30 years IMAB, 30 years still going strong!

Dear friends of IMAB around the World,

This year 2020 we celebrate the unique 30 years Jubilee of our dear child IMAB, the International Medical Association Bulgaria, with organization of the 30-th Annual Assembly of IMAB in Varna, Bulgaria, 18-20 October 2020. Due to the continuing situation with the Corona virus pandemic around the world, we had to take a sad decision to convert the forum in October 2020 from personal attendance to online participation only.

We very much hope that even far away, from all 5 continents, we shall be together, with the same spirit of mutual understanding, sharing same friend feelings and sympathy, the way we had during all previous meetings of IMAB in Varna, from 1990 until now.

*There is no future for anyone who does not respect the history* – this ancient Roman truth says everything for such situations.

Therefore, please, allow me to take a historical look behind and to refresh your memories 30 years back into the calendar. A group of several enthusiasts gathered in Varna, Bulgaria, February 1990, expressing their wish to establish a mutual organization to serve as a bridge between Bulgarian medical people from the Motherland and those Bulgarians, living abroad.

By that time, just 3 months after the Berlin Wall broke down, we deadly needed to open doors to the democratic World, and the easiest way was to try to find contacts with our nationals in foreign countries.

We were: Spasimir Nikolov, Margarita Ruseva, Ivan Ivanov, Deyan Hristov, Ivan Galabov, Krassimir Metodie, Feodor Protopopov, Boris Kornovski, George Kyuchukov, Dimitar Nenov (all from Bulgaria), Lili Levy (Israel), George Wassilew (Germany), Kapriel Kaprelyan (Germany), Virginia Lepage (France), Nava Niv-Vogel (USA), Atanas Shishkov (Moldova), Momo Polenakovic (Macedonia), Vladimir Krcmery (Slovakia).
For a pity and to our deep sorrow, several colleagues of this group are not any more with us, and we pay warm memories, condolence and homage to their bright destiny: Spasimir Nikolov, Margarita Ruseva, Ivan Ivanov, Deyan Hristov, Ivan Galabov. May God be with them on the Heaven!!!

The idea for the new organization and the name IMAB came from Krassimir Metodiev, who took over the entire administrative, scientific and logistic activities, and leadership, from the very beginning until today, already 30 years.

IMAB was legally registered in Varna City Court in April 1990 as a nongovernment civil organization and the first Annual Assembly was planned and realized in Varna, 8-11 May 1990, in the Main Auditorium of the Inst. Hygiene and Epidemiology, affiliated to the Medical University.

This First Assembly included a scientific session with oral and poster sessions, cultural events and get-together with all participants: by that time, together with the cited above colleagues, the first forum of IMAB gathered about 100 medical and dental doctors, biologists, pharmacists, health managers.

The enthusiasm was expressed, the high interest from Bulgarian and foreign colleagues and friends of IMAB allowed to expand the activities and the Annual Assembly of IMAB had been organized every consequent year, always in May, from 1990 until 2020, for a period of 30 years.

New and new friends of IMAB gathered and joined the big family of IMAB and by today we have thousands of like-minded friends, members of IMAB, from different nationalities, different countries on all 5 continents.

Little by little we expanded the annual meetings, moving the Assembly in the International House of Scientists “F.J.Curie”, and after that and until now in the Congress Center of Hotel Admiral, Resort Golden Sands, both in Varna region.

IMAB had and has a number of activities, in addition to the organization of the Annual Assembly:
- Over 150 full long-term stipends-fellowships (up to 1, 2, 3 years) were provided to young Bulgarian medical and medico-biologic specialists to qualify in leading medical centers, mainly in Israel (Hadassah-Jerusalem, Sheba-Tel Aviv, Rambam-Haifa), but also in Germany (Munich University), Norway (Radium hospital), Italy (Florence University, Slovakia (Bratislava University), USA (Boston medical center), Austria (Vienna University hospital, also Krems Danube University).
- A number of serious donations to the hospitals in Varna, Veliko Tarnovo, Bourgas, Rousse (medical equipment, instruments, medicines, accessories, transport vehicles, etc.) were realized through our partners abroad.
- Over 60 patients with problematic health conditions had been sent to the leading hospitals in Israel for better medical service.
- A number of guest-professors from Israel, Germany, Italy, USA, Norway, etc. had been invited to present their expertise in workshops and practical seminars in Varna, as well as in other initiatives of IMAB.

Thus, for example, the 20-th Jubilee Assembly of IMAB, together with the 1-st South-East European Conference of infections and cancer (SEECIC, initiated and founded by the idea of Krassimir Metodiev) gathered in Varna, in May 2010, over 700 participants from 72 countries from all 5 continents, a national record for most active scientific medical forum for the entire history of congresses and symposia in Bulgaria.

The main partner of all activities of IMAB was the Medical University of Varna and its great support must be highly evaluated, especially during the two terms of the former Rector Krasimir Ivanov (March 2012-March 2020), who was and is one of the best friends of IMAB.

IMAB had and has several additional partners, such as the Union of Bulgarian Physicians, with the former Chair of Varna Branch Boris Kornovski and the present Chair Radoslav Radev.

The Varna Section of the Bulgarian Red Cross and its current Chair Ilko Raev was and is also a close partner of IMAB for the last decades.

One of the most important initiatives, a joint forum of IMAB and Varna Medical University was and is the Annual Workshop on mass casualties, natural disasters and terrorism, starting from 2013 until now, and including collaboration with several institutions, such as the Israeli Embassy in Bulgaria, the ICT from Israel, experts from the medical centers Rambam-Haifa and Hadassah-Jerusalem, as well as from Forensic Medicine and David Magen in Tel Aviv, also Varna Municipality, Bulgarian Red Cross, and several specialized institutions and ministries in Bulgaria.

This forum has as main speakers leading top-level experts from Israel, NATO and partner-countries, and is a main source for education and practical tool for such dramatic situations in Bulgaria, addressed to national security forces, police, army specialists, fire brigades, municipalities, medical centers, civil organizations, disaster management centers, etc.

In addition, IMAB established the unique for the Bulgarian medical universities 1-week seminar on mass casualties, natural disasters and terrorism (currently only in Varna Medical University) is also a source for the mandatory education of our pre-graduate medical students, as part of their curriculum.
IMAB was the host of the First for Bulgaria NATO Workshop on Bioterrorism, organized in 2003 in Varna, with the initiative of Krassimir Metodiev, being the Director of this Workshop under the guidelines and supervision of the Scientific Affairs’ Division of NATO, thus opening soon after that the door of Bulgaria’s NATO membership.

Over 45 distinguished experts from all NATO member-countries shared their know-how during 4 working days in Varna.

Since then, as part of the annual meetings of IMAB, a section on bioterrorism has been organized in every annual Assembly of IMAB.

One other, but very important activity of IMAB is the Journal of IMAB, which exists from the very start of the Association, giving a possibility for publishing of articles of medical colleagues in English. Nowadays, the Journal has a very high status and rank among the international medical journals world-wide and we give our full complement to the Editor-in-chief, Krassimir Metodiev, and the Publisher of the Journal of IMAB, Mr. Gospodin Peichinski, for their never-ending energy, motivation and impact.

We, the founders and friends of IMAB around the World are happy to welcome every colleague from every location on the Planet, motivated and accepting the global idea for GET TOGETHER!!!

Happy Jubilee, dear friends and members of the big family of IMAB!!!

From the Board members of IMAB, 18-20 October 2020, Varna, Bulgaria

President of IMAB:
Prof. Dr. Krassimir Metodiev, MD, PhD, DScmed
30-th Jubilee Annual Assembly of IMAB
19 October 2020, online forum

Organizing Committee:
Krassimir Metodiev, Chair, President of IMAB

Members of Organizing Committee:
Tatina Todorova, Gabriela Tzankova, Neli Ermenlieva, Lidiya Hristova, Paula Lazarova, Ruska Nikolova, Todorinka Totkova

Date: 19 October 2020, Monday, online performance (via e-mail contacts)

The Motto of IMAB is: always same, ready and faithful

The Jubilee Medal 30 years of IMAB has been granted to:
Prof.Dr. Krasimir Ivanov, Rector of Medical University-Varna (2012-2020) for his never-ending contributions and collaboration with all programmes of IMAB
Scientific Programme:

9.00-10.00 – online contacts via e-mail with all participants. Greeting addresses, confirmation/registration of attendance (by e-mail)

First session: Medicine – 10.00-11.30 (by order of abstract submission)

Second session: Dental Medicine – 11.30-13.00 (same order)

Third session: Health management – 14.00-15.00 (same order)

Fourth session: Occupational medicine – 15.00-16.00 (same order)

Fifth session: Varia – 16.00-16.30 (same order)

Conclusion / wrap up / of all sessions: 16.30-17.00

Final announcements, submission of Certificate for Attendance and Book of Abstracts to all registered participants: 17.00-17.30
ABSTRACT BOOK:

Section Medicine:

Chair: Zlatislav Stoyanov, Mariana Arnaudova, George Kyuchukov, Deyan Anakievski
Secretary: Dobrinka Doncheva

1) Correlation between sleep apnea and methadone therapy
Christiana Madjova, Simeon Chokanov, Mario Milkov – Med.Uni Varna, Bulgaria

Abstract:
Introduction. Methadone therapy is the mainstay of treatment of addict patients. Methadone as a synthetic opiate has a longer action than heroin and acts on the same opioid receptors. Patients take it orally to treat their addiction. The most common side effects are: dizziness, drowsiness, vomiting, sweating, dry mouth and constipation. The more serious complications that can be observed are: sleep apnea, abnormal heart rhythms, respiratory problems, euphoria, disorientation, anxiety, seizures and more.
Purpose. The purpose of this study is to determine the correlation between methadone maintenance treatment and sleep apnea in addict patients.
Materials and methods. Subject of the study are 36 methadone-treated drug-dependent patients, mean age 35, 1 ± 7,5 years.
Results. The answers we received: 80.6% (29) of drug addicts have problems with sleep; 25% of them (9) reported having insomnia; 38.9% (14) experience morning fatigue; 16.1% (13) of the respondents said they were drowsy during the day and 36.1% of the respondents reported a change in mood; 19.4% (7) had a short sleep and 16.7% reported snoring; 75% answered that they don’t have problems with falling asleep and 30.6% wake up frequently in the evening.
Conclusions. Our survey found that there is a correlation between methadone therapy and sleep of patients. The key for improving the condition and reducing the risk of central sleep apnea is the monitoring of patients, as well as a combination of different types of treatment.

2) Assessment of knee joint position sense in patients with multiple sclerosis
Miglena Tsvetkova, Nevena Pencheva – SWU, Blagoevgrad, Bulgaria

Abstract:
The aims of this study were to implement the joint position sense (JPS) measurement methodology, to assess JPS and to determine whether there are sex differences in the sensation of the knee joint in patients with multiple sclerosis (MS). 20 patients (men n = 8 and women n = 13) with relapsing-remitting MS were tested on both lower limbs to reproduce the three target angles (20°, 60° and 75° of knee extension) passively and actively with or without visual and verbal feedback. Measurement of JPS with an isokinetic dynamometer allows to quantify this specific sensation and to calculate the errors from the target position - as criteria of this proprioceptive sense. The three type of errors were calculated - absolute error, variable error and constant error as criteria for accuracy, precision and direction of bias of JPS. The results were used to find sex differences in the perception and course of the disease
Results. A methodology for assessing proprioceptive joint position sense was introduced and in patients with MS higher values were found as deviations from the target angle, with women experiencing difficulties in passive mode (20°, absolute error = 3.9 ± 3°), and men in active
reproduction mode (60°, absolute error = 4.5 ± 2°) (p< 0.05; Mann Whitney test). Probably due to differences in motor control impairments in both sexes on one hand and more pronounced deficits in the strength of the knee muscle groups in the more injured leg in men, from another.

**Conclusion.** In the recent decades, there has been an increasing interest in research related to the role of sensory information in neuromuscular control of the movement through the use of independent mechanisms called proprioception. This finding shows that men and women with relapsing-remitting MS have different accuracy, precision and direction of deviation from the target angle of knee joint position sense proprioception.

3) **Circulating microRNA-16 in inflammatory bowel disease and some clinical correlations - a cohort study in Bulgarian patients**

*Atanassova A., Chervenkov T. – Med. Uni. Varna*

**Abstract:**

The etiology and pathogenesis of inflammatory bowel disease (IBD) remain undetermined but an interaction between environmental, genetic and immunological factors is most widely accepted. Recent studies examine the expression of miRNAs in peripheral blood and tissues in IBD patients. Our study aims to assess and correlate the serum expression of circulating miR-16 in IBD patients with clinical parameters as extent, activity and severity of the disease. 35 patients with ulcerative colitis (UC) and 35 patients with Crohn’s disease (CD) were included in the study. Serum miR-16 expression in both IBD diseases was assessed using reverse transcriptase quantitative real time PCR (RT-qPCR). Circulating miR-16 levels were also correlated with disease extent, activity and severity indices (CDAI, Montreal classification, Partial Mayo score). Serum expression of miR-16 in the 70 patients was also compared to serum levels in 30 healthy control subjects. The patients’ group showed mean serum miR-16 expression of 3.07 for CD, 1.97 for UC and 1.61 for the control group with a significant difference in the expression between groups. From the current study, we could conclude that there is a significant correlation between increased serum expression of miR-16 and disease activity, extent and severity.

