in smokers at PD=5 were *Porphyromonas gingivalis*, *Fusobacterium nucleatum*, *Tannarella forsythia*, and in non-smokers *Porphyromonas gingivalis*, *Fusobacterium nucleatum*, *Eubacterium nodatum*, *Prevotella intermedia*, *Treponema denticola*.

Table 4. Bacterial prevalence in smokers and non-smokers with PD=6

Prevalence %	SMOKER	
	YES	NO
Aa	90,9	100
Cr	54,5	60
Cs	18,2	40
Ec	45,5	80
En	18,2	60
Fn	90,9	100
Pg	90,9	100
Pi	54,5	40
Pm	63,6	100
Td	100	100
Tf	81,8	60

At PD=6 smokers had mostly *Treponema denticola*, *Actinobacillus actinomycetemcomitans*, *Porphyromonas gingivalis*, *Fusobacterium nucleatum* and *Tannarella forsythia*, while nonsmokers had more *Actinobacillus actinomycetemcomitans*, *Porphyromonas gingivalis*, *Fusobacterium nucleatum*, *Treponema denticola* and *Peptostreptococcus micros*.

Table 5. Bacterial prevalence in smokers and non-smokers with PD=7

Prevalence %	SMOKER	
	YES	NO
Aa	25	100
Cr	75	100
Cs	0	0
Ec	25	100
En	25	100
Fn	100	100
Pg	100	100
Pi	50	50
Pm	75	100
Td	100	100
Tf	100	80

At PD=7, smokers had more prevalent *Porphyromonas gingivalis*, *Fusobacterium nucleatum*, *Treponema denticola*, *Tannarella forsythia*. Nonsmokers presented especially *Campylobacter rectus*, *Eikenella corrodens*, *Eubacterium nodatum*, *Actinobacillus actinomycetemcomitans*, *Porphyromonas gingivalis*, *Fusobacterium nucleatum*, *Treponema denticola*.

DISCUSSIONS

PCR is a highly used technique in molecular biology. PCR reaction has the advantage that there is no need for alive samples, it is easy to be used and the results are obtained quickly.

The analysis method is simple, fast and safe, used by multiple studies. Discovered in 1983 by Karl Mullis, PCR is now a common method, used in research and biology labs for several applications. These include DNA cloning for sequencing, DNA-based phylogeny, or functional analysis of genes; the diagnosis of hereditary diseases; the identification of genetic fingerprints. In 1993, Mullis won the Nobel Prize in Chemistry for developing PCR. [1]

Data from literature concerning the influence of smoking on microbial periodontal flora are contradictory. Riviere et al. [2] and Bergstrom et al. [3] found no difference between

smokers and nonsmokers, supporting the fact that the more severe periodontal disease found in smokers does not depend on a particular flora.

Other researchers have proven a bigger amount of bacteria in smokers. [4, 5, 6]

The results in literature regarding this issue are also diverse. Some studies showed no difference of bacterial prevalence [7]. Haffajee et al. [8] showed difference in prevalence in smokers for *Prevotella intermedia*, *Peptostreptococcus micros*, *Fusobacterium nucleatum*, *Eubacterium nodatum*, *Bacteroides forsythus*, *Porphyromonas gingivalis*, *Treponema denticola*, and Martinez et al. [9] just for *Treponema denticola*.

Our study has found the specific prevalence for each examined depth of periodontal pockets. Higher values for entire group, smokers and nonsmokers, had *Porphyromonas gingivalis*, *Fusobacterium nucleatum*, *Treponema denticola*, *Tannerella forsythia*. Both smokers and nonsmokers had a raised prevalence for *Porphyromonas gingivalis*, *Fusobacterium nucleatum*, *Treponema denticola*. *Campylobacter rectus* and *Eubacterium nodatum* were increased at nonsmokers but without statistical significance. *Tannerella forsythia* was higher in smokers.

Other studies showed at smokers increased prevalence for *Porphyromonas gingivalis*\periodonticum, *Tannerella forsythia*, *Treponema denticola*, *Prevotella intermedia*, *Peptostreptococcus micros*, *Fusobacterium nucleatum*\periodonticum.[9Error! Bookmark not defined.]

It seems that some bacteria differ as quantity or\and prevalence, facts that advocates for the influence of smoking on flora from periodontal pockets. Another argument is that microflora in smokers is diminished after surgery or non surgical treatment.

Although smokers had periodontal parameters for a more severe periodontal disease, one cannot say that the microbial flora appears because of the severity of the periodontal disease or because of smoking. That's why we compared the bacterial prevalence of smokers and nonsmokers at the same probing depths.

CONCLUSIONS

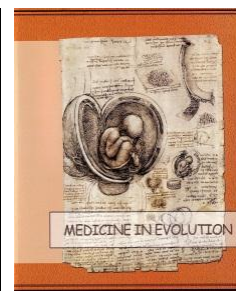
1. Raised values of prevalence both in smokers and nonsmokers were found for *Porphyromonas gingivalis*, *Fusobacterium nucleatum* și *Treponema denticola*.
2. *Campylobacter rectus* and *Eubacterium nodatum* were a little higher in nonsmokers but with statistical insignificant values.
3. *Tannerella forsythia* had increased values in smokers.

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Motivation in students' learning process



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Abstract

Aim: The aim of this study was to draw a parallel between learning motivation among third-year students in Dentistry, the first group who continues the second year and the second group who graduates the College of Dental Technology or a Postsecondary Health Care School, enrolled for the second college.

Material and method: Research methods were: free and systematic observation, based on work in internships and a questionnaire which would express their personal motivation in choosing medical profession.

Results and discussions: The present research allows us to set some parameters by comparing the two groups of students, parameters that could be extremely useful for us in the future in student's education.

Conclusions: For an effective preparation there is a need for the teacher to understand the particularities of the learning process in adulthood. Adult students learn more easily if they can put into practice, apply the new concepts they are being taught, learning, preparing is a means, not the end itself.

Keywords: motivation, learning process, student, performance, teacher.

INTRODUCTION

Whether conscious or no, there always lies a motive behind any action that a student undertakes. These motives can vary a lot: they may be individual or social, minor or major, superior or inferior, selfish or altruist, etc. Positive motivation is produced by rewarding stimulation (praise, encouragement) and leads to beneficial effects on the interim activity or relationships. Optimal motivation is an area between the minimum and maximum level of motivation, which differ from one student to another depending on the degree of difficulty of the task, their emotional and temperamental balance. Optimal motivation is also related to the student's need to reach performance and his aspiration level, his capacity for self-awareness and for the proper assessment of the real difficulties of the teaching tasks.

In our days the oral health status of population is one of the great challenges in health, treatment and medical education, so in this context, the education, specialized training of staff and students have a very big importance [1-3]. The most important educational information which is transmitted to the dental students is the evaluation of patients' teeth and oral cavity [4-7]. In the dentistry education, students need and must practice many dental procedures [8]. The traditional approach in dentistry education based on the treatment of those patients who are referred to dental schools is based on practicing on the patients or on the plastic teeth [9]. The dental and medical students are undergoing to a raised the stress level because of the curricula, the work with real patients, the inconsistency of feedback on work between different teachers, bad communication with teaching staff, and examinations and grades, so a lot of students lose the essence of the dental medicine: that is to know well the anatomic-morphology of the teeth and the oral cavity [10; 11].

Performance increases are not directly proportional to the motivation intensity. Excessive motivation causes the emergence of emotions, introducing some disorganization, which prevents progress leading even to regress [12].

Teachers are meant to facilitate the creation of a self-image of the student, to promote a fair self-knowledge. An adequate level of aspiration depends on a fair appreciation of your own ability because overestimation condemns you to a life full of failures, and underestimation makes you miss achievable goals [13]. That is why the teacher must get to a good knowledge of the disciples and by well motivated appreciations to reinforce an objective self-image. [14]

MATERIALS AND METHODS

By means of the study, we would like to analyze some aspects of students' learning activity, students attending the Faculty of Medicine and Pharmacy of Oradea, specialization: Dental Medicine. For this purpose, I referred to two groups of third-year students who have just started their specialized clinical activity. The first group includes students who started their academic training on Dental Medicine from the very first year of study, while the second group comprises students that have already obtained a university diploma, having graduated a Dental Technician School or a Postsecondary Health Care School.

The chosen topic deals with the interest showed by these students, as young men and future doctors, in their training for a career, for a doctor's working life. The current motivation of the choice to work as a doctor is the need for self-knowledge and self-assertion, the desire to have good name and to be respected in society; but the main reason is to be of use to sick people.

The present study has the following objectives:

- The students' desire to study the specialization they chose, a desire reflected by their class attendance, activity during internships, their concern for assignments.

- Students' ability to study and put into practice the theoretical concepts acquired up to this level.
- Students' interest for the subject that is taught, it is important to find out if the courses are being systematically learnt.
- Understanding their role in the society as future doctors, taking also into account the responsibilities they have.
- There have been used the following methods to the end of gathering and interpreting the data:
- Free observation method and systematic observation: it is observed activity during internships, specific study of some assignments, connection and thinking ability when dealing with quick questions
- Experiment: there shall be made a comparison among the presentation methods of a clinical case, the chronological order of anamnesis, the act of establishing a correct diagnosis, correlation between subjective and objective data of patient's complaints.
- For the purpose of determining students' concern for their training and education in order to become specialist doctors, it was used the multiple-choice test referring only to the subjects taught in class.
- At last, in order to find out more about their level of aspiration, we have used a questionnaire concerning their motivation during the training and learning process as future doctors.

The method used is:

- free and systematic observation through which the activity and presence of the students is pursued, the theoretical and practical training during the semester
- experiment by checking the exposure mode, the chronological order in the case of a clinical case presentation, the correctness of applying a diagnosis based on the data received from the patient
- test for verifying the theoretical information accumulated at the end of semester materialized by notes
 - questionnaire on personal motivation in the training process as future doctors

The duration of the study is the same for both groups between 1 October 2004 and 30 January 2005 and it happened in the dental clinic of Faculty of Medicine and Pharmacy, University of Oradea, with each practical internship having a duration of 4 hours once a week. The study discipline involved is prosthetic dentistry.

The study stages involved are: comparative check of the luggage accumulated in courses, attendance and involvement in clinical activities, personal preparation for the given topic, verification of lightning connections, verification of the theoretical knowledge at the end of the semester, application of the questionnaire by groups.

Samples of subjects that were investigated are: students in two groups of the third year of dentistry, the first group consisting of 7 students, 5 girls and 2 boys aged 23-25 years, the study average at the end of the second year 9.20 - 9.80, the urban background for all students.

The second group consists of 4 boys and 3 girls, 2 sanitary high school graduates, 5 graduates from the Dental College, aged 27-32, from urban area, some have a job.

The methodology for verification and evaluation of subjects is done through tests with grid questions, flashing questions, discussion of the topic of study previously given.

The processing of the obtained data was done using the separate graphical representation on the two groups, and comparatively.

The research allows for the establishment of some parameters, by comparing the two groups, from which the students can be trained.

RESULTS

The two groups I and II, which were in the same year of study, with the same internship hours and the same study subject but with different guidelines, participated in the study simultaneously. The first group is the one that continues the second year of study, and the second is the one who graduated the post-secondary school, respectively the dental technicians college.

The moment when this study began was marked as T0. The assessment stages during a semester were also established and were marked as T1, T2, namely T3 for the end of research. Among these stages, students had enough time for individual study or for the assignments given, respectively for the multiple-choice tests they had to eventually take.

Moment T1: after three weeks while students attended classes, they are given an assignment for their following class: there shall be used random, quick questions to determine the information amount assimilated by each student. A group-based and comparative representation is performed. It is also traced the ability of making connections based on the information that was acquired. First group makes proof of a significant amount of knowledge acquired concerning the given assignment: girls answer much faster than boys do, but when it comes to quick questions, it turns out that boys can make connections more promptly, among all pieces of information acquired.