**Keywords:** miR-16, ulcerative colitis, Crohn’s disease, inflammatory bowel diseases

4) **IVS8-(n)T variant in the CFTR gene as a reason for a low sperm count**

*Mariya Levkova, Trifon Chervenkov, Mari Hachmeriyan, Lyudmila Angelova – Med. Uni Varna, Bulgaria*

**Abstract:**

**Purpose.** There is growing data that the CFTR gene is needed for the normal spermatogenesis. However, different variants in this gene could lead to a low amount of the CFTR protein and this could cause male infertility due to a defect in the sperm production. The aim of this study is to establish the role of IVS8-(n)T variant in the CFTR gene as a reason for a low sperm count among males with primary infertility.

**Materials and methods.** In order to investigate this we performed Sanger sequencing for the studied IVS8-(n)T variant on 50 Bulgarian patients with sperm count below 5x10⁶/ml. The „n“ indicates the number of the T residues. The 5T variant was classified as a mutant allele, the 7T and 9T variants were considered normal findings. A Spearman correlation analysis was used in order to determine the impact of IVS8-5T polymorphism on the sperm count of the participants. A difference was considered significant at a p value < 0.05.

**Results.** One case subject (2.00%) was a homozygote for the 5T/5T variant, two (4.00%) – heterozygotes for the 5T/7T variant. Forty two men (84.00%) were homozygotes for the 7T/7T variant, four individuals (8.00%) were heterozygotes for the 7T/9T variant and one man (2.00%) was a homozygote for the 9T/9T variant. Twenty three of the participants
demonstrated azoospermia and the rest 27 subjects (54.00%) – severe oligozoospermia. The mean sperm count was 1.56x10^6/ml. Spearman correlation coefficient was 0.08, which indicates no association between the ranks. However, the p value was 0.55 and it was not significant.

**Conclusion.** The value of the Spearman coefficient indicates that the IVS8-(n)T variant does not correlate to a low sperm count. However, since the p value could be considered marginal, more participants are needed to further establish this result.

5) **High seroprevalence for toxocariasis among minority groups of Varna region, Bulgaria**

*Tatyana Cvetkova, Kalina Stoyanova, Tsonko Paunov – Med. Uni Varna, Bulgaria*

**Abstract:**
Toxocariasis in humans is a little-studied zoonosis, and there are no data on the impact of this parasitosis on the minority groups in our country.

The **purpose** of this study is to establish the seroprevalence of toxocariasis among specific ethnicities in the Varna region, Northeastern Bulgaria and to compare the results with a control group from the general population.

**Material and Methods.** As a part of a large seroepidemiologic study, we assessed the presence of Toxocara IgG among 132 individuals, self-identified as such with Turkish and Roma ethnicity. As a control group, we used 250 sera from children and adults from the general population. The statistical comparison was performed regarding age, sex, and a type of residence.

**Results.** Toxocara IgG were established in 43 individuals from the minority groups (seroprevalence of 32.58%) and 39 persons in the control group (15.60%) with statistically significant difference (odds ratio = 2.61). Considerably high seropositivity in the investigated ethnicities was discovered after stratification by age: children-33.33%; adults-32.00% and gender: male-38.98%; female-27.40%. A detailed analysis revealed that the type of settlement is an important confounding factor. The seropositivity among the minorities ethnic groups residing in small towns and villages is 35.40% in contrast to the residents of Varna city of the same ethnical origin (15.79%); OR = 2.92.

**Conclusion.** The established high seroprevalence for Toxocara IgG among minority ethnic groups, especially the ones residing in the rural settlements of Northeastern Bulgaria, shows undiscovered to this point increased risk for the spread of toxocariasis among this population.

6) **Demographic characteristics of the seroprevalence for human toxocariasis among the population of Northeastern Bulgaria**

*Tatyana Cvetkova, Kalina Stoyanova, Tsonko Paunov, Stoyan Pavlov – Med. Uni Varna, Bulgaria*

**Abstract:**
Toxocariasis is a tissue zoonosis caused by Toxocara spp. and the exposure to these geohelminths varies in different parts of the population in a particular region.

The **purpose** of the study is to reveal the seroprevalence of toxocariasis in the Varna region, Northeastern Bulgaria and to establish its demographic structure.

**Material and Methods.** Within the scope of a broad seroepidemiological study, 701 individuals from Northeastern Bulgaria were tested for anti-Toxocara antibodies (ELISA) between 2017 and 2020. The results were stratified and analysed by age, gender, and place of residence.

**Results.** The overall seroprevalence of human toxocariasis in North-eastern Bulgaria is 18.54%. Children (18.35%) and adults (18.79%) show similar levels of infection, but the stratified analysis by age in 5-years intervals revealed notable discrepancies. In younger
children, the seroprevalence is higher than the observed for the entire population (0-4 years - 22.22%; 5-9 years - 22.22%) while in adolescents and adults is lower than average. In the elderly, the seroprevalence rises to its highest levels (60-64 years - 30.56% and over 60 years -31.67%). Although there are variations between males and females, gender is not a significant factor for the distribution of toxocariasis. Higher seroprevalence levels in residents of the smaller settlements of the region (children - 28.18%; adults -29.10%) correspond to a 2.5-fold increase in the odds of contracting toxocariasis in comparison to the ones living in Varna city.

**Conclusion.** The overall seroprevalence of toxocariasis in North-eastern Bulgaria is alarmingly higher than the levels reported from other parts of the country, placing this unknown infection in a leading position among the parasitic zoonoses. The place of residency is the most significant factor driving the uneven distribution of the disease.

7) Epidemiological typing and mechanisms of resistance to beta-lactam antibiotics in clinical isolates of *K. pneumoniae* from University Hospital “Saint Marina”, Varna


**Abstract:**
Aim: to study the antimicrobial susceptibility and the mechanisms of beta-lactam resistance in clinically significant Klebsiella pneumoniae isolated from patients, hospitalized in the University hospital “Saint Marina”, Varna during the period 2014-2017 and to determine the clonal relationship between the isolates. Material and Methods: the susceptibility of 1084 K. pneumoniae isolates to a set of antibiotics was studied by the disk diffusion method and the microdilution method. PCR and sequencing were used to detect and identify the beta-lactamase genes, and the epidemiological typing was done by ERIC-PCR and MLST. Results: The following rates of antimicrobial resistance were detected (in increasing order): meropenem, 3.5% < amikacin, 9% < gentamicin, 38.3% < sulfamethoxazole/trimethoprim, 42.1% < levofloxacin, 42.8% < ciprofloxacin, 47.1% < piperacillin/tazobactam, 47.4% < ceftazidime, 52.8% < cefotaxime, 54.8%. BlaCTX-M-15 was the most widely disseminated gene coding ESBLs, detected in 81.1%, followed by blaCTX-M-3 (9.4%). Carbapenem resistance was mediated by the production of KPC-2 (21%), OXA-48 (0.6%), VIM-1 (1.3%) and NDM-1 carbapenemases (1.9%). Seventeen different ERIC types were detected, which well corresponded to 17 ST: ST15, ST11, ST35, ST395, ST307, ST147, ST76, ST340, ST659, ST17, ST37, ST151, ST902, ST1350. ST15 was the predominant, found in 67 isolates, (23 of which from blood cultures) from patients, hospitalized in 20 departments. ST11 was the second dominant ST. The carbapenemase-producing isolates were associated with different STs: KPC-2 with ST15, ST76, ST11, ST1350, ST151, ST35 and ST395; OXA-48 with ST15; NDM-1 and VIM-1 carbapenemases – with ST11 and ST147. Conclusion: During the four-year study period wide intrahospital dissemination of KPC-2 and/or CTX-M-15 producing K. pneumoniae was identified. The dominant ST15, which persisted during the whole period, demonstrated high cross transmission, epidemic and invasive potential.


Eliyana Ivanova, Gabriela Tsankova, Tatina Todorova – Med. Uni Varna, Bulgaria

**Abstract:**
**Background.** Hepatitis B is a viral infection that attacks the liver and can cause both acute and chronic disease, which can evolve into cirrhosis and hepatocellular carcinoma.
Purpose. With the current work we aimed to analyze the viral hepatitis B incidence in Varna region for 10-year period (2008-2017) and to assess the impact of obligatory immunization among children.

Material and methods. We performed retrospective analysis (2008-2017) using the official epidemiological data from Regional Health Inspectorate – Varna.

Results and discussion. The incidence of viral hepatitis B among the general population has decreased 7.5 times in the Varna Region (from 11.2 % to 1.48 %) and by about three times (8.17 % to 3.05 %) in Bulgaria. The proportion of patients of immunization age in the Varna Region has been 1.45%, and after 2011 the incidence of hepatitis B has reached zero. Only in 2017 there were 2 children with proven hepatitis B and without immunization data.

Conclusion. Vaccination against hepatitis B virus as a mass prophylactic intervention shows significant success in the epidemic management of this infection and leads to an important reduction in the incidence among people of immunization age.

9) Chronic Pain and Depression – Arbitrariness or Consecution of the Patient’s Diagnostic and Treatment Route
Tatyana Telbizova, Mariana Arnaoudova, Atanaska Dinkova – Med. Uni Varna, Bulgaria

Abstract: Unrecognized depression among patients with chronic pain is a common medical problem, which highlights the need of targeted search and identification of depression-related symptoms.

Purpose. The aim of the present study is to investigate the trends in the diagnostic and treatment pathway of comorbid patients with depression and chronic pain.

Materials and Methods. 110 psychiatrists and 119 neurologists were interviewed through an anonymous randomized survey in Bulgaria.

Results. Referrals of the patients with chronic pain to neurologists and psychiatrists are not routine practice. The general practitioners are the main group, referring the patients with chronic pain to a consultation with a neurologist (89.10%) and a psychiatrist (68.20%). The patients themselves seek help more often from a neurologist (77.20%) than from a psychiatrist (44.50%). The most common reason, for neurologists to consult their patients with a psychiatrist are the suicidal ideation and intentions (50.42%), and the least common – insomnia (15.96%). According to psychiatrists, chronic pain patients seek help from them for other symptoms like somatic – vegetative ones (97.8%), anxiety (78.20%), insomnia (55.50%) and depressed mood (54.50%). More than ¼ (29%) of them have had suicidal thoughts and intentions, which suggests a longer history of depressive symptoms.

Conclusions. The diagnostic and treatment processes of patients with chronic pain and depression are performed randomly rather than following a certain logical sequence. The creation of an algorithm for general practitioners and pain specialists aimed at early detection of symptoms of depression and related predictors of suicidal behavior is needed.

10) Conservative treatment of solitary caecal diverticulitis: Case report
Petar Stamov, Sylvia Stamova – MHAT St. Anna- Varna & Med. Uni Varna

Abstract: Purpose. The aim of this study is to assess the conservative treatment of acute solitary caecal diverticulitis in case of 11 year old girl, like outcome of antibiotic treatment in combination with metronidazole.

Materials and methods. The diagnostic methods for determination of acute caecal diverticulitis include physical examination, blood investigations, and abdominal ultrasound
scan. The treatment strategy of caecal diverticulitis involve Metronidazole, Gentamycin and Cefuroxime.

**Results.** The antimicrobial therapy of solitary caecal diverticulitis is reported as successful. The inflammatory process of the cecal diverticulum has been reduced and reverse regression of inflammatory signs was observed. All of paraclinical results are in normal levels and improvement in general condition of patient was detected.

**Conclusion.** The conservative treatment of solitary caecal diverticulitis with antimicrobial drugs is suitable therapy for non complicated cases.

11) **Potential antimicrobial activity of new metronidazole derivatives against pathogenic clinic isolates**

*Sylvia Stamova, Neli Ermenlieva, Emilia Georgieva, Svetlana Georgieva – Med. Uni Varna, Bulgaria*

**Abstract:**

**Purpose.** The present investigation aimed to search for and study potential antimicrobial activity of new metronidazole derivatives against clinical isolates of Staphylococcus aureus, Bacillus subtilis, Escherichia coli and Candida albicans.

**Materials and methods.** A total of six different concentration (6.25-200 µg/ml) of two newly synthesized metronidazole derivatives (MTD1 and MTD2) were tested by diffusion methods: disc diffusion method of Kirby-Bauer (with sterile 8 mm filter paper discs) and cup plate technique on Mueller Hinton Agar (MHA). The selection of solvents was very precisely according to solubility of new compounds. Therefore, we have used the following solvents: NaCl 0,9%, Phosphate buffer pH 7,2, methanol and ethanol.

**Results.** We observed weak antimicrobial activity of samples in methanolic and ethanolic solutions against S. aureus and C. albicans. The zone of inhibition for samples with concentration 100 µg/ml against S. aureus are 12 mm and 14 mm against C. albicans for MTD1 and 12 mm against S.aureus and 13 mm against C.albicans for MTD2. For samples with concentration 200 µg/ml, the zone of inhibition against S. aureus is 13 mm, 14 mm against C. albicans for MTD1, respectively 12 mm against S. aureus and 14 mm against C.albicans for MTD2. For each sample in NaCl 0,9% and Phosphate buffer there was not detected antimicrobial activity more than controls. The tested derivatives did not show antibacterial activity against E. coli and B. subtilis strains.