As for the 2nd group, it turns out that the students did not study too much for their assignment, but the students who graduated the Dental Technician School prove to have an extensive and well-founded knowledge compared to the ones who graduated the Post secondary Healthcare School, based on the answers given to quick questions.

Comparing the two groups, it is easily noticed that the first one is more diligent, but the students from the 2nd group prove to have reliable medical arguments to questions implying quick connections.

Moment T2: after 6 weeks of internships, it is scheduled a meeting for both groups of students, where they were supposed to present a clinical case. It is past mid-semester therefore, they are expected to have assimilated more than 70% of the concepts studied during classes. It has been taken into consideration the chronological order of the presentation, the student's ability to gather and make use of the necessary information in order to give a diagnosis (objective and subjective symptoms) and the ability to gather this data based on the theoretical knowledge to the end of establishing a comparative, final and presumptive diagnosis; it was also assessed the decision-making capacity to establish possible treatment methods. This complex case study points out a logical focus on the subject matter, an accurate medical thinking and the ability to make good theoretical and practical connections.

When analyzing 1st group, it is noticed that girls make proof of a clear chronological order when presenting the gathered data: they bring forth a precise diagnosis which denotes a good theoretical training. The treatment plan presented by them does not display all possible solutions. Boys are a bit more superficial when presenting the order of the data processed, they establish a good diagnosis based on the clinical data gathered; as for the treatment plan made up, they do not come up with all possible solutions.

We also deal with an interesting situation concerning 2nd group. Students who graduated Dental Technician School display an excellent chronological order when presenting the clinical data, when establishing the diagnosis, but they do not present all possible treatment methods. [13]

Students who graduated a Post secondary health care School make proof of a good chronological order in data collection but face minor issues when they must establish a diagnosis. But when it comes to set up a treatment plan, they point out all possible treatment methods. Thus, it is concluded that the Post-secondary health care School graduates make

proof of a better medical thinking and improved diagnosis skills, but the Dental Technician School graduates are more familiar with treatment techniques and prosthetic treatment plans.

By way of comparison, both groups have very well assimilated the theoretical concepts, but it is obvious that the Post-secondary health care School graduates are able to provide an efficient, medical analysis, while the Dental Technician School graduates are more familiar with the prosthetics techniques.

Moment T3 – one week left in the semester. Students are informed about the multiple-choice test they must take: it shall be used as theoretical assessment, as an equivalent of the practical work examination, work performed during internships. The test comprises 10 multiple-choice questions, with simple or multiple answers. Each question values 9 points, with 1 granted point. 90% of the 1st group is marked with 9; 85% of the 2nd group gets the same mark.

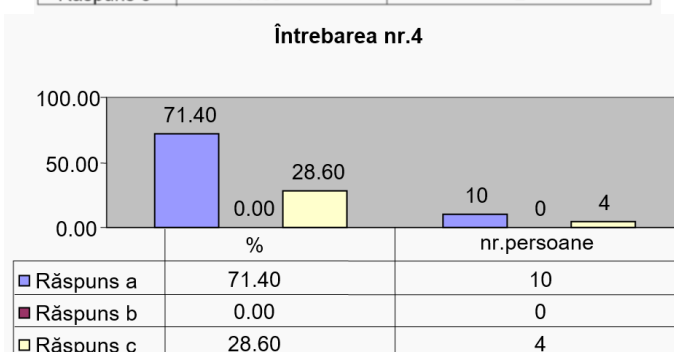
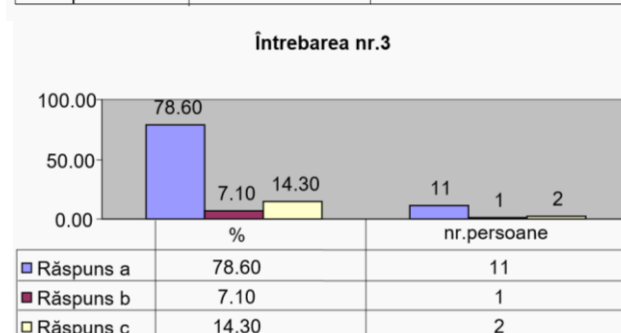
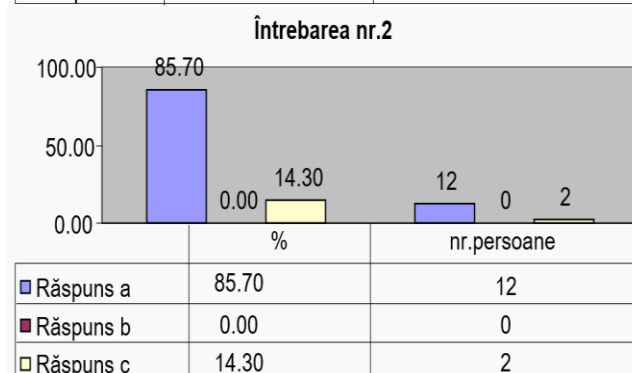
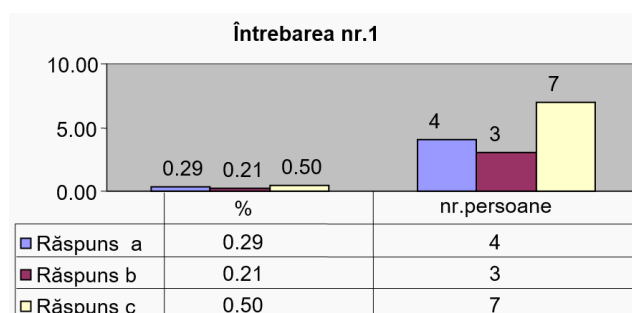
Thus, it is noticed that both groups of students show the same interest at the end of semester, even if during the semester, one could have noticed a slight difference between the levels of study reached by the two groups.

At the end of semester, each student is given a questionnaire made up of questions concerning the personal motivation during the training process as future specialist doctors.

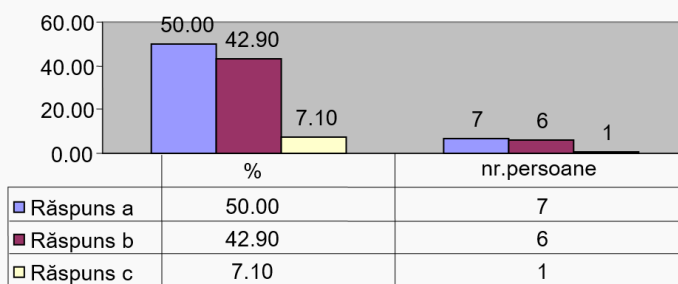
QUESTIONNAIRE:

1. Why did you choose to become a dentist?
 - a. It is an independent job
 - b. A family member with the same career
 - c. Other reasons (circle of friends, financial benefits, etc.)
2. Are you sure your choice reflects your profile and personal desires?
 - a. Yes
 - b. No
 - c. I don't know.
3. If you had to choose once again, would you make the same choice?
 - a. Yes
 - b. No
 - c. I don't know.
4. Do you have the moral or/and financial support of your family?
 - a. Yes, totally
 - b. No, I am self-supporting
 - c. Others (scholarship, family helps me as well, I am self-supporting)
5. What are your prospects after graduation?
 - a. I already have a job waiting for me
 - b. I have no clue at the moment.
 - c. Others (further education, international scholarships, etc)
6. Do you consider important training and active involvement during internships?
 - a. Yes, it is the perfect opportunity to put into practice the theoretical concepts studied
 - b. The assimilation of theoretical concepts is much more important: I have plenty of time to work till I get in the 6th year of study
7. Do you find useful for your training as future doctors the competition for high marks?
 - a. It is useful, but it is not the only motivating factor
 - b. It is the only motivating factor.
 - c. It is not useful.
8. Do you consider learning necessary after you graduate?
 - a. Yes

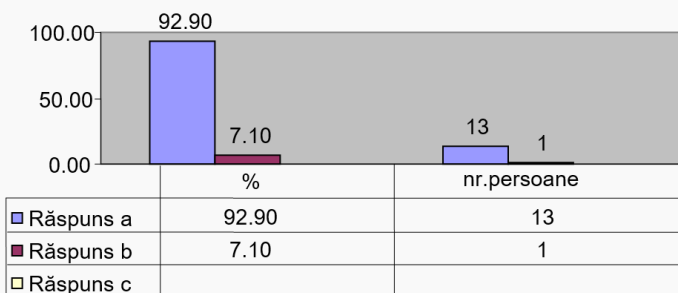
- b. No
- c. It is not useful
9. If so, what would you do to do it? (answers in the order of importance of your choice):
- Specific to the profession and the requirement to advance
 - Every profession requires you to learn all your life
 - The pleasure of constantly improving your self
 - It's a social duty to keep up to date with all the news
 - Prestige of competent specialist
 - Love of profession
 - Competition with other specialists
 - From the need to able to collaborate with other specialists



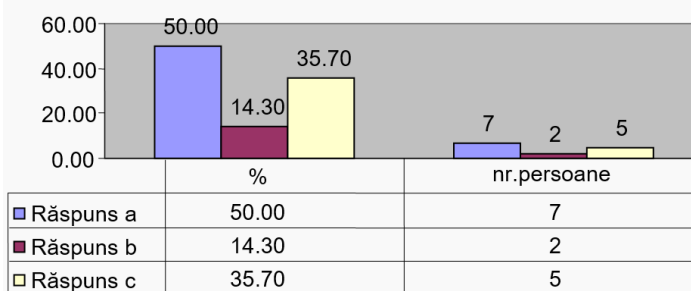
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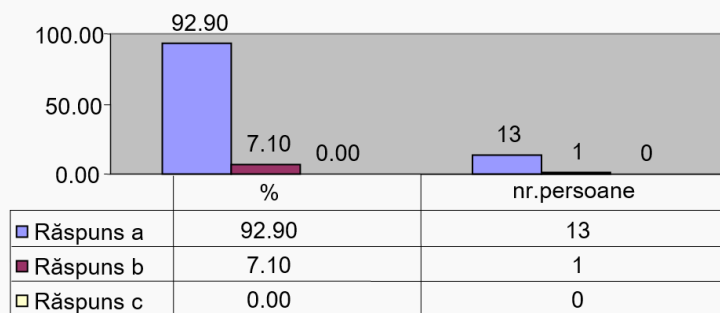
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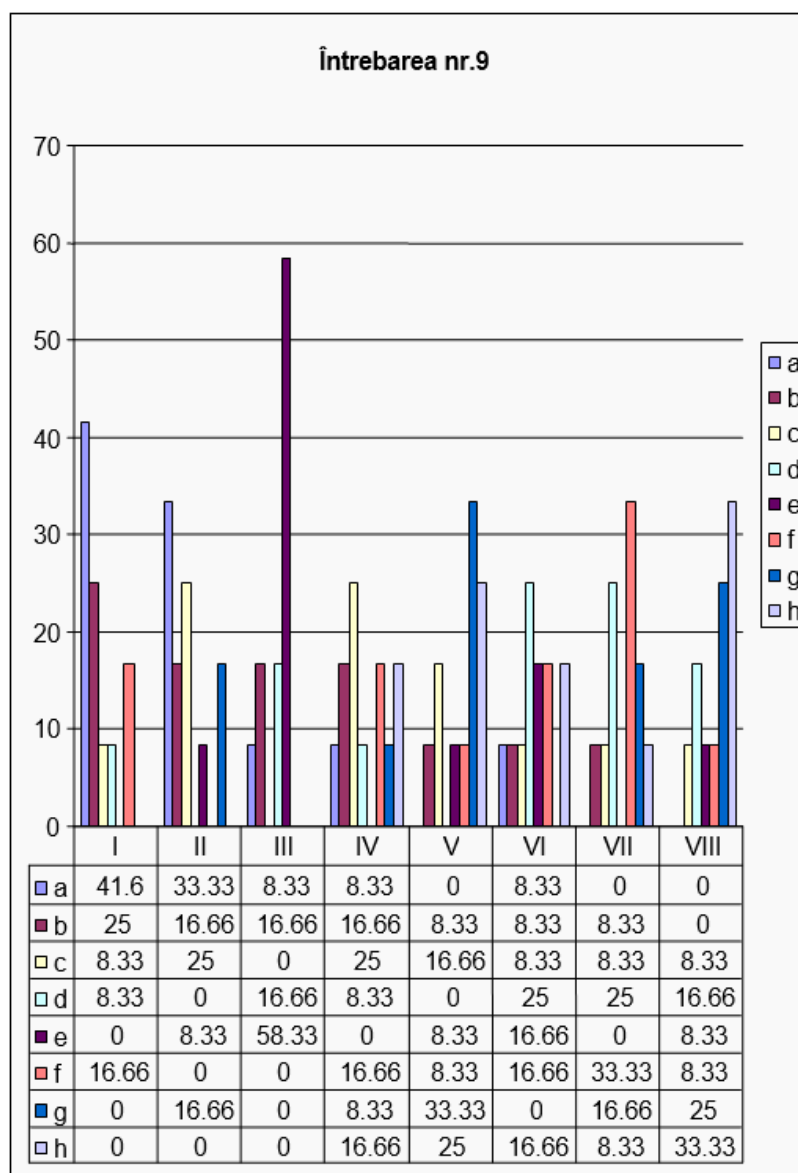


Întrebarea nr.7



Întrebarea nr.8





The students did not have to write down their names: in what concerns 1st group of students, it is noticed that most of them chose this job because it belongs to an independent medical branch, they are happy with the choice they made; they also have their family moral support and are eager to learn to acquire a good name as specialist doctors.