**Conclusion.** According to the obtained data, the tested compounds show potential antimicrobial activity and to further study they will subject of other methods for antimicrobial susceptibility testing.

12) **Effect of oligosaccharides on enzymes of carbohydrate metabolism and antioxidant protection in in vitro treated erythrocytes under conditions of hyperglycemia**

*Ivica Dimov, Mariya Choneva, Ilia Iliev, Anelia Bivolarska – Med Uni Plovdiv & PU, Bulgaria*

**Abstract:**

**Introduction.** The purpose of this experiment is to examine the effect of different oligosaccharides with proven prebiotic effects on enzymes of carbohydrate metabolism and the antioxidant protection of erythrocytes in vitro under conditions of hyperglycemia.

**Materials and methods.** This experiment included 10 healthy men (27±3 years of age). The isolated erythrocytes were treated with 1% and 5% solutions of the following oligosaccharides: lactulose, inulin, galactooligosaccharide and fructooligosaccharide in the presence of 5mM, 50mM and 100mM glucose. After incubation for 2 hours at 37 °C the erythrocytes were lysed and the supernatant was used for analyses of lactate dehydrogenase,
hexokinase and glutathione reductase. FRAP (Ferric reducing antioxidant power) method was used for determining the total antioxidant activity of erythrocytes.

**Results.** Lactate dehydrogenase was decreased in the presence of 5% lactulose in groups with 50 mM and 100 mM Glc. An increase in the activity of glutathione reductase under severe hyperglycemia (100 mM glucose) was observed after treatment with: 1% lactulose, 1% inulin, 1% galactooligosaccharide, 1% and 5% fructooligosaccharides (p<0.005). A significant difference in the enzymatic activity of hexokinase was found in all groups (p<0.05) and of glutathione reductase only in the control group as well as in the groups, treated with 1% lactulose, 1% galactooligosaccharide, 1% and 5% fructooligosaccharides.

**Conclusions.** Galactooligosaccharide 1% and fructooligosaccharides 1% and 5% cause a statistically significant increase of the enzymatic activities of hexokinase and glutathione reductase in in vitro hyperglycemia induced by 100 mM glucose, as well as an increase in FRAP.

13) **Normative regulation of hyperbaric oxygen therapy – specifics in Bulgaria and abroad**

*Krasimira Tsankova, Mila Dimitrova – Med. Uni Varna, Bulgaria*

**Abstract:**

**Background.** The provision of quality and effective health care and medical services based on patient safety is a main priority of health policies. The implementation of these policies is based on the legal framework, which includes a numerous of laws and legislative acts such as decrees, ordinances, decisions.

**Purpose.** The aim of the study is to exam and analyse the existing normative regulation in the field of hyperbaric medicine in Bulgaria, within the European Union and abroad.

**Materials and Methods.** Methods used include a review of relevant literature (scientific publications, normative documents) to identify regulations of hyperbaric oxygen therapy at national and international level.

**Results.** Over the last two decades, there has been noticed a gradual development of legal regulations and better definition, harmonization and implementation of health and safety standards in hyperbaric facilities in Europe and around the world. The study identified and summarized various types of normative documents that have a regulatory role in relation to the main aspects of hyperbaric oxygenation - medical equipment, technical requirements, risk assessment, patient and staff safety, personnel training and qualifications. The quality special regulations at a national level are presented by quality medical standards and are discussed in relation with specific hyperbaric practice.

**Conclusion.** Based on the analysis and assessment of the regulatory framework, recommendations can be made concerning relevant and appropriate legislative initiatives to be taken in the field of hyperbaric medicine in our country.

14) **Intramedullary thoracic meningioma: a rare case report and review of the literature**

*Mihail Kalnev, Elena Poryazova, Georgy Apostolov, Ivo Kehayov, Borislav Kitov – Med Uni Plovdiv, Bulgaria*

**Abstract:**

Only a few cases of intramedullary meningiomas in the cervical and thoracic region have been reported in the literature. We present a rare case of intramedullary meningioma in the lower thoracic region. A 68-year-old woman with complaints of back pain, gait disturbance, and paresthesias in both lower extremities for 4 months was admitted to our institution. Initially, she presented with weakness in her legs that gradually deteriorated over time. The patient had been operated for breast cancer 2 years prior to the onset of current complaints.
The neurological examination revealed spastic inferior paraparesis (McCormick grade IV), hypoesthesia below Th10 dermatome, bowel and bladder disturbances. Magnetic resonance imaging of the thoracic spine demonstrated intramedullary tumor that was hypointense on T1 and T2-weighted images but showed homogenous enhancement after gadolinium administration. After gross total resection, the histopathological examination confirmed the diagnosis of atypical intramedullary meningioma.

15) Historical development of the concept of hyperbaric oxygenation
Krasimira Tsankova, Mila Dimitrova – Med. Uni Varna, Bulgaria

Abstract:
Background. Hyperbaric oxygenation (HBO) is a treatment in which a patient breathes near 100% oxygen within a chamber at a pressure greater than one atmosphere absolute (ATA). The development of the hyperbaric medicine is continuous and associated with the history of underwater activities, the development of physical laws and physiological mechanisms of breathing.

Purpose. The aim of this article is to present the development of hyperbaric oxygenation internationally and nationally.

Materials and Methods. We have conducted a literature review of the publish works on hyperbaric oxygen therapy (HBOT) during the last 100 years. Our survey includes scientific reports and books in English and Bulgarian.

Results. Three main periods of the historical development of HBOT can be defined. In the past HBO did not have much scientific support but is extensively used in the field of medicine. We observed an increase of scientific interest in HBO during the last two decades both in our country and worldwide. The majority of the reviewed articles contained information about different aspects of HBO as clinical uses, effects, risks. HBOT has been used as a primary and adjuvant treatment for a variety of diseases for nearly 50 years in Bulgaria. The main areas of application and researches of hyperbaric oxygen therapy include diving diseases, intoxications, traumatic injuries, soft tissue infections, diabetic foot, hearing loss, some neurological disorders, etc.

Conclusion. Over the past decades, hyperbaric oxygen therapy has grown rapidly world-wide in accordance with evidence-based medicine methods and future developments to expand the knowledge are perspective.

16) The effect of kinesiotape in the lower limb area on improving locomotion in patients with ischemic stroke
Mariela Filipova, Daniela Popova – SWU Blagoevgrad, Bulgaria

Abstract:
The aim of the study was to investigate the effect of kinesiotape in the lower limb area on improving locomotion in patients with ischemic stroke.

Materials and Methods. The study was conducted in the period 2014-2015 at the General Hospital for Active Treatment in Blagoevgrad. Forty patients were studied, divided into two groups of 20 patients - experimental and control group. In addition to the applied standard kinesitherapy program in the two studied groups, in the experimental group, 3 kinesiotape tapes with a specific application "I" shape and a specialized method of application in the field of the foot and m. gluteus maximus were placed. The results were compared with the results of the patients from the control group and processed with descriptive statistics, as well as non-parametric tests to prove statistically significant differences.

Results. After research and analysis, we obtained faster recovery of locomotion in the experimental group and slowing of locomotor movements in the control group (Wilcoxon, ANOVA).
Conclusion. The results of our research show that the application of the author's methodology with kinesiotape creates an opportunity to improve the functions in the damaged lower limb, improves locomotion and quality of life.

17) Application of mirror therapy in patients with stroke
Mariela Filipova, Daniela Popova, Elka Goranova – SWU Blagoevgrad, Bulgaria

Abstract:
Purpose. The aim of the study was to investigate the effect of mirror therapy as a method of restoring damaged upper limb function in patients with ischemic stroke treated with venous thrombolysis.

Materials. Mirror therapy was administered to 10 thrombolyzed patients with ischemic stroke. The patients were treated in the neurological ward of the Multi-profile Hospital for Active Treatment-Blagoevgrad in the period from 2014-2015. After signing a declaration of informed consent of the patients, a Bartel index test was applied before and after hospitalization. The duration of the procedure is 15-20 minutes for 5 days and is part of the general kinesitherapy program. The Prizm statistical package was used for statistical data processing and graphical presentation.

Results. The mean age of the studied contingent was 67±2.8 years. Our new and specialized method of kinesitherapy for the recovery of patients treated with venous thrombolysis confirms a significant positive effect (Wilcoxon, ANOVA).

Conclusion. The results of our research show that the application of the author's methodology with mirror therapy creates an opportunity to improve the functions in the damaged upper limb and improves the quality of life.

18) Monitoring of Legionella spp. in waterways in medical institutions
Velina Stoeva, Iskra Tomova, Ani Kevorkian, Aleksander Atanasovski, Yordanka Stoilova – Med Uni Plovdiv & NCIPD Sofia, Bulgaria

Abstract:
Objective. To monitor the presence of legionella bacteria in the water supply system of medical institutions (medical and dental) in order to optimize the recommendations for the quality of water used for treatment.

Materials and methods. Two cross-sectional epidemiological studies (both within the span of five years) were performed to prove representatives of Legionella spp. in water samples from medical and dental equipment and water from the water supply network in medical institutions (MI) in Plovdiv. During the first period of time (March 2013 - March 2015) a total of 97 samples were taken at five consecutive visits to the (MI) and 24 samples during the second period (July-August 2019) in two consecutive visits. The following were examined: Faculty of Dental Medicine (FDM), Surgical Complex (SC) of the University Hospital “St. Georgi ” and individual dental practices (IDP). Water samples were tested at NCIPD-Sofia in accordance with ISO 11731-1: 1998 Water quality - Detection and enumeration of Legionella.

Results. In the period 2013-2015, the presence of legionella bacteria was found in 33 (34.02%) of the SC samples, in 1 out of 10 samples in IDP and there were none detected in FDM. Non-compliances with requirements of hot water temperature, type of water used when working with devices generating a fine water aerosol have been found. Five years later, only 1 positive sample of SC was proved, in which the water supply network was rehabilitated in the interval between the two surveys.

Conclusion. For the purposes of good medical and dental practice, it is necessary to conduct periodic monitoring of the "legional landscape" and the microbiological status of the water used for treatment.
19) Risk factors for humeral head osteonecrosis in patients with proximal humeral fractures, treated operatively
Konstantin Totev, Georgi Dimitrov, Lyubomira Toteva, Svielen Todorov, Steliyan Lungarov
Abstract:
Purpose. Proximal humerus presents the second most frequent site of posttraumatic osteonecrosis. This complication is usually related with poor functional outcomes. The aim of this study is to identify and analyze the risk factors for posttraumatic humeral head osteonecrosis in surgically treated patients.
Material and Methods. Ninety-one patients with 92 acute proximal humeral fractures were operated for a period of 39 months. Operative methods include open reduction and internal fixation and closed reduction and percutaneous fixation. Fractures were classified according to Neer, AO and LEGO classifications. The mean age of patients was 60.9 years. From 91 operated patients for follow-up were available 82. The mean follow up period was 15 months. Patient data was collected prospectively.
Results. Functional results are present using age and gender adjusted Constant score. In 41 patients the result is excellent, in 28-good, in 11-fair and in 3 poor. Bone union was evident in all cases. No deep wound infections, nerve injuries, vascular injuries and implant failure were observed. Osteonecrosis was seen in 5 (6.1%) patients. Patients with posttraumatic osteonecrosis had significant lower Constant results.
Conclusions. Analyzing the pre- and intraoperative factors in patients with osteonecrosis we find that the most significant factors for this complication are increasing fracture severity and combination of short medial metaphyseal extension and disrupted medial hinge.

20) Association between iron and thyroid status in pregnant women
Ginka Delcheva, Ana Maneva, Tanya Deneva, Anelia Bivolarska – MU Plovdiv, Bulgaria
Abstract:
Purpose. Pregnancy is often complicated by iron deficiency, affecting negatively thyroid gland physiology. The aim of our study is to investigate parameters of iron and thyroid status during I, II and III trimester of pregnancy in order to establish potential correlations in their dynamics.
Materials and methods. The study involved 61 pregnant women and 43 controls. Their iron and thyroid status was determined by measuring Hb, serum ferritin (SF), serum transferrin receptor (sTfR), thyroxine (FT4) and TSH.
Results. Significant differences between pregnant women and controls were found indicating an iron deficiency risk: sTfR level was higher, while Hb, ferritin and FT4 levels were lower in pregnant women. FT4 correlated positively with Hb (P = 0.016) and ferritin (P = 0.003) in pregnant women. In the I trimester there was a negative association between sTfR and thyroxine (P = 0.013) and in the III trimester there was a positive association between sTfR and TSH (P < 0.0001).
Conclusions. sTfR represented the relationship between iron and thyroid status in the I and III trimester. Iron deficiency was expressed in the III trimester with a positive association between sTfR and TSH. The increased maternal iron requirement (sTfR) correlated with increased TSH secretion, induced by decreased thyroxine.

21) Effectiveness of Specialized Kinesitherapy in Children with Spastic Hemiplegic Cerebral Palsy
Margarita Avramova – SWU Blagoevgrad, Bulgaria
Abstract:
**Purpose.** The aim of this study was to investigate the effect of Doman-Delacato and Perfetti methods in addition of routine kinesitherapy for children with spastic hemiplegic cerebral palsy (CP).

**Material and Methods.** 60 children with a spastic hemiplegic CP were randomly divided in two groups - control group (CG) received routine kinesitherapy method and experimental group (EG) received in addition specialized neurodevelopmental methods of Doman-Delacato and Perfetti. For children in both groups, kinesitherapy was applied three times a week for 50 min each procedure. Assessment were done using Ashworth Modified Scale, the Holt and Hoskins - Squires Test and GMFM – 88. The study period ran from April 2018 to November 2018. The evaluation were done before and 8 months later. Data was analyzed with GraphPad Prism 3.0. The level of significance was accepted as p<0.05.

**Results.** 60 children, 27 girls and 33 boys mean aged (±SD) for EG 4.8±1.3 and for CG 5.06±1.4 were included. Muscle spasticity in EG children decreases much earlier and more than children in CG. Man Witney criteria shows statistically significant differences at the end of the treatment (р=0.03<α=0.05). Holt test and GMFM-88 data obtained also received statistically significant differences of t - criteria between initial and final measurements in EG.

**Conclusions.** EG children improvement is better and occurs much earlier. Therefore, we could assert that our methodology optimizes the treatment of children with CPD and improves their quality of life.

22) **Predictors of stress of students and interns of various medical specialties during training at the Center for Emergency Medical Care**

*Magdalena Platikanova, Petya Hristova, Diana Todorova, Albena Andonova – Trakia Uni, Bulgaria*

**Abstract:**

**Purpose.** The aim of the study is to establish the presence or absence of stress predictors during the training of future medical professionals at the Center for Emergency Medical Care (CSMP).

**Material and Methods.** An anonymous survey was conducted on 40 students (21 men and 19 women) from different specialties of the Medical Faculty, Thracian University - Stara Zagora, during their internship at the Center for Emergency Medical Care - Stara Zagora. The survey data were processed mathematically and graphically with Microsoft Office Excel 2003.ink.

**Results.** The analysis of the obtained data shows that depending on the physical and emotional load during the working day, more than half of the respondents sometimes show signs of fatigue and feel exhausted (60%). 62.5% of the respondents reported problems with concentration, and 57.5% reported needing additional rest. Sometimes, with greater mental and intellectual workload, students and interns make spelling mistakes when filling out medical records (60%), get tired easily and lack energy (57.5%). As a result, 65% of them begin to lose interest in their usual duties. However, 75% have no memory problems, but have difficulty performing their new tasks (50%).

**Conclusions.** Psycho-emotional and physical stress from working in CSMP sometimes has a negative impact on future medical professionals. The study and analysis of the factors determining the predictors of stress in students with medical specialties will help to develop programs and methodologies for overcoming it. Improving the work environment, good organization of the work process and motivated choice of workplace are the main components of professional satisfaction and psycho-physical comfort of medical professionals.
Kinesiotape Metodology for Chronic Pain Syndrome in the Lumbosacral Region
Stamenka Mitova, Mariya Gramatikova, Margarita Avramova, Georgi Stoyanov – SWU Blagoevgrad, Bulgaria
Abstract:
Purpose. The study aims to evaluate the effect of kinesiotape methodology on chronic pain syndrome in lumbosacral region.
Material and Methods. 42 participants with chronic low back pain were recruited en randomly divided in two groups – control (n=19) and experimental (n=23). Foreword and lateral tilt, Borg and Modified Merl d’Aubigne Scale for pain were used for assessment before and after treatment. Roland-Morris Questionnaire was done to assess quality of life before and tree month after treatment. The participants received specialized kinesitherapy program combined with kinesiotape daily for 15 days with a duration of 40 minutes per procedure. They all received home kinesitherapy program. Data was analyzed using GraphPad Prism 3.02.
Results. 42 participants, including 20 women and 22 men, were examined. Mean age (±SD) of the control group was 45±9.08 years and for experimental was 49.13±8.3 years. Median values of Borg pain scale were as follows: 7.53±0.84 before, and 6.05±0.78 after treatment for the control group and 7.39±0.99 and 4.61±0.78 for the experimental group. Merl d’Aubigne Scale shows before and after treatment for control group 4.26±0.65 and 3.12±0.49 respectively, while in experimental was 4.26±0.68 and 2.09±0.44 after treatment. The average of forward tilts measured before and after treatment was 13.79±3.77cm and 10±3.6cm for the control group and 13.13±3.76 and 7.52±2.25 for experimental group. Initially quality of life questionnaire shows 17.26±1.66 and tree month later was 12±1.45 for the control group and 17.35±1.5 before, and descend to 9.00±1.04 for the experimental group. There were statistically significant differences before and after treatment (p <0.05).
Conclusions. Treatment significantly reduces pain and muscle spasm after application and improves the functionality of lumbar spine. Kinesiotape not only helps the reduction of pain symptoms in musculoskeletal pathologies but is also a valuable addition to the kinesitherapy procedures.

Musculoskeletal Disorders and Associated Workplace Risk Factors in Higher Education Employees
Gergana Sandeva, Violeta Tsvetkova, Gospodinka Prakova – Trakia Uni, Bulgaria
Abstract:
Musculoskeletal disorders (MSDs) are some of the most commonly reported work-related health problems in Europe and in the world. They are caused by a variety of environmental and organizational workplace factors, such as ergonomic issues, awkward work postures, and repetitive work movements that often act simultaneously and synergically.
Purpose. To determine the prevalence of musculoskeletal complaints among employees in the higher education, as well as the most significant risk factors for their occurrence.
Material and Methods. The survey was conducted among 542 employees of Trakia University, Bulgaria, who completed questionnaires on the symptoms (Nordic Musculoskeletal Disorders Questionnaire) and exposure to the most common occupational risk factors for MSDs. The subjects were grouped and compared by gender, age, years of service and employment position (teaching staff, administration and auxiliary).
Results. 74% of participants reported one or more musculoskeletal complaints in the last 12 months, with the most common being neck symptoms, followed by shoulders and arms. The same dynamics were observed in the gender groups, with neck complaints being much more common in men (27.71% versus 18.11%). However, women had a significantly higher average number of complaints (2.41) than men (1.64), p = 0.000058. Higher percentage of
hand/arm MSDs were reported by auxiliary workers, as well as low back complaints by
administrative staff compared to other groups. A positive correlation was found between the
number of MSDs and the years of service (r=0.11, p=0.019), but not between MSDs and age.
The analysis of workplace risk factors showed that 55.9% of the respondents reported
working with display screen, 37.46% frequent, repetitive hand movements and 27.67% having
non-ergonomic workstation during at least half of the working day.
Conclusions. Prevention of MSDs of occupational origin requires a comprehensive approach
involving the identification, assessment and control of a number of ergonomic and
organizational factors. Similar studies in various occupational groups would further elucidate
the etiological characteristics of these chronic, painful and often disabling diseases.

25) Serum expression of microRNA-16 in a cohort of Bulgarian patients with
inflammatory bowel diseases and its correlation with disease extent and severity
Antonia Atanassova, Trifon Chervenkov – Med. Uni. Varna, Bulgaria
Abstract:
The ethology and pathogenesis of IBD remain undefined but an interaction between
environmental, genetic and immunological factors is the most accepted explanation. Several
recent studies have examined miRNAs expression in the peripheral blood and tissues from
IBD patients.
The study aims to assess the expression of serum miR-16 in IBD patients and its correlation
with disease extent, activity and severity.
It was performed on 35 patients with ulcerative colitis (UC), 35 patients with Crohn’s disease
(CD). Serum miR-16 expression was assessed using reverse transcriptase quantitative real
time PCR (RT-qPCR), and then correlated with that of a group of 30 healthy subjects to
assess its role in diagnosis of IBD.
It was also correlated with disease extent and disease activity and severity indices (CDAI,
Montreal classification, Partial Mayo score). Serum expression of miR-16 in the 70 patients
was compared to that of the healthy control subjects. The patients’ group showed mean serum
miR-16 expression of 3.07 for CD, 1.97 for UC and 1.61 for the control group with a
significant difference between groups.
From the current study, we can conclude that there is a significant correlation between
increased serum expression of miR-16 and disease activity, extent or severity.

26) Anti-cytokine therapy and survival in patients with Rheumatoid arthritis
Tanya Shivacheva, Simona Bogdanova, Tsvetoslav Georgiev, Svetoslav Pavlov, Svetlana
Hristova, Georgi Gerganov – Med. Uni. Varna, Bulgaria
Abstract:
Mortality in patients with Rheumatoid arthritis (RA) is approximately 1.5 times higher than in
the general population, with no significant changes in recent years.
Purpose. The purpose of the study was to determine a 10-year prognosis for survival and to
identify factors associated with RA that influence it in patients with seropositive RA on anti-
cytokine therapy.
Material and Methods. In a retrospective study, we analyzed the medical records of patients
with seropositive RA who met the 1987 ACR criteria and were on anticytokine therapy. The
functional class was assessed according to Steinbrocker, and the residual RA activity was
assessed by SDAI (according to a conventional formula). Low activity is assumed according
to the generally accepted threshold lower than 11. The original Charleson comorbidity index
(CCI) was used to determine the 10-year survival of each patient (by formula).
Results. 190 RA patients with a mean age of 58.77 (±11.26) years were analyzed of which
85.8% were women. The mean 10-year survival prognosis for the whole group was 63% (0 to
A significantly large proportion of patients (65.6%) had a good (>73%) predicted 10-year survival. There is no relationship between the age at onset and the duration of RA, the time from diagnosis to the “first dose” of biologic therapy and its duration, on the one hand, and the predicted 10-year survival, on the other. The combination of variables: Functional class II (according to Steinbrocker) (OR 2.08, 1.08-3.99) and low activity (SDAI <11) of RA (OR 4.67, 2.44-8.96) are recognized as predictors of better 10-year survival.

**Conclusions.** Anti-cytokine therapy may improve the predicted 10-year survival in RA patients when it maintains good musculoskeletal function and low levels of residual rheumatoid arthritis activity.

27) **Immunotherapy in Urological Tumors – where are we standing in 2020?**


**Abstract:**
The past decade has seen significant improvement in our understanding of tumor biological features, which has led to use of anti-programmed-death 1 (PD-1) and anti-PD-ligand-1 (PD-L1) agents and cytotoxic T lymphocytes antigen 4 (CTLA-4) inhibitors in a multitude of cancers. By stimulating the inherent ability of our immune system to attack tumor cells James Allison and Tasuku Honjo have established an entirely new principle for cancer therapy. For this there were awarded with the Nobel price in 2018. These immunotherapeutic agents have shown activity in melanoma, lung, head and neck, colorectal, urological, and other cancers. Immune checkpoint inhibitors reactivate an immune response against tumor cells, leading to cell death. Urogenital tumors comprise renal, upper urinary tract, bladder, prostate, and germ-cell tumors. Bacillus Calmette-Guérin (BCG) is one of the most successful immunotherapies in cancer treatment and has widely been embraced by urologists globally as the standard of care for patients with high-risk non–muscle-invasive bladder cancer (NMIBC).

The progress in immunotherapy for the treatment of cancer reflects attempts made to restore immune-mediated tumor elimination. The versatility of immunotherapy in treating malignancies is a reflection of the different pathways that can be manipulated to redirect the immune system against cancer. Immunotherapeutic agents can be broadly categorized into recombinant BCG and cell wall–derived therapies, cytokines, gene therapy, cancer vaccines, immune checkpoint inhibitors, oncolytic viruses, adoptive immunotherapies, immune agonists, and immunomodulatory agents.

28) **Evaluation of invitro antimicrobial property of lipid extracts of Black Sea mollusks**

*Gabriela Tsankova, Tatina Todorova, Neli Ermenlieva, Albena Merdzhanova, Veselina Panayotova, Diana Dobreva – Med. Uni. Varna, Bulgaria*

**Abstract:**
Over the past decade, there has been a growing interest in sea bivalves, which are an inexpensive and easily accessible source of high-quality proteins, lipids and secondary metabolites. Marine invertebrates such as Black Sea mussels are a potential and promising source of structurally novel metabolites with anti-microbial, anti-fungal, anti-inflammatory and other pharmacological activities. The aim of this work was to determine the antibacterial activity of different extracts from the Black Sea mussel Mytilus galloprovincialis tissues by using the disc diffusion method with cultures of Staphylococcus aureus, Escherichia coli and Candida albicans.

The results obtained in our study showed that Black Sea farmed mussel could be an interesting source of antibacterial compounds. The glycerol-water extracts of Mytilus galloprovincialis had low antimicrobial activities against Staphylococcus aureus and more
important against Escherichia coli. This basic research can help to develop antimicrobial drugs from marine natural products. Identification and isolation of specific bioactive compounds from marine mussel extracts from Bulgarian part of Black Sea need to be carried out in further studies.