Students' answers from of 2nd group are various: most of them chose this profession as an alternative, others as way of exploring their previous studies; most of them are self-supporting but have moral support; their choice reflects their profile and they are eager to improve as specialist doctors.

At questions 1-8 answered 14 students; 13 of them answered at question no. 9. Because a student listed answers to the last question in the suggested order, we only considered 12 answers.

The results obtained were graphically represented for each individual question.

To question no. 9, we graphically represented the student's motifs, numbering with I-VIII the place where each of the sub-points a-h placed.

DISCUSSIONS AND CONCLUSIONS

Based on the study we notice lots of differences between the two groups of students and their motivation: 1st group is constant in the activity developed during the semester; it

does not have a strong motivation, but a routine "governing" the learning process; this group registers a higher level of attendance to internships, it's more active; it displays a constant assimilation of theoretical concepts; 2nd group of students brings forth different motivations and even if it clearly has the advantages of a medical thinking formed during the classes of the first faculty graduated, its activity is not constant during the semester. Still, at the end of semester, both groups of students show the same interest and concern for the examinations they must take.

The present research enables us to determine some parameters by comparing the two groups of students, parameters that could be extremely useful for their future training. Thus, there can be formed mixed groups of students, where students that have already been awarded a university diploma are integrated in groups of common students: this way, the students would be motivated to keep pace with others in the learning process. They should also be trained by using same activities, common research assignments and even planning additional classes for these students, to help them recover the concepts assimilated by other students during previous years of study and not just planning some equivalency examinations. [15]

The questionnaire results point out that only one student out of the ones questioned rejects the learning process and his need to further education to become a dentist. Reasons are related to their involvement in the future profession, their need to hold a respected position in society [16, 17]. It is noticed that the subjects did not mention any constraints exerted by their parents: on the contrary, one of their motivation to learn is to make them proud, to reward the sacrifices of their parents. There must be a balance between the intellectual effort required in a learning process and the rest that is necessary after this kind of effort.

The situation is complex, and it should be thoroughly analyzed because in the case of students who learn only during exam sessions, their intellectual effort is much more intense. The amount of time taken to rest, and the time normally used for other activities are implicitly diminished. Thus, it becomes a cause for students' loss of motivation, and the mental exhaustion usually makes the student to avoid or to stop learning.

Besides this reason, another one very often referred to is the students' desire to be stimulated to think, not to be forced to learn theoretical concepts that have no practical utility. We will also mention here the lack of some methods meant to facilitate the learning process as being another cause for students' loss of motivation. In other words, students consider that learning has an extremely diminished educational aspect and that rote learning method is emphasized: students cannot enjoy any beneficial result from this method.

The questionnaire results prove that learning process is highly motivated and the fairly complex range of reasons makes reference to both intrinsic and extrinsic motivation. The students that were questioned are aware that learning is extremely important both for their career and for other life areas. It is necessary a radical change, according with students' expectations concerning learning in schools and not only. In order to implement this change, there should be studied the way professors understand and are willing to make changes, to reorganize and to develop the contents, to improve the teaching and learning strategies, in order to increase the quality level, especially from an educational point of view.

Considered by Samuel C. Certo as "success factors hindering communication in a specific communication process", these micro barriers can be saw also in the communication teacher-students and there are called also process barriers, operating from the privacy process, its components and phases. [11; 14] To dissolve these micro barriers is necessary that the teacher and also the doctor to be a good leader and to know very well all the legislation and the terminology and conceptual rigors to teaching and to treat the patients. [15-17]

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Unilateral Removable Dentures 2-year follow-up



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Abstract

Purpose Are the unilateral removable dentures a short or a long-time treatment option?

Materials and methods: 13 were treated with unilateral and 13 with bilateral (control group) removable dentures. The inclusion criteria were: 1. Kennedy class II or class III; 2. the impossibility of realizing implant supported dentures; 3. recalls every 6 months; 4. direct reline every 12 months. The exclusion criteria were: 1. missing the recalls; 2. missing the reline appointments. The examined aspects were: maintenance of the occlusal contacts and the masticatory function; maintenance of the periodontal health of the abutment teeth; fractures of the removable dentures, of the connectors or chipping of the ceramics; comfort of the patients (1- poor, 2 -acceptable, 3- good, 4- very good, 5 -exceptional).

Results After the first 4 check -ups the situation was: 1. the masticatory function and the occlusal contacts were well for all the patients were; 2. the periodontium of the abutment teeth was healthy; 3. there were no fissures/fractures; 4. in 2 cases the retentive caps of the special system were replaced; 5. the comfort of the patients was 4 (76%) and 5 (24%) for the unilateral RPD and 2 (15.38%), 3 (61.53) and 4 (23.07%) for the control group

Conclusion According to the follow-up period, the unilateral removable partial dentures on extra coronal resilient attachments are viable treatment alternatives.

Keywords: removable unilateral denture, removable dentures with major connector, precision attachments

INTRODUCTION

In patients with risk factors like Alzheimer disease and great smokers [2, 3, 10] using removable dentures could be a viable treatment option [13]. Conventional RPD design is frequently bilateral [6] and consists of a major connector that bridges both sides of the arch. Some patients cannot and will not tolerate such an extensive appliance [5]. Studies have suggested that at least two teeth on each side should be splinted when extracoronal distal extension attachment prostheses are used [1, 4]. Stress on the terminal abutment can be reduced by using an extracoronal resilient attachment that allocates more loads onto the distal edentulous ridge [13].

Objective of the study

Are the unilateral removable dentures treating class I and II Kennedy a short or a long-time treatment option comparative with the removable dentures with a major connector?

MATERIAL AND METHODS

The study was realized in the Department of Prosthodontics, Faculty of Dentistry, University of Medicine and Pharmacy "V Babes" Timisoara Romania in 2016- 2018. 26 partial edentate patients were included in the study. Each patient has signed and informed consent in accordance with the Ethical Committee of the University. 13 patients were treated by using unilateral removable dentures and 13 by using removable dentures with a major connector. Both type of dentures had a metal frame and a precision attachment (Rhein 83 OT unilateral - Italy for the removable unilateral partial dentures and external slide attachments, Vario-Soft 3 rod attachment - Bredent Germany, for the control group).

The inclusion criteria were: 1. Kennedy class I, II or class III edentate arches with or without modifications; 2. the impossibility of realizing implant supported dentures; 3. recalls every 6 months; 4. direct reline every 12 months. The exclusion criteria were: 1. missing the recalls; 2. missing the reline appointments. 3. Patients who do not wear their removable dentures.

The examined aspects were: maintenance of the occlusal contacts and the masticatory function; maintenance of the periodontal health of the abutment teeth; fractures of the removable dentures; fractures of the connectors; chipping of the esthetic material (ceramics) of the fixed partial dentures and comfort of the patients. The type of the opposite dentition was also recorded (natural teeth, fixed partial denture, removable/complete denture). The comfort of the patients was registered on a scale 1 to 5: 1- poor, 2 -acceptable, 3- good, 4- very good, 5 -exceptional. All the check -ups were realized by one experienced clinician.

When necessary, the initial periodontal therapy, scaling, professional cleaning and rinsing with chlorhexidine (0.06% %) and peroxide mouthwash (1.5%)

The patients receiving unilateral removable dentures were treated following the next steps: preparation of the abutments for the fixed partial denture (FPD) with external precision attachment. The prepared abutment teeth were impressed by using a vinylpolysiloxane impression material in a two steps technique (Variotime easy putty and light flow, Kulzer, Germany). The impression of the antagonists was taken with the same material and the occlusion was recorded by using a bite impression material (Occlufast, Zermack, Italy). The try - in of the cast metal framework (Fig.1 a, b) was performed. After the try in the final fixed partial dentures with the external precision attachment was received from the laboratory. A final impression for the removable denture in an individual tray was taken over the FPD with the precision attachment by using polyether material (Impregum 3M Espe Germany). The

impression of the occlusion was again recorded with the same bite impression material (Occlufast, Zermack, Italy).

The finalized FPD together with the RPD were cemented by using a glass ionomer cement (Ketac-Cem 3M Espe) (Fig.3). Before and after cementation the occlusal contacts were adjust in static and dynamic occlusion. he patients were instructed to insert and remove the RPDs and also to clean the fixed and removable dentures.

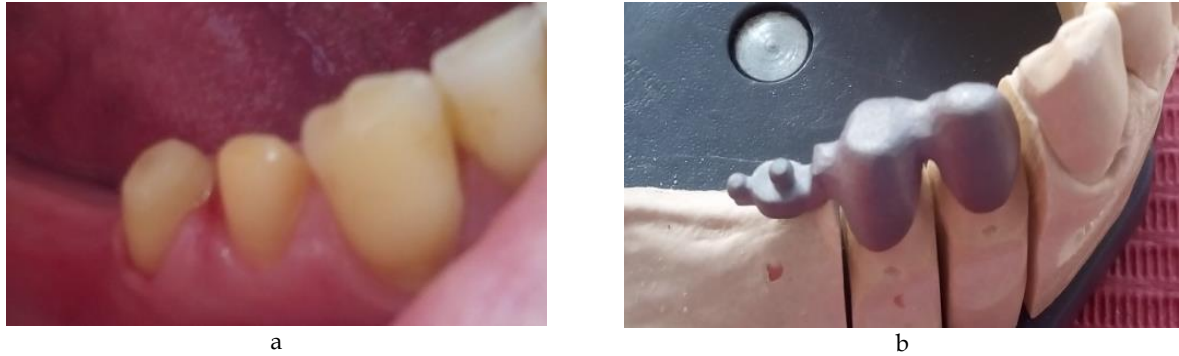


Figure 1. a. Prepared abutment teeth for the FPD of the hybrid prosthesis;
b. try-in of the cast metal framework of the fixed partial denture

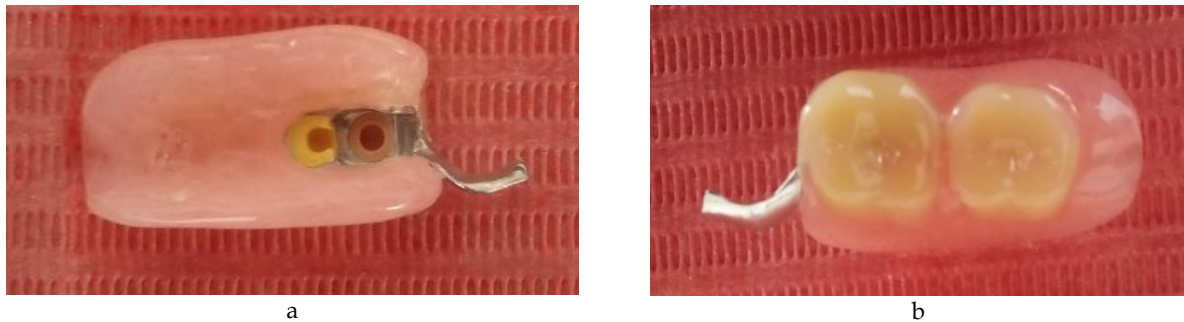


Figure 2. Extraoral aspect of the unilateral removable denture a. mucosal view; b. external view



Figure 3. Final intraoral aspect of the hybrid treatment: fixed partial denture and unilateral removable partial denture with metal frame and external precision resilient attachment

RESULTS

After 4 check-ups, the situation was:

1. the mastication was in good shape and the occlusal contacts were functioning for all the patients after the direct relining realized at 12 moth and 24 months;
2. the periodontium of the abutment teeth was healthy with no altered probing depth and no mobility also for all the patients;
3. there were no fissures/fractures of the ceramics, of the extra coronal attachment or of the removable denture;

4. in 2 cases of unilateral RPD the plastic female of the precision attachment was replaced;

5. the comfort of the patients was 4 (76%) and 5 (24%) for the unilateral RPD and 2 (15.38%), 3 (61.53) and 4 (23.07%) for the control group (RPD with major connector) (Fig.4).



Figure 3. Patient satisfaction for unilateral removable dentures (left) and control group (right)

In the control group after 4 checkups the main complaint of the patients was the presence of the major connector which limits the space for the tongue during functions.

DISCUSSIONS

It would be correct to state that removable dental prostheses, given suitable pretreatment and follow-up regimes, can provide satisfactory solutions [Error! Reference source not found., Error! Reference source not found.]. Another 5-year clinical study on the other hand reveals that removable partial denture, retained bilaterally with precision attachments, are a reliable treatment modality without negative long-term effects on periodontal health, whereas unilateral removable dental prostheses cannot be recommended because of high clinical failure rates [Error! Reference source not found.]. At least two teeth on each side should be splinted when extra-coronal distal extension attachment prostheses are used [Error! Reference source not found.]. A very interesting study three finite elements study [Error! Reference source not found.] concluded that the stress in the periodontal tissue decreased effectively when the third abutment was added. In this preliminary clinical study, in all cases at least two abutment teeth were used in the FPR on which the precision attachment was applied. Also it was important to protect the periodontal health of the abutment when restored with distal-extension extra-coronal attachment dentures. It is necessary to examine periodically after restored in order to keep the periodontal health of the abutments. The patients included in the study were recalled for check-ups every 6 months and the periodontal status of the abutment teeth was recorded. All the abutment teeth had healthy periodontium after the follow-up period. Stress on the terminal abutment can be reduced by using an extracoronal resilient attachment that allocates more loads onto the distal edentulous ridge [Error! Reference source not found., Error! Reference source not found.]. The level of loading influenced the extent of reduction. A resilient attachment with a universal hinge had the most movement when loading was in the bucco lingual direction [Error! Reference source not found.]. In this clinical study we have used external precision attachments with plastic (resilient) females with medium retention (yellow) (Fig.2).

CONCLUSIONS

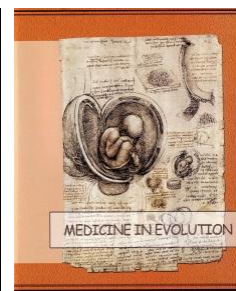
Both removable partial denture with metal frame and major connector retained bilaterally with precision attachments, and unilateral removable dentures on precision attachments are reliable treatment options without negative medium-term effects on

periodontal health in class I II and III Kennedy edentate spaces. The unilateral removable dentures on precision attachments were preferred by the patients.

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Restoration of upper anterior teeth morphology in case of dental attrition. Case presentation



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Abstract

Dental attrition is the mechanical wear caused by functional or para-functional dento-dental contact without food interposition or the action of other tooth extrinsic factors [1]. Microscopically, parallel striations are observed. Macroscopically glossy faces appear with well-rounded edges. Two male patients with accentuated attritions to the upper frontal teeth were examined. The primary difference between the two cases, which has led to a different therapeutic approach, is the presence in one of the patients of the diastema and inter-dental spaces of considerable size. As a result, in one patient the treatment consisted of a fixed partial denture that included the whole group of upper frontal incisors. A unitary fixed denture could not be achieved for the second patient because coronary morphology and height-to-width. It was decided to individually recover each tooth through corono radicular reconstruction using glass fiber posts, after the pulpectomy has been done. The first patient benefited from a fixed physiological partial denture that included the entire group of upper frontal incisors. For the second patient, individual metal crowns were made to achieve optimal morphofunctional appearance. Increased mechanical wear to the level of the upper incisors occurred as a result of the loss of chewing units in the lateral areas. In addition to the unaesthetic appearance, dental sensitivities have begun to appear in some of the frontal teeth, which require devitalization. The purpose of any prosthetic treatment is to achieve the restoration of dental morphology and implicitly of facial aesthetics, corroborated with the restoration of stomatognathic system functions.

Keywords: morphology, attrition, upper frontal teeth.

INTRODUCTION

Non-carcinogenic dental lesions arise from the combination of attrition, abrasion and erosion phenomena. Throughout their lives, each person is exposed to various dental wear mechanisms of different intensity, duration and time. Each lesion can be present in varying proportions, making the clinical appearance vary from patient to patient, and for a more difficult diagnosis. The attrition lesion is a form of tooth wear produced by friction and cyclic stress, as in bruxism [2].

Tooth wear is a term referring to different processes, which, either individually or in association, lead to the irreversible loss of hard dental tissue [3]. Currently, the tooth wear is considered as the result of three processes: erosion (dissolution of hard tissue by acidic substances), attrition (wear through tooth-tooth contact), and abrasion (wear produced by interaction between teeth and other materials) [4]. In addition, some authors appreciate that a further process (abfraction) might potentiate wear by abrasion and/or erosion [3; 4; 5].

Dental attrition is the mechanical wear caused by functional para-functional dento-dental contact without food interposition or the action of other tooth extrinsic factors [1]. It is thought to be caused by fine microscopic particles coming from collapsed enamel prisms and trapped between antagonistic dental surfaces acting as an abrasive material. These cause microscopically visible parallel striations. Macroscopically glossy faces appear with well-rounded edges.

Lack of attrition is considered a sign of occlusal blockage and is encountered within dento-maxillary anomalies that alter the morphological parameters of occlusion. Among the parafunctions responsible for the appearance of attrition are bruxism.

Depending on the location, there are two types of attrition: incisal or occlusal and approximate [6]. The first type occurs in incisal edges or occlusal surfaces with static or dynamic dental dentures. Microscopically we can observe striations oriented in the same direction, parallel, which clearly stop at the edge of the surface's contour and correspond with similar ones on the antagonist teeth. Interproximal attrition occurs at the interdental contact surface. It is due to tooth friction at the point of contact, as a consequence of dental physiological mobility. There is a shortening of the dental arcs in the mid-distal direction and transformation of the interdental contact points into contact surfaces.

The degree of mechanical wear is different depending on the forces exerted between the dental surfaces, their duration of action and the quality of the dental hard tissues. Attrition is more visible in the teeth with poor mineralization [7].

According to Pindborg attrition takes three forms: physiological, excessive and pathological [7]. Physiological attrition is a reduced loss of tooth tissue due to dental contacts during mastication and swallowing. Within one year about 0,03 mm of the enamel thickness is lost. Excessive attrition is a loss of deeper tissue, due to low resistance of the dental enamel or erosion due to the consumption of food and acidic beverages. Pathological attrition is a profound loss of hard tissue localized to a dental group as a result of traumatic dento dental contacts from extended edentation or parafunctional movements (bruxism).

Pathological attrition occurs as a result of concentrated action of the occlusal forces on some segments of the dental arches. Dental wear takes on various forms which, in relation to spread, form or age are a normal or pathological state [8].

MATERIALS AND METHODS

Two male patients with advanced attrition to the upper frontal teeth were examined. Attritions are more visible in study models than at the endooral clinical examination, when the „mirror” polishing [9] of the upper fronts is seen.

The first case is 58 year old man. According to the patient's history, it appears that the tooth loss in the lateral region is the consequence of dental caries and it's complications. Thus, the patient presents bi-terminal edentulous area in the mandible and shows a bilateral edentulous upper maxillary. The lack of teeth in the lateral areas have resulted in the loss of occlusal stops at this level. At the level of the front teeth, aggravated abrasions appeared at the incisal edge of the upper frontal teeth. To prepare a prosthetic treatment plan, we took dental impressions to create study models (figure 1). On the study models we can see the diminution of the vertical dimension, as well as the egression of the upper molars (figure 2, figure 3).



Figure 1. Study models



Figure 2. Study models - right lateral view



Figure 3. Study models - left lateral view

As a first step of the prosthetic treatment, the vertical dimension of occlusion (VDO) was determined using occlusion templates (figure 4).



Figure 4. Determining VDO with occlusion rims

The next step is to morphofunctional reconstruction of the maxillary frontal group and patient's physiognomy. For this one we choose a fixed physiological, metal-composite partial prosthesis for the maxillary incisors.

During the case studies we used a series of instruments and materials, among which:

- yarns for gingival retraction (figure 5)
- a set of grinding mills (figure 6)
- dental impression spoons (figure 7)
- dental impression material (figure 8)
- cementitious material (figure 9)



Figure 5. Yarn for gingival retraction

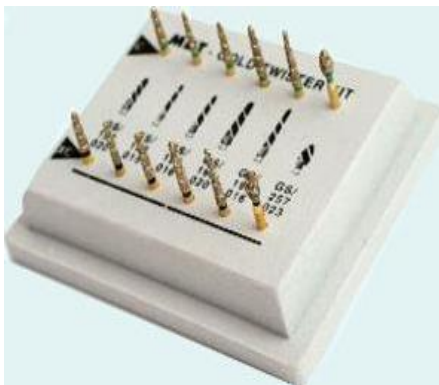


Figure 6. A set of grinding mills



Figure 7. Dental impression spoons



Figure 8. Dental impression materials



Figure 9. Cementitious material

After the preparation of the superior incisors (figure 10) the prosthetic field is imprinted and the metal skeleton of the future prosthetic restoration is made. It is tested and adapted in the oral cavity of the patient (figure 11). The next session is reserved for testing and adapting of the prosthetic work, verifying propulsion, laterality and lack of interference (figure 12). The prosthesis is temporarily cemented until the morphofunctional rebalancing treatment of the masticatory device is completed.



Figure 10. Preparation of upper frontal teeth



Figure 11. Testing the metallic skeleton



Figure 12. Endooral aspect of the maxillary prosthetic rehabilitation

The second case is a 49 year old man, also presenting bi-terminal edentulous area in the mandible and a bilateral edentulous area in the maxillary. Edentulous areas are a consequence of complications with dental caries. The patient presents pathological attrition at the level of the upper frontal incisors (figure 13).



Figure 13. Pathological attrition of the upper incisors

Since the patient has a diastema between the frontal teeth, the therapeutic solution is the morphofunctional restoration with the help of four metal-ceramic crowns. Abrasion is very pronounced, thus we devitalize the four upper incisors, endodontic obturation is made (figure 14), after which dental crowns are reconstructed using glass fiber pivots (figure 15, figure 16).