29) One year follow up Schroth therapy in adults with idiopathic scoliosis and kyphosis
Radostina Madjarova, Maya Krastanova, Irena Stoilova – Med. Uni. Pleven, Bulgaria
Abstract:
Schroth therapy is a new method in Bulgaria for conservative physical therapy for patients with adolescent idiopathic scoliosis and kyphosis. The method is a combination of specific physiotherapeutic exercises with breathing and manual techniques and is part of the SOSORT (The international Scientific on Scoliosis Orthopaedic and Rehabilitation Treatment) recommended for the treatment of scoliosis and kyphosis. The aim of the study is to stop progression, improve posture and reduce back pain of adults with idiopathic scoliosis and kyphosis.
Subjects of the study were 6 adults with diagnosed adolescent idiopathic scoliosis and kyphosis, who followed long-term therapy. Clinical, VAS, radiological, kinesiological methods of diagnostics have been used. One year treatment with Schroth therapy was reported. The conclusion is that Schroth therapy for long-term patient compliance is a reliable conservative treatment for scoliosis. Good results are recorded on retaining the degree of distortion, pain reduction, thoracic mobility, posture improvement regardless of gender, degree of scoliosis and age.

30) Rheumatoid arthritis – stratification of the risk
Abstract:
In terms of clinical course, rheumatoid arthritis (RA) is a heterogeneous disease. The prognosis for the development of RA is defined as the prediction of the expected outcome, and the outcome of the disease usually depends on individual factors, environmental factors and/or factors related to treatment. At this stage, there is a lack of a sufficiently well functioning and reliable tool for everyday clinical practice with which to predict the course of RA and the expected effect of the applied treatment. Stratification of the risk of rapid progression is an important aspect of the therapeutic approach to RA with a view to choosing the initial or subsequent drugs to achieve minimal disease activity in patients with low or high risk of disease progression. In view of this, we developed a forecasting matrix with a methodology borrowed from the international standard ISO 31000: 2011 and applied the method FMEA (Failure Modes and Effects Analysis - Analysis of the types of failures and their consequences) in three main steps - risk identification, analysis of risk and impact on risk. The goal is to diagnose each patient and determine their risk in terms of the likelihood of rapid disease progression, the likelihood of non-response to standard therapy.
The individual approach depending on the potential prognostic factors for the course of RA and the effect of its treatment are part of the idea of personalized medicine. Using this prognostic matrix and determining the risk of the respective patient to have a tense disease, we can take action to minimize this risk. The ability to predict the clinical response to appropriate treatment allows for the creation of personalized treatment plans with the most appropriate medication.
Keywords: rheumatoid arthritis, prognostic factors, personalized medicine
Gender differences in disease activity and quality of life in patients with non-radiographic axial spondyloarthritis

Abstract:
Background. In recent years, with the introduction of the ASAS criteria for the diagnosis of axial spondyloarthritis (ax-SpA), it has become possible to confirm the diagnosis in its pre-phase, also known so-called non-radiographic spondyloarthritis (nr-ax SpA). Compared to the radiographic phase, where male involvement predominates, in the early non-radiographic phase more than half of the patients are women. The shift of focus according to gender gave researchers reason to look for differences in the course, risk characteristics, levels of disease activity and phenotypic manifestations of the disease in the earliest phase of the disease.

Purpose. To perform a comparative analysis based on the patient’s gender in terms of disease activity and quality of life in non-radiographic axial spondyloarthritis.

Material and Methods. The study involved 60 patients (32 female pts vs 28 male pts) over the age of 18 with a history of inflammatory pain in the lower spine for a period of at least 3 months. All patients underwent conventional radiography and MRI of sacroiliac joints to demonstrate non-radiographic changes. Patients completed the Bath Ankylosing Spondylitis Disease Activity Index (BASDAI) and ASDAS-CRP questionnaires, as well as the Bath Ankylosing Spondylitis Functional Index (BASFI) and the Bath Ankylosing Spondylitis Metrology Index (BASMI). The quality of life assessment was performed with the disease – specific ASQoL questionnaire.

Results. Female gender is associated with a significantly higher level of disease activity in nr-ax SpA (higher BASDAI, ASDAS – CRP and BASFI), as well as a poorer quality of life identified with ASQoL. Both genders demonstrate similar disease burden due to structural changes shown in BASMI scores.

Discussion. The focus on non-radiographic axial spondyloarthritis and the improvement in the early phase diagnosis gave the opportunity to researchers to investigate deeply characteristics in disease course as well as differences in disease activity and quality of life.

Keywords: gender, disease activity, quality of life, non-radiological axial spondyloarthritis

Atrophy and fatty infiltration of lumbar multifidus muscle in patients with axial spondyloarthritis

Abstract:
Purpose. Lumbar multifidus muscle atrophy and dysfunction are associated with chronic low back pain. An interesting question is how inflammation and pain in axial spondyloarthritis (AxSpA) interact with the multifidus muscle. The aim of our study was to describe the characteristics of multifidus muscle in patients with AxSpA and to investigate the association of muscle atrophy and fat infiltration with the inflammatory marker c-reactive protein (CRP).

Material and Methods. Forty-two patients meeting the ASAS criteria for axial SpA were included in a retrospective single-center study. All patients underwent pelvic radiography with sacroiliac joint (SIJ) centering and SIJ magnetic resonance imaging. Data on demographic characteristics and C-reactive protein (CRP) levels in all patients were collected. The cross-sectional area of the investigated muscle was measured at the L5-S1 level. Muscle fat infiltration was assessed on a semi-quantitative scale from 0 to 4.

Results. There was no significant difference between the cross-sectional area of the multifidus between men and women. The area of examined muscle correlated significantly
with age, but not with the body mass index (BMI). A significant association was also found with C-reactive protein levels in patients with AxSpA. 19/42 (45.2%) of patients with AxSpA showed a high degree of fatty degeneration (score ≥ 3). Their levels of CRP were higher compared to the patients with lower degree of fatty infiltration.

**Conclusions.** In patients with AxSpA, structural changes in the lumbar multifidus muscle are observed, which are associated with age and acute phase parameters.

**Keywords:** axial spondyloarthritis, AxSpA, paravertebral muscles, multifidus muscle

33) **COVID 19 pandemic impact on Emergency Department workload and work organization**

*Kiril Atliev, Rostislav Kostadinov – Med. Uni. Plovdiv, Bulgaria*

**Abstract:**
The newly detected virus SARS-CoV-2 for 9 months has caused pandemic that has imposed significant changes into entire spectrum of the medical activities. The impact of the COVID 19 on medical community has led to diverse effects requiring rapid decisions and reorganization. The most affected into the first months of the pandemic were the so called first-line medical responders. The emergency department of the University hospital for active treatment Saint George Plovdiv is the largest structure providing life-saving 24-hours, 7 day emergency medical aid to patients from Southern Bulgaria. As the others structures for emergency medical care the Department had to undergo serious structural and organizational changes in order to respond adequately to the increasing biological threat to the medical teams and patients.

**Purpose.** The purpose of our study is to present the results of the implemented structural and organizational measures into the Emergency department of the University hospital for active treatment “Saint George”, Plovdiv for assuring the safety and security of the staff and patients.

**Material and Methods.** By the means of the descriptive method the challenges related to the developing epidemics faced by the Emergency department medical teams are presented. Comparative method is applied for analyzing how the implemented measures were responding to the requirements of the constantly changing medical and general situation in the country.

**Results.** Results obtained by the performed analyses highlight several shortfalls into the hospital readiness and preparedness to swiftly adjust its activity in case of increased demands. The main challenges are grouped by its impact on medical personnel, patients and managers. From the analyses the psychological stress related to the fear of infecting the families and the imposed self isolation of the medics, along with the shortages into personal protective equipment and difficulties into following the required protocols for triage and isolation of the suspected patients are those with greatest impact on the workforce and work organization.

**Conclusion.** As conclusions the requirement for improving the preparedness of the emergency structures for disaster medical support has to be noted.

**Keywords:** Emergency department, COVID 19, Disaster medical support, Disaster resilience

34) **Influence of trace elements copper and selenium on parameters assessing the iron status in pregnant women with low-risk and high-risk pregnancies**


**Abstract:**
Pregnancy is characterized by increased requirements on erythropoiesis because of the expansion in maternal red blood cell mass and intensive tissue growth. The involvement of
trace elements copper (Cu) and selenium (Se) in iron metabolism, erythropoiesis and erythrocyte functioning is a subject of extensive research with contradictory results.

**Purpose.** The purpose of the study was to determine serum concentrations of Cu and Se and to investigate their relationships to parameters for assessment of iron status in pregnant women with low-risk and high-risk pregnancies.

**Conclusions.** Trace elements Cu and Se have significance for the normal erythropoiesis in pregnant women. Further in-depth studies are needed for detailed elucidation of their role on iron metabolism. This would optimize the period of trace element supplementation in pregnant women with low-risk and high-risk pregnancies.

35) **Molecular screening for Fragile X among children with unexplained intellectual disability and/or autistic behavior**

*Milena Stoyanova, Mari Hachmeriyan, Maria Levkova, Valentina Miteva, Stoyan Bichev, Miglena Georieva, Violeta Iotova, Lyudmila Angelova – Med. Uni Varna, Bulgaria*

**Abstract:**
Fragile X Syndrome (FXS, OMIM #300624) is the most common inherited form of intellectual disability and the leading monogenic cause of autism. The aim of this study was to present our experience with molecular genetic screening for FXS among children with ID / developmental delay /autistic behavior and to further prove the importance of performing selective screening in a high-risk population. It included 52 clinically examined children (45 boys and 7 girls) who were hospitalized in the Pediatric clinics or referred to the genetic counseling office for unknown cause of intellectual disability/developmental delay/ behavior problems. FastFrax FMR1 Identification Kit was used for screening of expanded (a group of pre- and full mutation) from non-expanded (normal and high normal) FMR1 alleles (≥55 rpts) and samples, which showed an expansion of the CGG repeats, were followed confirmation by FastFraX FMR1 Sizing Kit at the National Genetic Laboratory. 33 (63,4%) out of 52 children were evaluated as intellectually disabled with or without autistic spectrum disorder. The rest 19 children manifested developmental delay, especially language delay with or without autistic-like behavior, but 12 children could not be evaluated for ID, due to age 2-3 years. Only 9 boys (17,3%) presented with facial dysmorphism, typical for FXS. Three out of 52 samples (5,7%) were classified as expanded in relation to the 53 repeat control by the identification kit. These patients were males at age 8, 9 and 11 years. The mothers of case 1 and case 2 were additionally tested by Identification Kit and their samples showed expansion. FastFraX FMR1 Sizing Kit confirmed that all three males carried a full mutation, and the two females were premutation carriers. None of the tested 7 girls for developmental delay or autistic behavior showed expansion. The present study was the first attempt for molecular genetic selective screening for FMR1gene mutations in a high-risk group of children with ID/developmental delay from the region of Northeastern Bulgaria. As clinical symptoms are neither specific, nor constant and the idea for application of mass newborn screening for FXS in context of insufficient medical advantage in treatment is controversial, testing for Fragile X mutation remains the basic genetic assessment in patients who present with developmental delay, mental disabilities and/or behavioural problems. It provides a definitive diagnosis for the family and facilitates genetic counselling of the affected individual and relatives for reproductive planning. The study was conducted at Laboratory of Medical Genetics, University Hospital St Marina, Varna, as a part of a scientific project №18015, funded by the Medical University – Varna, Bulgaria.

36) **Chromosomal Polymorphism and Reproductive failure in the Bulgarian Population (A 15-Years Experience)**
Maria Tsvetkova, Mariya Levkova, Mari Hachneryan, Lyudmila Angelova – Med. Uni. Varna, Bulgaria

Abstract:

Introduction. Chromosomal polymorphisms are described as normal variants at chromosomal regions with no impact on the phenotype, but they could correlate to infertility and recurrent spontaneous abortions (RSA). These regions consist of highly repetitive sequences of satellite DNA, which do not encode proteins. The repeated sequences, when are located on the same chromosome, could predispose to homologous unequal recombination leading to chromosomal micro-rearrangements, i.e. deletions, duplications and inversions, which can affect a clinical condition such as infertility and recurrent abortions.

Aim. The aim of this study was to evaluate the effect of the chromosomal polymorphisms involved in families with reproductive failures (RF) in the Bulgarian population.

Material and Methods. A total of 1733 patients with unexplained RF (RSA, missed abortion, infertility or other complications of pregnancy), who visited the Laboratory of Medical Genetics – Varna, Bulgaria, between January 2005 and December 2019, were investigated by conventional cytogenetic analysis GTG and CBG differential banding techniques. Approximately 10 metaphases were karyotyped for each patient on the resolution 400-550 GTG bands.

Results. Chromosomal polymorphisms were found in 173/1733 infertile patients (9.98%). The sex distribution was 113 (6.52%) males and 60 (3.46%) females. The most frequent finding was pericentric inversion in chromosome 9 (inv(9)(qh)) – 41/173 patients (23.7%). The other chromosomal variants, which were found, consisted of 26/173 (15.1%) cases with 9qh+/- variants; 37/173 (21.4%) cases with polymorphisms on the short arms of the acrocentric chromosomes; 22/173 (12.7%) patients with 16qh+ and 12/173 (6.9%) with 1qh+. An Y chromosome polymorphism was found in 31/113 (27.4%) of the males with polymorphisms. Two rare cases of polymorphism, involving the centromere regions of chromosomes 19 and 20 - 19qcenh+ and 20pcenh+ were also found.