Figure 14. Endodontically treated upper frontal teeth



Figure 15. Restoration using glass fiber posts



Figure 16. Dental restoration using composite

Dentures are prepared (figure 17), dental impressions are taken and metal-ceramic crowns are realized (figure 18). After their adhesive cementing, the entire dental apparatus is morpho-functionally rebalanced by solving edentulous lateral areas.



Figure 17. Upper incisors prepared



Figure 18. Metal-ceramic crowns

DISCUSSIONS

The occlusal relief is in congruence with the dento-maxillary functions: incision, mastication, phonation, swallowing. Morphological changes following pathological attrition will not allow for a normal masticatory dynamics, causing parafunctions to occur in the musculature and temporomandibular joint. For these reasons, dental attrition should be viewed as an edentulous area. The treatment follows a complex morpho-functional restoration. The restoration of dental morphology must be in harmony with the musculo-articular system and aesthetic requirements.

Unilateral mastication is followed by more pronounced abrasions in the hemi-arch and the appearance of occlusal disharmony with consequences on the entire dento-maxillary apparatus [9].

As a result of extractions and dental migrations, uneven distribution of the masticatory forces takes place, with focus on certain areas of the dental arches, leading to the generation of parafunctional muscular activities with pathogenic potential [10].

The shortening of the dental arches modifies the strain at the remaining dento-periodontal units. The higher the partial edentation, the higher the occlusal strain on overlying teeth [10].

The psychologist analyzed the results obtained at the beginning and end of the whitening treatment and drew conclusions for each patient. The Schwarzer Self-Test Questionnaire, developed by Schwarzer and Jerusalem in 1995, was used. It is very important in every research to respect the human rights and to inform the patients about the clinical research [11; 12; 13; 14].

CONCLUSIONS

Increased mechanical wear of the upper frontal teeth occurred as a result of loosening the chewing units from the lateral areas. Abrasion is a physiological phenomenon, which may become pathological only through association with other factors (friction and erosion).

The pathological attrition of the frontal teeth creates, besides the unaesthetic appearance of the patient, complex problems of prosthetic treatment. Frequently there is a false reduction in the vertical occlusion dimension [15].

The prosthetic rehabilitation of these patients often requires endodontic treatments of the tooth with pathological attrition for the purpose of restoring their morpho-functionality and restoring facial aesthetics.

Some patients experience a generalized pathological attrition on the arches with reduced cervical incision size at half or even gingival level. Thus an unaesthetic and aged appearance of the patient occurs.

Partial edentations in the lateral areas caused the mandible to deviate concurrently with changes in the individual masticatory cycle. Patients, in order to compensate for the reduction in chewing efficiency, mobilized their mandible on a different, highly modified trajectory. These chewing cycles, in addition to having a shorter duration, change after the consistency of the food and the presence of interference. This results in the rodent-like mastication which causes the wear and tear of the fronts leading to the alteration of the patient's physiognomy.

After prosthesis the correctness of the vertical occlusion dimension was restored and the occlusal interferences were eliminated, the mastication becoming effective, the prosthetic treatment also solving the reconstruction of the physiognomic function.

The relationship with the patient is actually an internal cabinet rule, or habit and not a imposed way of management [16]. In the management of date patients in the dental office is necessary to try to go more in the electronic dental record field because the management of the patients will be better and this will improve the communication skills [17]. A good prevention and treatment is accomplished by conducting a thorough medical history of the patients [18]. When the patient is coming to medical services, he expects primarily to be heard, understood and not necessarily just a good service that is considered something usual and normal [14].

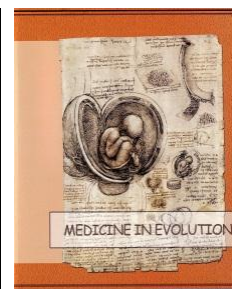
The purpose of any prosthetic treatment is to achieve the restoration of dental morphology and implicitly of facial aesthetics, corroborated with the restoration of stomatognathic functions.

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A simplified synthetic search to evaluate tooth loss and survival rate after regenerative periodontal therapy in moderate to severe chronic periodontitis, in a Romanian specialty clinic setting



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Abstract

Introduction: in patients suffering of chronic to severe generalized periodontitis, there are teeth at borderline, rising the question of retaining or extracting. It has been show, that teeth with questionable periodontal prognosis can be retained in most of the cases. **Objective:** to propose a proof of concept to report the survival rate, tooth loss of teeth with severe reduced attachment apparatus, and to use it to assess, for the use of a Romanian periodontal clinic, the ability of long term supportive periodontal care to modify the prognosis from hopeless to unfavorable or questionable. **Methods:** based on the research data on regenerative periodontal surgery issued by the team of the clinic (mainly clinical parameters as Pocket Depth, Bleeding on Probing, Clinical Attachment Level, but also tooth survival and common risk factors), full-text articles on human studies were electronically searched in PubMed and in relevant scientific journals. The query used in the advanced search offered 1,486 results. Studies were considered for inclusion if limited to patients with moderate to severe periodontitis, who underwent active periodontal therapy (APT) and followed a supportive periodontal care (SPT) program for at least 5 years. Also, they had to report data on tooth loss, diagnosis, prognosis, treatment approach, supportive periodontal treatment, treatment outcome. **Results:** from 18 articles selected, only 6 referred to regenerative surgical therapy. In patients treated with surgical regenerative procedures alone, the **conclusions** were: more than 92% of the treated teeth presented up to 15 years after regeneration with CAL in a position equal or more coronal than at baseline, when the infection-control phase of periodontal therapy was completed. The long-terms benefits of periodontal regeneration are: greater short-term CAL gain and PPD reduction, absence of tooth loss, less periodontitis progression and less need for re-intervention.

Keywords: survival rate, tooth loss, long term survival, maintenance, chronic periodontitis, severe periodontitis, questionable teeth, hopeless teeth, surgical regenerative treatment.

INTRODUCTION

The first studies on the importance of supportive periodontal care (SPT) program were conducted by Oliver (1) and Ross et al. (2). In 1978, Hirschfeld & Wasserman (3) stated that "the main goal of periodontal treatment is the retention of as many teeth as possible in health, function and comfort". Periodontal maintenance care (PMC), also known as SPT, is an essential part of the long-term success periodontal treatment, and immediately follows the completion of active periodontal therapy (APT). Periodic recall visits form the base of the maintenance program. Preservation of periodontal health status acquired in the active periodontal phase needs time and efforts from the part of the dentist and the staff and also patient compliance.

In a systematic review from 2008, Gaunt et al. (4) find that supportive periodontal care performed by a specialist will likely result in greater periodontal stability and higher tooth survival rates when compared with general dental practice. The cost evaluation analysis based on the Axelsson & Lindhe article from 1981 (5) showed that for the patient the difference between SPT delivered by the general dentist is an extra 210€ (equivalent) per extra tooth per year over 30 years. PMC includes a group of procedures: update of medical and dental history, extra-and intra-oral soft tissue examination, dental examination, periodontal evaluation, radiographic review, removal of biofilm and calculus, treatment of new or recurrent sites of periodontal disease, establishment of an individualized interval for periodontal maintenance treatment. The purpose of these procedures is to prevent the progression or recurrence of periodontal disease, to reduce the incidence of tooth loss and to increase the probability of diagnosing and treating other diseases found within the oral cavity (AAP 2001). Most patients with a history of generalized severe chronic periodontitis that has been recently treated and stabilized are initially placed on a periodontal maintenance therapy program with a 3-month recall interval. The basis for this relatively short interval is the fact that people with a history of severe disease are, by nature, at high risk for recurrence. (6). The predictability of maintenance care program may be associated with diverse conditions, mainly when a patient is exposed to one or more risk factors that influence the host response (7,8). It is worldwide acknowledged that poor compliance with the recall and recare intervals is associated with recurrence/progression of periodontal disease, clinical attachment loss, increasing of probing depths, root caries and tooth loss (5).

Between 2004 and 2014, periodontal regenerative surgery using an oily Calcium hydroxide suspension, enamel matrix proteins and polylactic-polyglycolic copolymers became the focus of research of a Romanian periodontal clinic. The results were published as 15 papers in peer-reviewed journals, literature reviews, experiments on animal models and randomized clinical trials. The latter can be now assessed in terms of tooth survival and retention under a long-term supportive periodontal therapy, if a proof of concept for a simple way to extract the most relevant data from the existing literature can be provided.

Due to the frequency of severe periodontitis among Romanian patients, and the amount of extractions performed by general dentists in severe compromised periodontal patients, a synthetic search was conducted, to assess the predictability of different type of periodontal treatment (non-surgical; surgical non-regenerative; surgical regenerative) and the outcomes of these clinical procedures. The objective of this paper was to propose a proof of concept to report the survival rate, tooth loss of teeth with severe reduced attachment apparatus, and to use it to assess, for the use of a Romanian periodontal clinic, the ability of long term supportive periodontal care to modify the prognosis from hopeless to unfavorable or questionable, in order to show that severely compromised teeth can be predictably long-term maintained if they are included in a qualitative supportive periodontal treatment.

METHODS

Development of a protocol

This synthetic search was conducted following a modified protocol imagined by Miron et al. (9) which included definition of the focused question; a PICO (patient, intervention, comparison, outcome) question; a defined search strategy; study inclusion criteria; determination of outcome measures; screening methods, data extraction and comparison.

Defining the focused question

How far can be extended the survival rate of teeth with severe reduced attachment apparatus due to periodontal disease, how long and which procedure is more predictable?

PICO question

P: Can patients with severe periodontal disease and severely compromised teeth support

I: undergoing non-surgical/surgical, non-regenerative/ surgical/ regenerative procedures

C: when compared with not treated patients

O: maintain their teeth on long-term?

Search strategy

Based on the research on regenerative periodontal surgery issued by the team of the clinic (mainly clinical parameters as Pocket Depth, Bleeding on Probing, Clinical Attachment Level, but also tooth survival and common risk factors), full-text articles and human studies were electronically searched in the PubMed database and scientific relevant journals. The filters used referred to full text articles and human studies. Combination of search terms and search strategies were used to find appropriate studies (Table 1).

Table 1. Search criteria for surgical, regenerative treatment

Search Terms
'severe periodontitis' OR 'severe periodontal disease' OR 'moderate periodontitis' OR 'moderate periodontal disease' OR 'periodontal maintenance' OR 'maintenance program' OR 'supportive treatment' OR 'tooth loss' OR 'survival rate' OR 'survival time' OR 'periodontal prognosis'
AND
'surgical' OR 'open flap' OR 'open-flap' OR 'regenerative surgery' OR intrabony defect' OR 'intra-bony defect' OR 'periodontal regeneration' OR 'intrabony pocket' OR 'intra-bony pocket' OR 'infrabony defect' OR 'infra-bony defect' OR 'infrabony pocket' OR 'infra-bony pocket' OR 'intraosseous defect' OR 'intra-osseous defect' OR 'guided tissue regeneration' OR 'GTR' OR 'guided bone regeneration' OR 'GBR'

The query used in the advanced search offered 1,486 results, according to the topic of this search:

A hand search was conducted through the Journal of Clinical Periodontology, Journal of Periodontology, Journal of Periodontal Research, Periodontology 2000 from November 2016, until August 2017. The reference list of the selected articles was screened.

Criteria for study selection and inclusion

All the studies selected were written in English, are full-text human studies articles. No reviews were included. For inclusion were considered studies limited to patients with moderate to severe periodontitis, who underwent active periodontal therapy (APT) and followed a supportive periodontal care (SPT) program for at least 5 years. Also, they had to report data on tooth loss, survival rate, diagnosis, prognosis, treatment approach, supportive

periodontal treatment, treatment outcome. In the end, from the electronic database search and the screening of the reference list of included publications, 18 articles were selected from which only 6 articles used surgical regenerative periodontal therapy as treatment.

Outcome measure determination

The main outcome was tooth loss during SPT. Second endpoints were the change of prognosis and the survival rate.