Conclusion. There is growing evidence that polymorphisms may have a clinical impact on fertility and could take part in the etiology of RF. In this study we found a significantly high percentage of polymorphisms (9.98%) among the tested patients and they were more common among males. This was mainly due to the Y chromosomal polymorphism. A higher prevalence of the other polymorphic variants, especially for 9qh + and inv (9) (qh) variants were almost twice as many as in the women. The statistical significance of increased incidence of chromosome variations found in our infertile sample of 1733 examined patients emphasizes the need to routine evaluation of their role in families with RF in our country.

Keywords: chromosome heteromorphism/ polymorphism/ variant, infertility, RSA

37) Fetal fibronectin as a predictor of preterm birth

Nikolay Kolev – Med Uni. Varna, Bulgaria

Abstract:

The use of biochemical markers to predict preterm birth has the potential advantage as it provides direct evidence of changes in the extracellular surface matrix between fetal membranes and decidual tissue. Fetal fibronectin is a high molecular weight adhesive extracellular matrix glycoprotein. In the embryonic period it is produced by the cells of the cytotrophoblast. Its examination in combination with measuring the length of the cervix is an excellent screening method for assessing the risk of premature birth. Objective: To evaluate the role of fetal fibronectin as a predictor of preterm birth within 7 - 14 days of the test.

Materials and methods. The object of the study are 120 pregnant women from Varna and the region, and the gestation period is between 24 weeks of gestation and 34 weeks of gestation. The studied women are divided into two groups - asymptomatic and with clinical symptoms.
The Full-Term test for fetal fibronectin (fFN) was performed between 24 weeks and 34 weeks. For all pregnant women with positive tests, we prescribed retention therapy from Magnerot, Gynepral and Utrogestan on a 20-day schedule.

**Results.** Positive results from the fFN test were given by 36 patients, of whom 15 gave birth 37 weeks ago or 41.70% of women. By correlation analysis we proved that there is a direct proportional extremely strong relationship \( (r = 0.97; p \lt 0.001) \) between the gestational age of the fetus and its weight in women who gave a positive result of the fFN test. Most of the half-mothers (72.20%) started labor after 14 days of the test. In the analysis of variance, we proved that there is a significant difference between the interval between the test and the gestational age of the fetus \( (p \lt 0.001) \), with a tendency to increase gestational age with increasing time from the test to the onset of labor. The study of cervical length in fFN-positive women showed a significant difference in the intervals between the test and the onset of labor \( (p \lt 0.001) \), while proving that there is a strong proportional relationship between the two factors. \( = 0.76; p \lt 0.001 \). Women with a short interval between testing and childbirth are characterized by a small length of the cervix, while women with an interval of more than 20 days are of normal size and are de facto without risk of premature birth.

**Conclusions.** Full-Term test is a practically easy to perform, non-invasive, clinically effective and cost-effective rapid test for predicting preterm birth in the period 24 - 34 weeks of gestation. The prognostic value is high and in case of negative results, the patients give birth as close as possible to the probable term.

**Keywords:** Fetal fibronectin, preterm birth, predictor

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38) **Comparative bioavailability of a novel misoprostol containing formulation**

*Andrey Petrov, Emil Gatchev, Rossen Koytchev – Med. Uni. Sofia, Bulgaria; CCDRD, Berlin, Germany*

**Abstract:**

**Purpose.** To assess the comparative bioavailability of two oral preparations containing misoprostol (test: Misoprostol Exelgyn 400 µg tablets as compared to a market standard reference: 2 tablets of Cytotec® 200 µg tablets) after oral administration of a single dose of 400 µg misoprostol.

**Material and Methods.** The study was conducted as a two-stage, monocentric, open, randomized, single dose, two-period crossover trial in healthy female volunteers under fasting conditions, with a mean duration of hospitalization of 5 h after dosing on day 1 and with a wash-out period of 7 days.

**Results.** A total number of 55 volunteers (1st and 2nd stage) were randomized and received study medication. Fifty-one volunteers completed the trial according to the protocol and 4 volunteers dropped out. The samples of all 51 study completers were analyzed and subjected to statistical evaluation. The evaluation of comparative bioavailability of the primary endpoints AUC(0-t) and Cmax of misoprostol acid was based on a parametric method (ANOVA-log). The 90.20% CI of misoprostol acid was calculated by means of ANOVA-log for the first primary endpoint, intra-individual ratio (T/R) of AUC(0-t) of was between 95.79% and 106.04% and thus within the acceptance range (80.00 - 125.00% for log-transformed values). The 90.20% CI calculated by means of ANOVA-log for the second primary endpoint intra-individual ratio (T/R) of Cmax of misoprostol acid was between 85.39% and 107.38% and thus within the acceptance limits (80.00 - 125.00% for log-transformed values).

**Conclusion.** The test product Misoprostol Exelgyn 400 µg tablets is bioequivalent to the reference productCytotec® 200 µg (2 tablets) in terms of rate and extent of absorption.

**Keywords:** Misoprostol, comparative bioavailability
39) Skin barrier and sensitive skin syndrome

Filka Georgieva – Med. Uni. Varna, Bulgaria

Abstract:

Purpose. To establish is there a dysfunction of skin barrier in SSS patients.

Objective and Methods. The presented study includes 64 female self-diagnosed with SSS and 45 female self-diagnosed with NSS (non-sensitive skin). Demographic data were collected from registers of Medico-Aesthetic Center “Medea” Varna from April 2017 till April 2019. Transepidermal Water Loss (TEWL) and Hydration (H) of epidermis in three different areas of the body were measured as an indicators of normal skin barrier functioning.

Results. No significant differences in skin barrier indicators in SS compare to NSS were found. No visible pathological changes were found in patients according to duration of SSS. A slight correlation between abnormal levels of TEWL and H and severity of disease was obtained.

Conclusion. All reported and analyzed results indicate that disorders of skin barrier are slightly connected with severity and duration of SSS. This could be one of the explanations why adding topical treatment worsen rather than improve SSS. This is the first study in our country, which aims to measure the impact of changes in skin barrier on clinical characteristics of SSS.

Keywords: Sensitive Skin Syndrome; Skin Barrier Evaluation, TEWL

40) Case presentation of Proximal femur deficiency


Abstract:

Presenting a case with proximal femur deficiency, which was treated previously in another hospital with Salter pelvic osteotomy and VDRO on the right femur 3 years ago. Periacetabular osteotomy has become a more common surgical intervention to relieve pain and improve function, even though is more surgically demanding. We therefore performed revision surgery with multiple osteotomies with the goals to address the coxa vara, genu valgum, to obtain better femoral coverage. Radiographic deformity correction was consistent and improvement in hip function was noted after the surgery. We show case that periacetabular osteotomy provides pain relief and improved hip function over our short-term followup.

Keywords: PFFD, Periacetabular, osteotomy, pelvic, femur, revision

41) Effects of acutely applied cannabinoid CB1 ligands on locomotor activity of rats with a model of depression


The endocannabinoid system a lipid signalling system in the brain, which has been shown to play role in the pathogenesis of depressive disorders. Bilateral olfactory bulbectomy (OBX) is a model of depression, which produces in rodents a syndrome with behavioral, neurochemical, structural, etc. abnormalities, similar to those observed in human depression. The aim of our study was to examine the effect of centrally administered CB1 receptor ligands (HU-210 and SR141716A) on locomotor activity of rats with OBX model of depression. Drugs were microinjected acutely, i.c.v. 5 minutes before testing the OBX rats in an Opto-Varimex apparatus. The microinjection of HU-210 significantly inhibited locomotor activity of OBX rats by decreasing the total number of both horizontal and vertical movements, while SR141716A decreased only the total number of vertical movements for a 30 min period of observation as compared to the OBX controls. After the administration of
both ligands, the locomotor activity was higher as compared to the sham-operated rats. HU-210 exerted more significant effect on the number of vertical movements, which almost approached the values of the sham controls. The results suggest an involvement of the cannabinoid CB1 receptors in the development of the depressive-like state of OBX rats.

42) Robot-assisted operations with da Vinci Xi- initial experience
Abstract:
The last two decades have seen a dramatic change in the surgical treatment of most urological diseases with the advent of a robotic surgical platform. Technical improvements over the years have led to improved results in terms of oncological and functional outcomes. In fact, surgical treatment of prostate cancer has undergone the most dramatic change, with most cases now performed with a robot. Robotic surgery is also used for the surgical treatment of bladder cancer, kidney cancer, ureteral reconstruction and other benign conditions. With the accumulation of additional experience and the realization of longer-term results, robotic surgery plays a growing role in the surgical treatment of many urological conditions.
In this abstract, we report our initial experience with the use of the da Vinci Xi system in various urological conditions (oncological and benign).

43) Influence of Sex, Age and Body Mass Index on Some Functional Indices of Pulmonary Ventilation in Physically Active in Children
Abstract:
Purpose. The purpose of the present study is to examine the impact of age, sex and body mass index (BMI) to some indices of the pulmonary ventilation in healthy children actively practicing sport, between 11 and 14 years of age, living in Plovdiv, Bulgaria.
Materials and methods. A group of 22 healthy volunteers (boys, n=14 and girls, n=8) with high level physical activity underwent a functional test for evaluation of pulmonary ventilation. In order to assess the influence of age, BMI and sex on some indices of pulmonary ventilation, they were divided in the following groups: in accordance with the age - group 11-12 years old (n=14) and group 13-14 years old (n=8); in accordance with the BMI group < 20 kg/m² (n=14) and BMI group >20 kg/m² (n=8) and in accordance with the sex – boys group (n=14) and girls group (n=8). Lung volumes and capacities, maximal voluntary ventilation and flow/volume ratio were investigated (Flowscreen, Erich Jaeger, Germany). The results are presented as X±SD. The data has been analyzed with Independent Samples Test (t-test), (SPSS v. 13. 0). Difference at P<0.05 was accepted as significant.
Results. We did not find significant differences in most of the indices between the groups by age, body mass index and sex. Although there was higher maximum pulmonary ventilation and higher peak (maximal) expiratory flow in boys as compared with the girls. There is a tendency of higher peak (maximum) expiratory flow in the age group 11 – 12, as compared with the age group 13 – 14 years (P=0.058).
Conclusion. Despite the good health condition and high level of physical activity we found out higher maximum pulmonary ventilation and higher peak (maximal) expiratory flow in boys as compared with the girls. Further investigations are required in order to discover details in pulmonary ventilation in children with high level physical activity.
Keywords: spirometry, children, pulmonary ventilation, peak expiratory flow
44) Stemless shoulder prosthesis
Abstract: TBA

45) Total knee arthroplasty after failed unicondylar knee arthroplasty
Asparuhov A., I. Gerasimov, St. Lungarov – Med. Univ. Pleven, Bulgaria
Abstract: TBA

46) Title of the presentation should contain brief but informative content
Mariela Filipova-, SWU Blagoevgrad, Bulgaria
Abstract
Purpose. To compare different kinesitherapy techniques and their impact on the recovery of patients with ischemic stroke

Methods. The study was conducted in 2014-2015 at the General Hospital for Treatment in Blagoevgrad - Neurology Department. The study contingent consisted of 20 patients, 10 of whom had an ischemic stroke and underwent venous thrombolysis (experimental group). In the other ten patients, no innovation was applied (control group). The following elements of different methods were applied in the experimental group: kinesiotape application of upper and lower limb, passive exercises, Kabat method, mirror therapy, exercises for fine movements, coordination exercises, applied locomotor movements. The same methods and specialized exercises were applied in the control group, except for kinesiotaping and mirror therapy.

Results. Of the studies performed, better results were recorded in the experimental group (ANOVA). We believe that this is due to the applied kinesiological tape and the additionally applied mirror therapy.

Conclusion. We believe that the choice of methodology is extremely difficult due to the colorful clinical picture and the general condition of the patient. The combination of different methods could help the patient recover faster.
Keywords: kinesitherapy, kinesitherapy methods, kinesiotaping, mirror therapy
Section Dental Medicine:
Chair: Stefan Peev, Metodi Abadzhiev, Miglena Balcheva
Secretary: Kiril Gogushev

1) Influence of the nausea and vomiting reflex in prosthetic treatment of patients with homeopathic medicines
Abstract:
The nausea and vomiting reflex in patients is a common phenomenon and is a real problem in dental practice. The aim of the present study was to demonstrate the potential of homeopathic remedies in patients with severe nausea and vomiting. Material and methods: 31 patients with partial edentulousness aged 65-75 years were studied. Diagnosis of the nausea reflex is performed and treatment with Gelseminum semperviles 30CH, Ipecacuanha 5 CH is applied.

Results. Patients with a weaker reflex respond positively to digital palpation and palpation with a round instrument. When using Lidocaine – spray, by spraying - slight improvements are shown, but the emetic reflex is not completely suppressed and is still affected by its diagnosis on palpation, and not the ability to take a impression. By smearing with a tampon and contact anesthesia, the result is the same as above. After reception and taking pill of antiemetic drug - Degan 10mg., one tablet, 30 minutes before the manipulation - does not work and the reflex appears at diagnosis by palpation. Those of them who have a pronounced nausea reflex respond positively to all three diagnostic tools.