Screening method

Titles and abstracts of the selected articles were screened by the first author (VR) based on the question: "which are the long term results of different treatment procedures involving non-surgical/surgical but non-regenerative/surgical regenerative procedures at severely periodontal compromised patients? Full-text articles were obtained if the follow-up period was at least 5 years, and if the outcome of the treatment was described in at least two terms of the following: tooth loss during SPT, tooth loss during APT, change of prognosis, survival rate.

Data extraction and analysis

The following data were extracted: the main author's name, the study design, the number of patients, the number of teeth, the setting where the clinical procedures were performed, the presence of systemic diseases, initial SPT prognosis, last SPT prognosis, the period of SPT, recall intervals, compliance, administration of antibiotics, the population of the study description (age range, mean age, gender), smoking habits, inclusion of the third molar, if the teeth considered in the study were abutment teeth or not, the furcation involvement, the kind of treatment the patient underwent, initial extraction, tooth loss during SPT and which of them were lost for periodontal reason and survival rate. Due to the reduced number of articles, no meta-analysis was performed. Instead, data are reported in a synthetic way, with an overview of all studies fitting the search descriptions. The articles selected for the search were summarized in tables, according to the type of the treatment the patient underwent: surgical, regenerative.

RESULTS AND DISCUSSIONS

In a study from 2006, Thirty patients suffering from chronic periodontitis, each of whom displayed one intrabony defect, were randomly treated with access flap surgery (AFS) and the application of OCHS (test) or with AFS alone (control). The following clinical parameters were recorded at baseline and at 6 months after therapy: plaque index, gingival index, bleeding on probing, probing depth (PD), gingival recession, and clinical attachment level (CAL). No differences in any of the investigated parameters were observed at baseline between the two groups. At 6 months after therapy, the test group showed a reduction in mean PD from 7.7 ± 1.5 to 2.9 ± 0.9 mm ($P < 0.001$) and a change in mean CAL from 9.6 ± 2.1 to 5.5 ± 2.5 mm ($P < 0.001$). In the control group, the mean PD was reduced from 6.9 ± 0.9 to 3.7 ± 0.9 mm ($P < 0.001$) and the mean CAL changed from 8.5 ± 2.5 to 6.4 ± 2.7 mm ($P < 0.001$). OCHS resulted in statistically significant higher PD reductions ($P < 0.01$) and CAL gains ($P < 0.05$) than AFS alone. Within the limits of the study, it could be concluded that: (1) at 6 months after surgery both therapies resulted in statistically significant PD reductions and CAL gains and (2) treatment with OCHS resulted in statistically significant higher CAL gains than treatment with AFS alone (Stratul et al. 2006). At ten years after the initial study, an assessment of the tooth survival and retention, following a well-planned supportive therapy appears as necessary.

In 2004 Cortellini and Tonetti (10) in their a long-term survival of GTR-treated sites, assessed clinical attachment level (CAL), stability and tooth loss in a total of 175 patients with one deep intrabony defect (teeth severely compromised with mean CAL10.7 mm, mean PPD of 8.7mm). In each patient, one site was treated with GTR using non-resorbable/resorbable membranes or a combination of absorbable membranes and alloplastic biomaterials. Average follow up was 8±3.4 years and 66.9% of total number of subjects fully complied SPC recall visits. Tooth survival was ≥ 96.3% for the first 8 years and remained constant during the following 8 years. The authors found that more than 92% of the treated teeth presented CAL in a position equal or more coronal than at baseline 15 years after regeneration, after the APT was completed.

Dannewitz et al. in 2006 (11) studied the tooth loss on molars, and prognostic factors for molar survival. Study population consisted of 71 subjects with 505 molars. After initial anti-infectious therapy, 3 or 6 months later, corrective periodontal surgery was carried including access flap surgery, GTR, tunnel preparation, resective procedures and tooth extraction. 127 molars received non-surgical therapy, while 227 were subject to flap surgery. 33 molars (6.5%) were extracted during APT, 22 were maxillary molars, while 11 were mandibular molars. During SPC (average period of 107 months), another 38 molars were lost. The results showed that 3rd degree furcation involvement (FI) influence negatively the lifespan of molars, leading to a significant deterioration of prognosis. According to the authors, molars with FI in 1st and 2nd degree had a comparable prognosis to teeth without FI, after APT. Smoking, baseline bone loss, number of molars left, and degree III FI are risk factors influencing the retention time of molars.

Cortellini et al. in a 2011 study (12) compared the prosthetic outcome following periodontal regeneration (test group) of 25 hopeless teeth with the extraction (control group) of another 25 hopeless teeth and prosthetic replacement. The population consisted in 50 subjects with generalized severe periodontitis and at least one hopeless tooth to be extracted. In the control group, 8 out of 14 implanted sites needed bone regenerative procedures, 3 sites needed bone regeneration and soft tissue augmentation. In the test group, 22 out of 25 teeth needed splinting before surgery, that was achieved with temporary fixed bridges or composite resin. At 1 year reevaluation, 23 out of 25 teeth showed important improvements clinical and radiographic at 4 sites/tooth. Two hopeless teeth were extracted. No more teeth were lost in this group between 1 and 5 years. In the control group, 24 out of 25 extracted teeth were replaced by implants. None of the 24 implants were lost during the 5 year observation period. Authors noted that 23 out of 25 test teeth got an important clinical improvement that was able to change their prognosis at 1 year from a hopeless condition into a maintainable condition. In terms of ability to retain natural tooth, the test therapy showed a clear superiority over the control approach: the tooth survival rate being 92% vs 0%. Table 2 presents a synthesis of the above-commented studies.

Table 2. Details of the included studies from 2004 to 2011: surgical, regenerative therapy

Study	Cortellini & Tonetti	Dannewitz et al.	Cortellini & Stalpers et al.
Year of publication	2004	2006	2011
Study design	Retrospective	Retrospective	Randomized controlled clinical trial Test: regenerative procedures Control: extraction and implant insertion
Number of patients	175	71	50
Number of teeth	175	505 molars	25 in test group, 25 in control group
Operator	Private practice	University	Private
Diagnosis	Severe periodontitis	AgP/ ChP: 9/62	Generalized severe periodontitis
Systemic disease	Excluded	NA	NA
Initial SPT Prognosis	Severely compromised	FI 3 rd degree- inferior	Favorable 19 teeth

		prognosis vs 1 st or 2 nd degree	Questionable 4 teeth Hopeless 2 teeth
Last SPT Prognosis	Long-term stability	Upper molars< lower molars	Maintainable condition
SPT	Up to 15 years	At least 5 years	At least 5 years Reevaluation at 1 and 5 years
Recall interval	1 st year, monthly, afterwards 3 months	3-6 months	3 month
Compliance	66.9% fully compliant	NA	NA
Antibiotics	No	NA	Doxycycline, 0.12% chlorhexidine
Age range	18- 76 years	16- 70 years	NA
Mean age	44.5	46 years	51.2 years in control group 46.3 years in test group
Gender	43% males	40 females	15 female
Smoking	Smokers and non-smokers	Actual/ former/ never smoker: 43.7%/ 26.8%/ 29.5%	2 Smokers <20 cigarettes/ day were included
3rd molar inclusion	NA	Included but excluded in logistic regressions	NA
Abutment teeth	NA	NA	NA
Furcation involvement	NA	1 st /2 nd /3 rd degree: 23%/ 24.1%/ 13.3%	NA
Surgical treatment	GTR with non-resorbable/ absorbable membranes Absorbable membranes and alloplastic biomaterials	Access flap GTR 57 molars Tunnel preparation Resection 20 molars	Papilla preservation flap Nonresorbable/ bioresorbable membranes EMD Alloplastic materials
Initial extraction (APT)	NA	33 molars(6.5%)	24 teeth in control group
Teeth loss during SPT	6 teeth, all smokers and 5 noncompliant	38	2 teeth from test group
No of teeth loss during SPT/ year/ patient	NA	0.06	NA
Periodontal reason	NA	12	2 in test group
Survival rate	First 2 years 100% Up to 8 years follow up 96.3%	85.9%	92% in test group

In a study on aggressive (AgP) and chronic periodontitis (CP), Graetz et al. in 2011 (13) determined the survival rates of questionable and hopeless teeth during 15 years of SPT. The APT was basically non-surgical, but, when indicated, access flap surgery, GTR, tunneling procedures, molar root resection were carried on. No pocket elimination, osseous resection or augmentation of intrabony pockets was performed. In this study, the number of teeth before APT in AgP/CP was 923/874. After APT remained 853/834. At the end of SPT, the losses were in AgP/CP: 22.6/19.9 teeth/patient. Teeth lost due to periodontal reasons of predicted questionable/hopeless prognosis during SPT/ APT were 43/17 and 26/16 in AgP and CP, respectively. The mean survival time of questionable teeth until extraction was 4.5 (AgP) and 5.9 (CP) years, respectively. In hopeless teeth, the mean time until extraction was 3.9 (AgP) and 4.0 (CP) years. For the authors, it was obvious that the more teeth being extracted in APT, the fewer will be extracted in SPT. The authors did not find any statistically significant differences in tooth survival between AgP and CP in the follow-up of probing pocket depths (PPD). In patients with AgP, 88.2% (209 of 237) of questionable and 59.5% (22 of 37) of so-called hopeless teeth survived 15 years during regular SPT.

In a study on risk factors for molars loss during SPT, on 136 subjects with 1015 molars at baseline, Dannewits et al. in 2016 (14) extracted 50 (4.9%) molars during APT and 154 (15.2%) molars over an average SPT period of 13.2±2.8 years). The treatment applied during APT were: SRP only, open flap debridement, GTR, tunnel preparation, resective procedures. 63% of molars with 3rd degree furcation involvement (FI) were still present after 10 years, with a mean survival time of 11.8 years. Authors noted that, in addition to FI, advanced bone loss>60% at the beginning of periodontal therapy and endodontic treatment are significant tooth-related factors with a negative impact on survival of molars. The results showed that periodontal therapy combined with regular maintenance contributed to teeth preservation.

Conversely to other studies, in which surgical therapies approach included both access flap surgery and/or periodontal regeneration, in 2017 Cortellini et al. (15) presented a comparison study of

periodontal regeneration vs. access flap surgery in 20-year follow-up. The results of this study confirmed the superiority of regenerative techniques compared to access flap surgery. Half of the sites treated with access flap alone remained stable over the 20-year follow-up period. Observed long-term benefits of regeneration were: greater short-term CAL gain and PPD reduction, absence of tooth loss, less periodontitis progression and less need and expense of re-intervention. Table 3 presents a synthesis of the above-commented studies.