Conclusion. After the appointment and administration of homeopathic medicines Gelseminum semperviles 30CH, Ipecacuanha 5 CH according to the described scheme, 3 days before the manipulation, the diagnosis is negative and it is possible to carry out prosthetic treatment.

2) Antimicrobial Effect of a Means for Enzyme Excavation (Brix 3000) and Photodynamic
Zornitsa Lazarova, Maya Rashkova, Raina Gergova – Med. Uni. Sofia, Bulgaria
Abstract:
The selective removal of the caries dentin via enzyme methods for excavation appears to be an alternative to the conventional treatment of caries in childhood. The photodynamic therapy is an effective alternative for reduction of cariesogenic microorganisms. Brix 3000 is an enzyme-based material for excavation of carious dentin.

Purpose. To study the antimicrobial effect of means for enzyme excavation (Brix 3000) and photodynamic therapy with FotoSan 630 Intro Kit to the two main cariesogenic microorganisms – S. mutans and L. acidophilus, in vitro experiment;

Materials and Methods. Forty plates were prepared: group 1- 10 plates only with Brix 3000; group 2 – 10 plates only with FotoSan; group 3 – 10 plates with a combination of Brix 3000 and FotoSan; group 4 – 10 plates without an active agent. In the agar of each plate, three 7 mm wells in diameter were made, where the Brix 3000 gel was placed, as well as discs soaked with the dye and irradiated with FotoSan and a combination of them. After 24 hours, the zone of inhibition was measured.

Results. Compared to the control group, Brix 3000 and FotoSan have a defined antimicrobial activity against S. mutans and Lactobacillus spp. By combining the two materials, their antimicrobial activity significantly increases. S. mutans shows greater resistance compared to Lactobacillus spp.
Conclusion. A combination of enzyme-based excavation and photodynamic therapy could be used successfully in the treatment of caries in primary teeth.

Keywords: S. mutans, Lactobacillus spp., photodynamic therapy, Brix 3000

3) Fear Assessment with the ‘Draw a Person’ Test of Dental Treatment in Sparing Enzyme-Based Excavation of Caries in Children between 4 and 6 Years of Age
Zornitsa Lazarova, Hristina Tankova, Maya Rashkova – Med. Uni. Sofia, Bulgaria

Abstract:
Purpose. The aim of the study is to assess fear and anxiety with the ‘Draw a Person’ test in sparing enzyme-based excavation with Brix 3000 when treating caries in primary teeth.

Materials and Methods. The study involves 42 children, aged 4-6, having strong and slightly negative behavior according to Frankl’s scale. Each child has to complete the ‘Draw a Person’ Test: at home, before and after dental treatment in the dental office. The length of each figure is measured in centimeters using a ruler.

Results and Conclusions. An increase of fear in the forthcoming treatment is established as well as quick soothing following the sparing excavation with Brix 3000. There are no differences in the degree of anxiety between children aged 4-6. There are no differences in the anxiety degree between boys and girls. Brix 3000 could successfully be used with children with slight or strong negative behavior according to Frankl’s scale.

Keywords: Fear, ‘Draw a Person’ Test, Enzyme-Based Excavation, Brix 3000

4) Technical complications in implant-supported fixed prosthetic restorations. Case series.

Abstract:
Purpose. This case series report aims to present three cases of technical complications in implant-supported fixed prosthetic restorations.

Case series. A 57-year-old woman came to our practice with complaints of pain and mobility of an implant-supported FPD at the area of 35-37. After x-ray diagnostics, an implant fracture at 35 was observed. The crown on 37 was preserved whereas the other part of the FPD was removed. The implant was explanted and a socket preservation technique was performed with allograft. Three months later at a recall appointment, a fracture of the second implant was observed on an x-ray. The same procedure was performed for the second implant. Two patients – a 46-year-old male and a 49-year-old female, came to us with complaints of mild gingival inflammation, bleeding and construction mobility. The clinical examination revealed a titanium base fracture and crown chipping of a screw-retained single-unit restoration over the implant in both cases. The restorations were replaced on the next day using the existing computer-generated models for the production of new constructions.

Discussion. Implant fracture is one of the most unpleasant, but fortunately rare technical complication in implant-rehabilitation. The treatment protocol in such cases is difficult and includes explantation and immediate or delayed implant placement. Augmentation procedures or socket preservation is often a necessity in these situations. An enormous advantage in restorations manufactured with the CAD/CAM technology is the ability of quick and easy replacement when the failure of the prosthetic superstructure is irreparable.

Conclusions. An accurate diagnosis and treatment options analysis are necessary, in order to select an optimal rehabilitation plan. Regular recall visits with radiographic control can prevent further biological complications in compromised implant cases.

Keywords: implant treatment, technical complications, fracture, case series report
5) Research on the opinion of the patients about the teamwork among the healthcare professionals during rendering of dental services

Abstract:
The primary medical care which is the rendering of dental services by doctors in dental medicine and dental technicians is a system which considers rendering of primary medical care to all indigent patients. The use of a multi-disciplinary approach and establishment of teamwork is required exactly in this system to achieve higher efficiency in provision of cares.

Purpose. The present report is intended to study the opinion of the patients about the teamwork among the healthcare professionals during rendering of dental services.

Material and methods. 328 patients who have used the services of dental technicians were inquired through an anonymous inquiry card. The results are processed statistically with SPSS v. 20, with usage of variation, benchmark and correlation analyses.

Results. More than 88 per cent of the patients have specified that they felt satisfied by the teamwork between the doctor in dental medicine and the dental technician through the process of treatment. The patients scored highly the quality of work of the dental technicians (90.50 per cent) which inevitably reflects on their opinion about the prosthetic construction, and 94.80 per cent of the patients have specified that the dental technicians considered their opinion during the manufacturing of the denture. All the patients think that communication has significant importance about the establishment of efficient relations among the healthcare professionals and the patients.

Conclusion. Based on all carried out analyses, we can conclude that there are established teams in dental medicine who achieve good results but it is required to pay attention not only to the professionalism of the experts, but also to the process of communication among them.

Keywords: teamwork, dental technician, satisfaction, patients, dental services

6) Use of selective laser sintering in dental technician practice - obstacles, advantages and disadvantages

Abstract:
The selective laser sintering (SLS) features high performance, high density and accuracy of the elaborated constructions as well as sustainable process management.

Purpose. The purpose is to study the obstacles, advantages and disadvantages from the use of the selective laser sintering in dental technicians’ practice.

Material and methods. The opinion of 135 practicing dental technicians has been researched through an anonymous survey card. The data processing employed the statistical software package, IBM SPSS v.20.0 for Windows. Variational, comparative and correlation analyses were used.

Results. According to 42.20 per cent of the studied dental technicians, there is a change in the quality of the denture constructions with the use of selective laser sintering. The use of SLS in the workmanship of the denture construction in 66.70 per cent of the cases will improve the accuracy, and according to 64.40 per cent of the respondents, SLS helps the faster workmanship of the construction. The results showed that the low purchasing power of the population is not a main motive and 31.60 per cent of the respondents would invest in the purchase of the innovative machinery provided that they are convinced in the quality of the equipment.

Conclusion. In conclusion, we may say that the results of the analysis showed that despite the existing factors, there are dental technicians who are ready to risk in the investment for purchase of machinery for selective laser sintering if it meets the parameters for quality of the elaborated constructions.

Keywords: selective laser sintering, obstacles, advantages, disadvantages, use
7) Temperature of periapical lesions measured with near-infrared light

Bogdan Krastev – Med. Uni. Plovdiv, Bulgaria

Abstract:

**Purpose.** The most common periapical lesions is the chronic periapical periodontitis. It is usually asymptomatic and can grow undisturbed. It can be diagnosed with: radiographic images, computed tomography, 3 dimensional computed tomography, 3D and 4D Doppler ultrasound, none of which, gives a true and early indication of the activity of the lesion. We must see clinical symptoms and changes in size and those changes need to be substantial to be noticed especially in 2D radiographic images. The focal spot theory implies that a chronic disease may affect other organs, systems, processes elsewhere in the body. One theory behind it is that constantly inflammatory cytokines or bacteria spread and affect the body. The local reactivity of the body can be tested by the electric-skin test of Gehlen-Standel, the histamine probe of Erkes and thermometry test of Pasheva-Jerassy.

**Materials and Methods.** We used a Moor VMS LDF monitor with a skin probe able to measure the temperature of the mucosa over periapical lesions and compared it to healthy control sites.

**Results.** We were able to detect more than 0.04 degrees Celsius difference between periapical lesions and healthy control sites.

**Conclusion.** There are several ways to measure temperature: liquid expansion thermometer, thermocouples, resistance temperature detector, pyrometer, langmuir probe, infrared sensor. So far the pyrometer and the infrared sensor are the most accurate methods which can be used in every day medicine. Thermography allows us to see the influence of many classes of medications or therapies on human organism as well as their activity and effect.

**Keywords:** periapical lesion, activity, focal spot, infrared, thermography

8) Hypoplasia Due To Vitamin D Deficiency and Oligodontia – A Case Report

Dobrinka Damyanova – Med. Uni. Varna, Bulgaria

Abstract:

**Background and Aims.** Acquired dental dysplasia are metabolic disorders in infancy and early childhood and are the result of malnutrition, disease and insufficient ultraviolet radiation. The diagnosis Oligodontia: of the research subjects only (0.08%) had six or more missing tooth. **Purpose.** The purpose of this study is diagnosis of developmental defects of the dental hard tissues and their treatment.

**Case Description.** In order to conduct the study, we received pre-declared informed consent from the parents of a patient who is 10 (ten) years old. The study was conducted in 2019-2020. Caries status was evaluated using both clinical and radiographic data and assessed as (D1/D2) enamel lesion and (D3/D4) as dentin lesion. Dental status and treatment. We defined the diagnoses: Caries mediooccclusalys d3b on tooth 65; Caries distooccclusalys d3b on tooth 64.

Caries was treated by fillings of the cavities with a Dyract compomer. Deep non-mineralized fissure of tooth 36 with subsequent application of sealant. Orthopantomography also shows Hypodontia premolar dentis teeth (35, 44, 45); Hypodontia dentis (18, 28, 38, 48 D: Oligodontia). Diagnosis: 10-year-old boy with hypoplasia of the upper permanent incisors and Oligodontia. The patient was treated with non-invasive and invasive methods of treatment. The study was conducted at the University Medical and Dental Center, Varna, Bulgaria.

**Conclusion.** Dental anomalies related with tooth agenesis include delayed tooth formation, prolonged primary tooth exfoliation, retained primary teeth, interdental spacing. Enamel hypoplasia increases the risk of developing dental caries. Early diagnosis helps to prepare a treatment plan, the treatment itself and the prevention of complications.

**Keywords:** Enamel hypoplasia, Vitamin D deficiency, Oligodontia
9) Reasons for choosing a profession and professional satisfaction of dental assistants  
Abstract:  
Purpose. The purpose of the study is to establish the reasons for choosing a profession and professional satisfaction of dental assistants.  
Material and methods. An anonymous inquiry was carried out among 108 dental assistants – 103 women and 5 men, working in dental offices in 4 Bulgarian cities. The questionnaire form consists of 18 questions about socio-demographic and professional characteristics of the sample. The used methods are sociological (inquiry) and statistical (alternative analysis).  
Results. The interest in the dental profession was the main motive for 75 (69.4%) of inquired persons, at second place - 50 (46.3%) pointed good financial remuneration and 49 (45.3%) – the convenience of working time and lack of shifts as reasons for choosing this profession. The majority of the inquired dental assistants – 102 (94.5%) answered positively that their expectations from the profession were fully or partially justified, only 6 (5.5%) persons gave negative answers.  
To the question “Does the job bring you a satisfaction?” 44 dental assistants (40.74%) answered “I am satisfied”, 22 people (20.37%) - ”I am very satisfied”; 34 (31.48) - ”I am somewhat satisfied”. Only 8 people (7.41%) gave a definite negative answer.  
All inquired dental assistants reported the need of additional training as 46.50% believe that it is necessary to attend additional training courses, and the remaining 53.5% rely on training from a dentist. The majority of the group – 81 (75%) believed that every dentist should work with an assistant.  
Conclusions. The main motives for choosing the profession ”Dental assistant” are the interest in the profession, the expected good financial remuneration and the convenience of working time. The majority of dental assistants were satisfied with their profession in varying degree and they are convinced that every dentist should work with an assistant.  
Keywords: dental assistants, professional satisfaction, professional choice  