Table 3. Details of the included studies from 2011 to present day: surgical, regenerative therapy

Study	Graetz et al.	Dannewitz et al.	Cortellini & Pini Prato
Year of publication	2011	2016	2017
Study design	Retrospective	Retrospective	Retrospective
Number of patients	68	136	45 (15 each of the 3 groups)
Number of teeth	AgP/ ChP: 923/ 874	1015 molars (3523 teeth)	45 deep intra-bony defects
Operator	University	University	Private
Diagnosis	AgP/ ChP: 34/ 34	ChP/AgP: 88.2%/ 11.8%	NA Deep intra-bony defects Moderate to severe periodontitis??
Systemic disease	NA	Diabetes mellitus Coronary heart disease	NA
Initial SPT Prognosis	Questionable/ hopeless AgP: 262/63 ChP: 149/51	NA	NA
Last SPT Prognosis	NA	NA	No tooth loss and less periodontitis progression
SPT	10- 24 years AgP 10- 24 years ChP Mean 16.1/ 16.3	10-20 years Mean 13.2 years	20 years
Recall interval	3- 12 months	3-6 months	Monthly, 1 st year 3 months for 20 years
Compliance	Compliant patients	Noncompliant/ compliant: 44.1%(60)/55.9%(76)	41 compliers
Antibiotics	Metronidazole and Amoxicillin in 29.4% of AgP	NA	Tetracycline HCL 250 mg
Age range	AgP/ChP: 23-42/ 40-69	20-69	25-61
Mean age	AgP 33.3 ChP 51.6	47.1	42.8
Gender	AgP male/ femle: 23/11 ChP male/ female: 17/17	Female/ Male(no): 66.9%/33.1%	21 male, 24 female
Smoking	Smoker/ former/ non AgP 8/5/26 ChP 4/4/30	Active 11/ former 60/ non-smokers 65	NA
3 rd molar inclusion	Included	Included	NA
Abutment teeth	NA	NA	NA
Furcation involvement	NA	1 st degree FI 290(28.6%) 2 nd degree FI 201(19.8%) 3 rd degree FI 87 (8.6%)	Not included
Surgical treatment	Access flap surgery GTR Tunneling procedures Root resection	OFD GTR Tunneling Respective	1. regeneration with MPPT+ Titanium e-PTFE 2. regeneration with e-PTFE 3. Flap surgery
Initial extraction (APT)	AgP/ChP: 70/40	50 molars (4.9%)	-
Teeth loss during SPT	AgP/ChP: 72/93	154 molars	0
No of teeth loss during SPT/ year/ patient	AgP/ChP: 0.14/ 0.16	3 rd molar/1 st &2 nd molar/ single-rooted: 0.09/ 0.06/ 0.07	0
Periodontal reason	AgP/ChP: 63/48	52 molars (33.8%)	26 recurrences required re-intervention in 20 years
Survival rate	AgP: questionable/ hopeless: 88%/ 60%	NA	100%

CONCLUSIONS

Regarding original CAL, more than 92% of the treated teeth presented CAL in a position equal or more coronal than at baseline 15 years after regeneration, after APT was completed. Molars with FI in 1st and 2nd degree had a comparable prognosis to teeth without FI, after APT. Smoking, baseline bone loss, number of molars left, and degree III FI are risk factors influencing the retention time of molars. There are no significant differences in tooth survival between AgP and CP pocket depths probing follow-up. In patients with AgP, almost 90% of the so-called questionable and 60% of the so-called hopeless teeth survived 15 years during regular SPT. Periodontal therapy combined with regular maintenance contributed to teeth preservation even in molars with baseline bone loss > 60% and/or 3rd degree FI for more than 10 years. The long-terms benefits of periodontal regeneration are: greater short term CAL gain and PPD reduction, absence of tooth loss, less periodontitis progression and less need and expense of re-intervention. The proposed proof of concept to evaluate the tooth survival and retention under rigorous supportive periodontal therapy can be applied for any randomized clinical trial in any clinical setting.

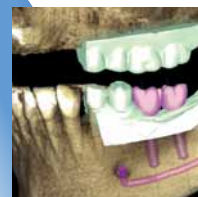
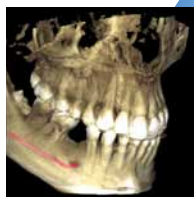
Authors contribution

Viorelia Radulescu and Marius Boariu have equally contributed to this paper, and can be, therefore, regreded both as first authors.

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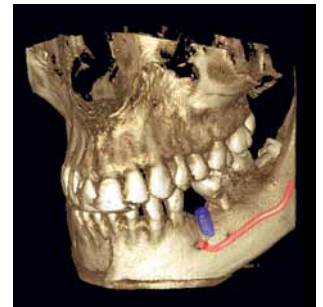
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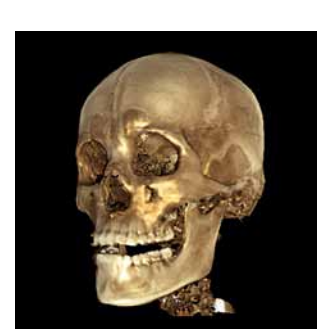
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Assessment of toxicological profile of plant extract formulation on human skin by non-invasive measurements



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Abstract

Thymus vulgaris is a species of Lamiaceae family which possess a number of pharmacological properties, like anti-oxidative, antiseptic, antimicrobial, antispasmodic, antitussive, antifungal, antiviral anti-inflammatory. In this study, two type of formulation loaded with thyme hydro alcoholic extract, thyme aqueous extract, rosmarinic acid and rutin respectively were studied by the means of non-invasive methods on human healthy volunteers. Skin parameters' change, in terms of trans epidermal water loss, erythema and the moisture of corneous layer, was evaluated after the application of the test compounds. The assessment of formulations suggest that these products are safe to use in skin preparation. Low changes of erythema, trans-epidermal water loss and skin moisture were observed in the case of samples based on rosmarinic acid, respectively thyme extract.

Keywords: toxicity, skin, non-invasive measurements, thyme, formulation.

INTRODUCTION

The evaluation of the toxicological profile of the various natural and synthetic agents is of major importance. Premature aging of the skin represents a complex process caused by a set of factors of which, the most important is ultraviolet radiation [1]. Regarding the two types of skin aging, natural aging and photo aging, clinical manifestations are different: in the first case, can be mentioned the appearance of laxity and wrinkles, without an increased pigmentation and the epidermal layer is atrophic while in the photo aging pigmentation and wrinkles are characteristic and epidermal layer is much more affected [2]. Lately, formulations have acknowledged a growing interest due to the fact that are proper transporters in human body for bioactive molecules through various routes. Natural plant resources are often utilized in different products made for skin protection, based on topical application in particular, in order to obtain an increased efficacy based on the antioxidants found in their composition which are very useful in skin protection from aging process. Ultraviolet radiation is a well-known carcinogenic agent, a producer of reactive oxygen species which can lead to the destruction of collagen fibers and wrinkle formation [3]. Plant-based formulations are of great interest, especially due to the frequent utilization of plant extracts in dermatological preparation for different pathologies. However, the use of medicinal plants or biologically active compounds found therein can lead to unwanted effects, most often by the type of allergies. Therefore, plant-based formulation demands efficacy, safety regarding skin irritation and/or sensitization, processes which are influenced by their formulation, nature, quantity, quality of ingredients used [4]. A considerable number of biologically active compounds are studied in the present for their activities in skin protection, by reducing melanin production, pigmentation processes which are associated especially with photo aging. *Thymus vulgaris* is a species of Lamiaceae family, which in the traditional medicine, was used to prepare infusions with the following activities: expectorant, mucolytic, antitussive, antispasmodic [5]. The most important classes compounds identified in thyme extract are phenols, phenolic acids and flavonoids [5]. Based on its rich composition in biologically active compounds extracts from thyme was used mainly for the treatment of respiratory diseases but more recently is studied for effect in various other pathologies due to its properties like: anti-oxidative, antiseptic, antimicrobial, antispasmodic, antitussive, antifungal, antiviral anti-inflammatory and other [6]. Some *in vivo* studies have proved a protective activity of thyme and also an anti-inflammatory effect which reduced edema in animal wounds [7].

The aim of the present study was to evaluate the toxicological profile of some thyme-based formulation on human skin. Therefore, two type of formulation loaded with thyme hydro alcoholic extract, thyme aqueous extract, rosmarinic acid and rutin respectively were studied by the means of non-invasive methods on human healthy volunteers.

MATERIALS AND METHODS

Total hydro alcoholic extract of thyme was obtained by using Soxhlet extraction method. Aerial parts of plant were placed in the Soxhlet apparatus and ethanol 50% was used to sequentially extraction for 12h. The crude extract was filtered, the solvent was removed and final total extract was kept at -4°C until further tests. For aqueous extract dried plant material was suspended and extracted by refluxing with 12 volumes of boiling water for 15 min. The extracts were filtered through a filter paper and the filtrates were used for further tests.

Different types of formulations, namely: a) blank 1 (paraffin oil and distilled water), with thyme hydro alcoholic extract (TC1), with thyme aqueous extract (TC2), and b) blank 2 (self-emulsifying wax, macadamia nut oil and propylene glycol) with thyme hydro alcoholic

extract (TC3), with thyme aqueous extract (TC4), with rosmarinic acid (TC5) and with rutin (TC6) were prepared by homogenization method.

Design of skin parameters' study

12 human subjects (women, between 20 and 40 years old, with an average age equal with 30 years) were recruited through advertisement and personal invitation. The subjects were first examined by a dermatologist in order to discover any serious skin disease or damage especially on forearms; just healthy persons, without any problems, were included in order to ensure comparable baseline characteristics. The aim of this research was revealed to the participants, but they have not been trained about the results' quantification method.

Four different 3x2 cm regions were separately marked on each anterior forearm; zero values for skin parameters were measured in the first day before any applications and they were considered references. 0.3 mL of tested samples were applied in the first day of weeks (the 1st, 2nd, 4th, 6th and 8th week) on one of these regions, as follow: blank formulation, TC1, TC2 and TC5 (left forearm) and blank formulation, TC3, TC4 and TC6 (right arm). After samples' application, the regions were covered by independent surgical dressing for 24 hours, then they were carefully removed and skin parameters' change was evaluated by a Multiprobe Adapter System (MPA5) from Courage-Khazaka, Germany: the measurements of transepidermal water loss (TEWL) were carried out with a Tewameter® TM 300 probe, the level of erythema were tested with a Mexameter® MX 18 probe and the moisture of corneous layer with a Corneometer® CM 825 probe. The skin tests were performed at the same hour, by the same operator by touching every exposed area with every probe for just a few seconds in a laboratory at 22±1°C and 45±3% relative humidity. Statistics were also done by considering blank 1 and 2 / control sample.

Ethical standards

The study was performed in accordance with the ethical guidelines of the Helsinki Declaration, respecting local jurisdiction, and it was previously studied and approved by the Ethics Committee of "Victor Babes" University of Medicine and Pharmacy Timisoara (Romania). Signed informed consents were obtained previous to any sample application; signed informed consents for publication of the results were also obtained.

Statistics

All statistical analyses were performed using a trial version of IBM SPSS. Skin determinations were performed in triplicate. Numerical data were presented as mean ± standard errors. Student t test was used to determine the statistical difference between various experimental groups. Statistical significance was considered at a p-value less than 0.05; *, ** and *** indicate p<0.05, p<0.01 and <0.001.

RESULTS AND DISCUSSIONS

Erythema is a very sensitive skin parameter. It is often used in different studies on toxicological effects of newly synthesized products [8-10] or in the research of novel skin healing compounds [11-12].

Figures 1 and 2 presents the evolution of erythema (redness of skin). Low increases of erythema were reported in every skin experiment, but the increase level make the difference between a toxic compound and a benefic one. Similar evolutions were observed between the groups of samples based on blank 1 on the one hand and blank 2 on the other hand. Lower increases can be observed in the case of samples containing TC1 and TC2 than pure blank samples.

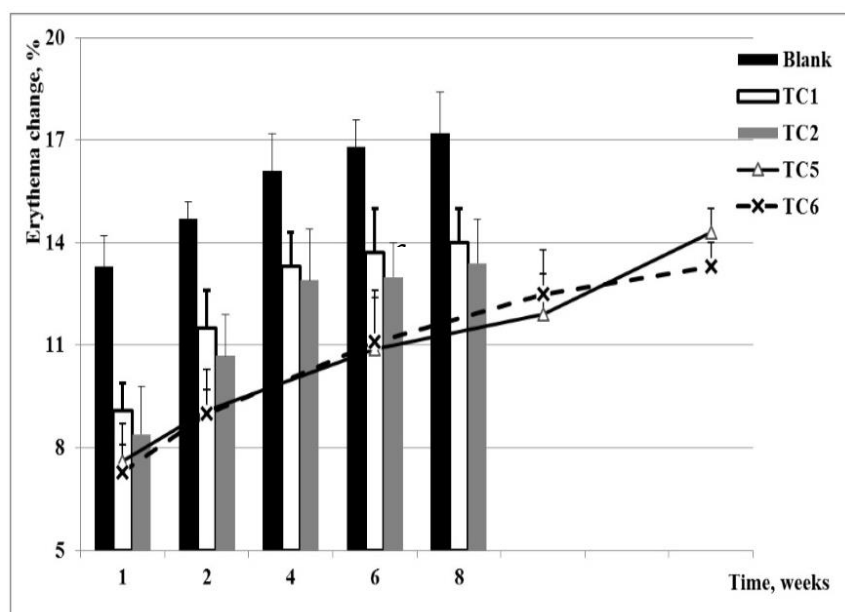


Figure 1. The erythema evolution in the case of samples based on: blank 1 (paraffin oil and distilled water), with thyme hydro alcoholic extract (TC1), with thyme aqueous extract (TC2), with rosmarinic acid (TC5) and with rutin (TC6)

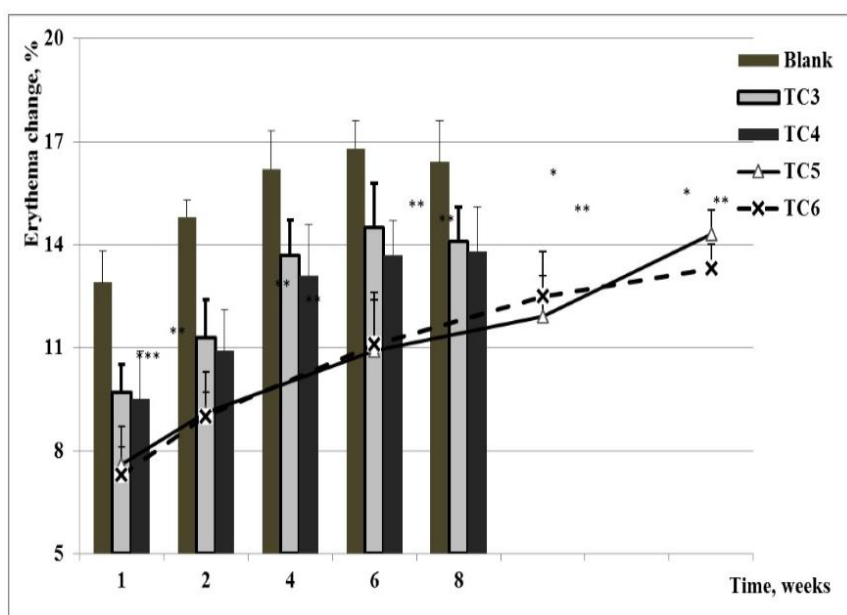


Figure 2. The erythema evolution in the case of samples based on blank 2 (self-emulsifying wax, macadamia nut oil and propylene glycol) with thyme hydro alcoholic extract (TC3), with thyme aqueous extract (TC4), with rosmarinic acid (TC5) and with rutin (TC6)

The moisture of *stratum corneum* and TEWL depend on one another: an increase of TEWL leads to a decrease of skin hydration.

Figure 3 and 4 presents different decreases of skin hydration; the most important decreases can be seen in the case of blank 1 and blank 2 samples (around 4%). In the case of TC1 and TC2 the decreases of skin hydration were lower.

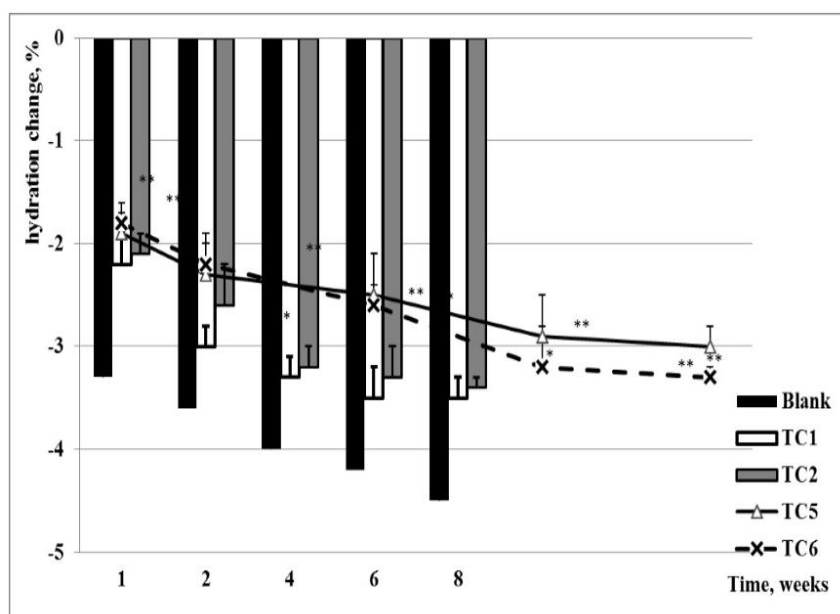


Figure 3. Skin moisture evolution in the case of samples based on: blank 1 (paraffin oil and distilled water), with thyme hydro alcoholic extract (TC1), with thyme aqueous extract (TC2), with rosmarinic acid (TC5) and with rutin (TC6)

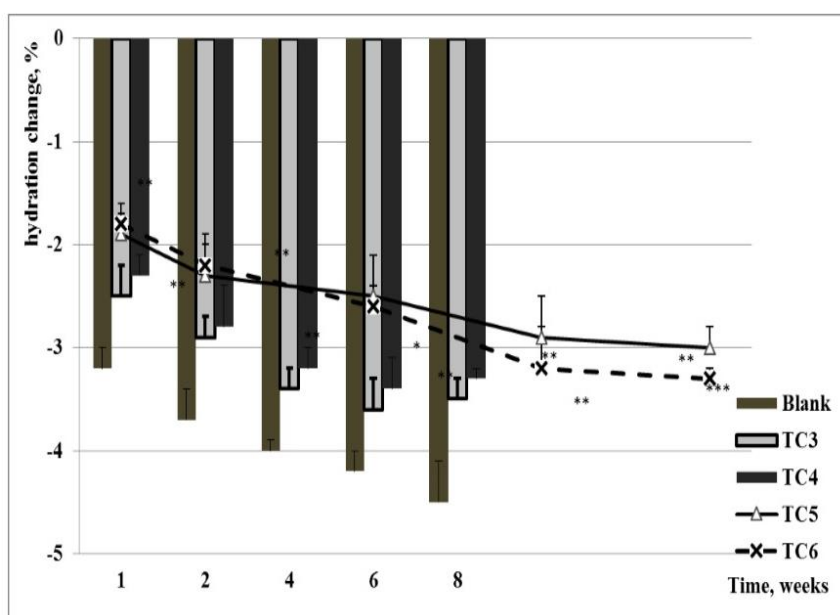


Figure 4. Skin moisture evolution in the case of samples based on blank 2 (self-emulsifying wax, macadamia nut oil and propylene glycol) with thyme hydro alcoholic extract (TC3), with thyme aqueous extract (TC4), with rosmarinic acid (TC5) and with rutin (TC6)

Trans-epidermal water loss (TEWL) is a normal process, but its index makes the difference between a normal or abnormal state of skin. An increased TEWL leads to a dehydrated skin with an aging look.

One important role of skin is its barrier function; skin offers protection as a chemical, biological, physical/mechanical barrier [13]. This function is lost day by day through the aging process or in the case of skin lesions.

TEWL increases were reported in every skin studies. In this research increases by around 8% were obtained in the case of samples blank 1 and blank 2, while the others values were lower (around 6%) (Figures 5 and 6). There are not important modifications which are specific to toxic compounds, but it is important to mention that samples containing active agents lowered TEWL.

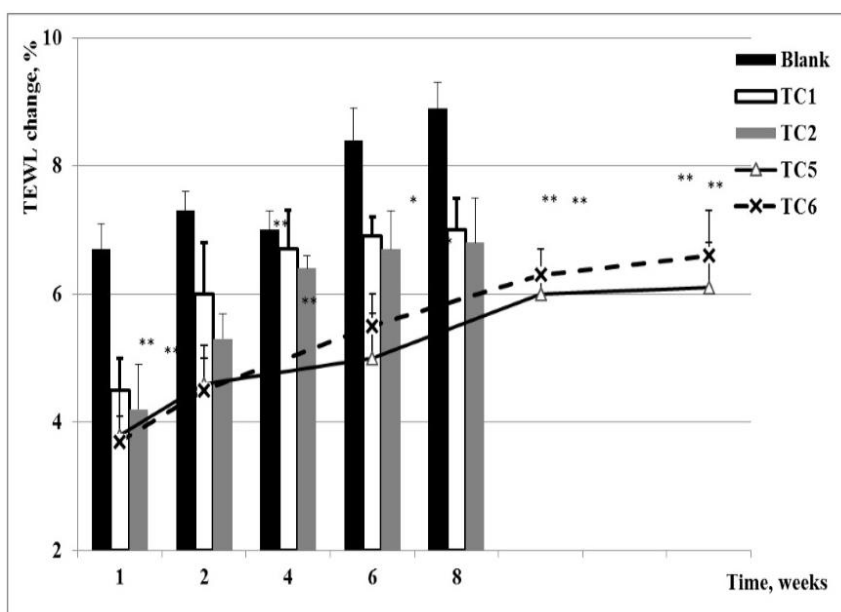


Figure 5. TEWL evolution in the case of samples based on: blank 1 (paraffin oil and distilled water), with thyme hydro alcoholic extract (TC1), with thyme aqueous extract (TC2), with rosmarinic acid (TC5) and with rutin (TC6)

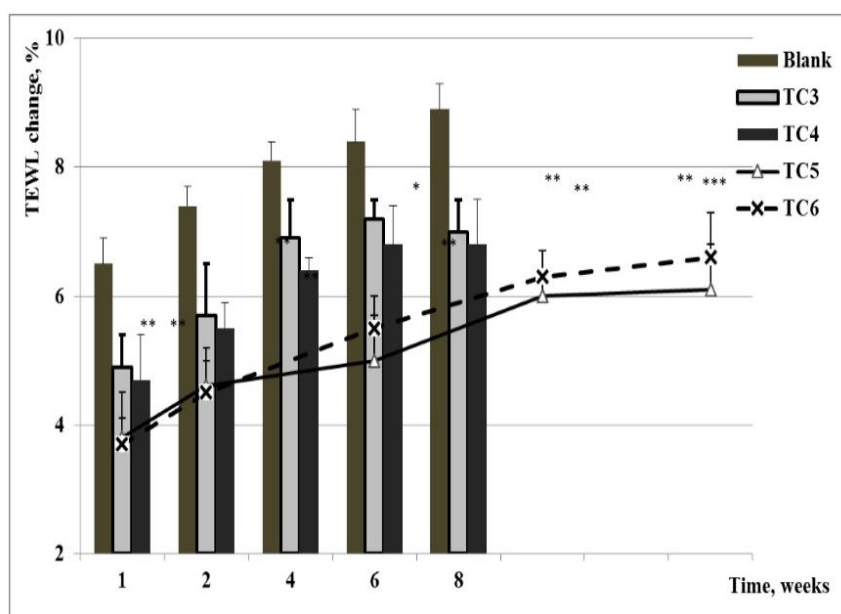


Figure 6. TEWL evolution in the case of samples based on blank 2 (self-emulsifying wax, macadamia nut oil and propylene glycol) with thyme hydro alcoholic extract (TC3), with thyme aqueous extract (TC4), with rosmarinic acid (TC5) and with rutin (TC6)

Figures 1-6 highlight good values of rosmarinic acid (TC5) and rutin (TC6). These samples present the lowest increases of erythema and TEWL and the lowest decrease of skin moisture.

CONCLUSIONS

The bioevaluation of products, based on different assays on human skin, suggest that these products are safe to use; low changes of erythema, trans-epidermal water loss and skin moisture were observed in the case of samples based on rosmarinic acid, respectively thyme extract.

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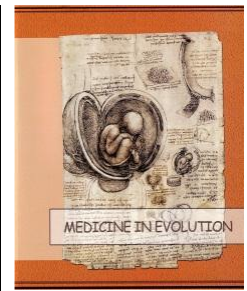
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