10) Conservative treatment of an immature permanent tooth with large periapical lesion - a case report  
Krasimir Hristov, Natalia Gateva – Med. Uni. Sofia, Bulgaria  
Abstract:  
Regenerative endodontic procedures have become increasingly popular in recent years.  
Purpose. This paper reports the use of regenerative endodontics in treatment of a large cyst-like inflammatory periapical lesion in an immature permanent tooth.  
Case report. A 12-year-old boy with a submucosal abscess in the upper jaw visited the Department of Pediatric Dentistry. Previous injury in the area was reported. The X-ray showed a well-defined large osteolytic lesion, engaging the apical part of the root. The initial treatment plan included creation of MTA - plug and apical surgery. During the treatment unintentional bleeding was provoked from the periapical structures. The patient missed his appointments and returned 8 months later. The initial working length couldn’t be reached and hard barrier was present in the middle portion of the root canal. The CBCT showed that the size of the lesion had decreased significantly. Bone-like tissue with a density similar to surrounding spongiosis was observed in the root canal. There was no change in the contour and length of the root walls.  
Conclusion. Regenerative endodontics could be successfully used in the treatment of some immature permanent with necrotic pulp and large periapical lesions.  
Keywords: Regenerative endodontics, large periapical lesion, immature permanent teeth
11) Comparative Evaluation of Anti Microbial effects of Intracanal Medicaments against E. faecalis: An in vitro study
Abstract:
Introduction. Mechanical and chemical preparation is not always sufficient to eliminate microorganisms from the root canal. E. faecalis is one of the most important microorganisms infecting the root canal and present in asymptomatic and persistent infections.
Objective. To study the effectiveness of intracanal medications against E. faecalis in decontamination of the endodontic space in immature permanent teeth.
Materials and methods. An agar diffusion method was used to determine the efficacy of the intracanal dressings to remove E. faecalis from the root canal. The drugs were divided into the following groups: calcium hydroxide, indextol, triple antibiotic paste (TAP) at a concentration of 200, 100, 50 and 25 µg / mL, prepared immediately before the experiment. Factory packs of calcium hydroxide and indextol were used. TAP is composed of metronidazole, clindamycin and ciprofloxacin in a ratio of 1: 1:1. Talcum powder mixed with saline was used as control. A bacterial strain of E. faecalis was incubated in agar plates. In each plate 6 holes with depth of 4 mm and diameter of 6 mm were created - five peripheral and one central. The tested medicaments were placed in the peripheral wells, and in the central one - talcum powder. The inhibitory zone was measured from the edge of the well to the beginning of microbial growth one day later. The experiment was repeated three times and the results were analyzed statistically.
Results. The inhibitory zone was the largest in the samples treated with calcium hydroxide, the difference being statistically significant compared to the other study groups (p &lt;0.05). In the other groups, the inhibition of microbial growth was significantly lower, as it decreased with the concentration of the active ingredients in the triple antibiotic paste. No inhibition of microbial growth was observed in the groups with TAP concentration of 50 and 25 µg / mL. The efficacy of indextol against E. faecalis was comparable to that of TAP at a concentration of 100 µg / mL (p&gt; 0.05). With the exception of calcium hydroxide, none of the other intracanal medicaments at the concentrations tested guaranteed good antimicrobial activity against E. faecalis.
Conclusion. Under the limitation of this study, calcium hydroxide exhibits an antimicrobial effect against E. faecalis and can be considered a more effective drug than indextol. Decreasing the concentration of TAP reduces its inhibitory effect on E. faecalis proportionally.

12) Risk factors and gingival inflammation in children aged 10 to 14 years - an epidemiological study
Hristina Tankova, Nadezhda Mitova, Maya Rashkova, Hristina Popova – Med. Uni. Sofia, Bulgaria
Abstract:
Aim. The aim of the present study is to assess the prevalence and associated risk factors for periodontal disease in children aged 10-14 years.
Materials and methods. The study included 457 subjects. All children were clinically examined and the data were recorded in a specially designed examination card. The recorded clinical variables contained: assessment of oral hygiene habits; registration of dental status, including presence of carious lesions and fillings on risk for periodontal health surfaces (proximal, cervical); presence of malocclusionis; assessment of the Plaque index by Silness and Loe (PLSL); assessment of the Gingival index according to Loe and Silness (GILS).
**Results.** Carious lesions at risk for gingival inflammation surfaces are registered in 59% of children, at risk for periodontal health fillings in 32% and malocclusion in 37%. The studied children showed relatively good oral hygiene (PLSL-0.432 ± 0.287), which improved with age, with the largest amount of plaque observed on the proximal and vestibular surfaces. Over 88% of children have mild gingival inflammation (GILS-0.560 ± 0.422), affecting mainly the front teeth in both jaws.

**Conclusions.** Gingival inflammation in 10-14-year-old children covers more than half of the studied children, with mild forms of inflammation predominating with a relatively low oral hygiene index. 2/3 of the registered caries and 1/3 of the fillings have risk for periodontal health localization. Malocclusion are the next most serious risk factor for plaque accumulation and gingival inflammation.

**Keywords:** gingival inflammation, risk factors, periodontal indices

13) Evaluation of an electronic periodontal probe versus a manual probe in periodontal diagnosis of children aged 12-14 years

*Hristina Tankova, Zornitsa Lazarova, Maya Rashkova – Med. Uni. Sofia, Bulgaria*

**Abstract:**

**Aim.** The purpose of the trial is to comparatively analyze an electronic, pressure-calibrated probe third generation Parometer (Orange) and a standard, manual measurement probe WHO 621 (C type) in the context of taking periodontal variables when assessing periodontal status in childhood.

**Materials and methods.** The study includes 38 children aged between 12 and 14 years (12 boys and 16 girls). All children are clinically examined and the data is recorded in a specially designed examination card. The recorded clinical variables contains: assessment of oral hygiene habits; OHI Green Vermillion; registration of dental status; depth of gingival sulcus (PD) (on all teeth) with both types of probes; BOP (bleeding on probing), % bleeding units with both types of probes; the complete time needed to take the findings and the sensation of pain experienced by a digital rank scale during probing.

**Results.** The average depth of PD measured with a mechanical periodontal probe is 1.62 mm, and with an electronic one - 1.38 mm (p < 0.005). The values for BOP with mechanical periodontal probe are 0.29 ± 0.32, and with electronic 0.31 ± 0.27, which demonstrates an involvement of 30% of all examined bleeding units (p>0.005). The complete time for recording the variables with both probes is, on average, 10 minutes. The degree of discomfort according to the digital rank scale used for sensitivity with a mechanical probe is valued at 3.43 ± 1.752, and with an electronic probe - 4.07 ± 1.741 (p < 0.005). The sensitivity is more significant when using an electronic periodontal probe.

**Conclusion.** No significant differences have been found in the efficiency of probing using the two types of periodontal probes. It can be concluded that the use of an electronic periodontal probe provides more objective data on the condition of periodontal structures and allows for a more accurate monitoring of the results of subsequent therapy.

**Keywords:** gingivitis, gingival sulcus, periodontal indices

14) Skeletal Class II patient management with combination of braces and Myofunctional appliance

*Yana Popova - Med. Uni. Sofia, Bulgaria*

**Abstract:**

Distal occlusion is one of the most common malocclusions. Functional orthodontic appliances are a proven treatment choice for mild to moderate forms Class II growing patients. The simultaneous application of the two treatment appliances braces and Myofunctional appliance
in single-phase treatment aims optimal alignment of the teeth, achieving balanced occlusal contacts, Class I occlusal molar relationship and balance of the muscles in the maxillofacial area.

**Aim.** The aim of present study is to present a combined approach for management of skeletal Class II patients including fixed appliances and myofunctional Trainer for Braces appliance.

**Materials and methods:** The current study involved twenty dental and skeletal Class II orthodontic patients with ANB angle values greater than 40 and Class II occlusal molar relationship, who underwent combined treatment with braces and functional appliance T4B. Cephalometric analysis on profile X-rays were made for the beginning and the end of the treatment. We observed 5 sagittal, 6 vertical and 8 dentoalveolar parameters of cephalometric analysis before and after to evaluate the treatment results.

**Results.** The results show us increase of sagittal jaws relationship mainly due to the change of the mandible position. There is no substantial effect over the vertical growth pattern. Dentoalveolar treatment effects are mesial inclination of the incisors and decrease of interincisal angle values.

**Conclusion.** Well-aligned teeth and optimal occlusal relationship combined with muscle balance are prerequisites for a stable result. The final treatment effects of the present appliance combination were satisfactory. It’s impossible to determine treatment effects of braces, separate from trainer treatment effects.

**Keywords:** Class II treatment, functional appliance

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15) **Association between Characteristics of Occlusion and Gingival Health State in Children with Renal Diseases**

*Sirma Angelova – Med. Uni. Varna, Bulgaria*

**Abstract:**

**Introduction.** The excretory system disorders of pyelonephritis and nephrotic syndrome are characterized with a high rate of distribution in different age groups of childhood. These nephrology noxae afflict the organism on tissues’, organs’ and systemic level, related to the disturbance of functionality of metabolic mechanisms. The child and the other family members have to be aware of the fact that these deviations of the physiological norm are related to potential risks of complications provoked by the renal diseases or medicines applied for their therapeutic control. The hard and soft tissues into oral cavity are also impinged by the common health disorders.

**Purpose.** The purpose of the study is to be investigated the association between the specifics of occlusion and state of the gingival tissue among children suffering from pyelonephritis and nephrotic syndrome. Material/Methods The subject of the study are 157 children with primary, mixed or permanent dentition. A total number of 116 of the participants are with diagnosed renal disorders. There is a control group of 41 children without systematic diseases. A parent or guardian of each of the participants has signed a form of a declaration of informative consent. In the context of the research are applied clinical and statistical methods.

**Results.** The registration of the orthodontic status of the participants in the study is characterized with a wide variety of deviations from the physiological norm of orthognathic occlusion. Simultaneously, based on the established clinical status of the gingival tissue and the level of plaque control among the children with diagnosed pyelonephritis and nephrotic syndrome, and the healthy controls in parallel, there has been outlined an interrelation between the common health status and the degree of gingival inflammation. In the context of a dispersion analysis is confirmed the statistically significant influence of occlusion upon the plaque index of PLI. There has been established an interrelation between the orthodontic status, respectively the deviations from the orthognatic norm, and the abnormal accumulation
of dental plaque upon teeth surfaces in the role of a predisposing plaque-retentive factor for initiation and progression of gingival tissues’ inflammation.

**Conclusion.** We conclude that deviations of orthognatic occlusion norm exercise a considerable impact upon gingival tissues in children with renal disorders.

**Keywords:** occlusion, gingival health, children, renal diseases

16) **Dispersion Analysis of the Impact of Common Diseases upon Indicators of Oral-Dental Health**

*Sirma Angelova – Med. Uni. Varna, Bulgaria*

**Abstract:**

**Introduction.** In the context of plenty of scientific literature sources has been accentuated on the interrelations between systemic disorders and clinical and non-clinical parameters of oral-dental health. The dispersion (variation) analysis provides favorable conditions for simultaneous check-up of the equality of the average values of variables, in terms of a fixed level of significance, which is valid for the entire multitude of comparisons. Among the most widely implemented parameters of investigation of oral-dental health are the epidemiological indices of dft and DMFT, the clinical variables of non-cavitated and cavitated carious lesions, plaque index of PLI, index of G. Delanghe et al., gingival index of GI.

**Purpose.** The purpose of the study is to be evaluated the impact of the common health status of the individual on characteristics of oral-dental health.

**Material and Methods.** In the study are included 157 children with primary, mixed or permanent dentition. A total number of 116 of the participants are with diagnosed renal disorders of pyelonephritis or nephrotic syndrome. There is a control group of 41 children without systematic diseases. A parent or guardian of each of the participants has signed a form of a declaration of informative consent. In the context of the research are utilized clinical and statistical methods.

**Results.** The parameter of the common health status of the investigated children exercises a statistically significant influence upon these variables: pH, PLI, GI, number of cavitated carious lesions and the index of G. Delanghe. The factor of the individual common health status among the participants with diagnosed nephrotic syndrome does not exercise any statistically significant influence upon the variable of non-cavitated carious lesion. The parameter of gender does not exercise any statistically significant influence upon any of these results’-associated variables.

**Conclusion.** It is concluded that deterioration of the common health status in terms of renal diseases does exercise statistically significant influence upon essential parameters of the oral-dental health.

**Keywords:** dispersion analysis, oral health, common diseases, children

17) **Current actions in dental practice for limiting Coronavirus infection**

*Ralitsa Radenkova, Desislava Todorova, Mariana Dimova-Gabrovska, Desislava Dimitrova – Med. Uni. Sofia, Bulgaria*

**Abstract:**

In the context of a global Covid-19 pandemic, every dental team in daily practice seeks to limit the transmission of cross-infection and viral spread.

**Purpose.** The purpose of the study is based on a sociological survey among dentists in Bulgaria to bring out current conclusions on measures for reducing the risk of cross-and viral infections transmission and for preserving the health of medical staff and patients.

**Material and methods.** In 2017, a survey was conducted among 126 dentists in the city of Sofia, Bulgaria for the period from May to September 2020. Some of the questions in the
survey are related to the methods and means used to minimize cross-infection between members of the medico-dental team, the patient and dental technicians.

**Results.** 31.7% of the respondents always treat the impression with a disinfectant after taking it. One in five (22.2%) always autoclaves the turbine tips. The aspiration system during clinical work is included by only 11.9% of the respondents.

**Conclusion.** The need for continuing training among medical staff on current methods and means for reducing the risk of cross and viral infections transmission is confirmed. The conditions for overcoming these risks are the availability of quality equipment, consumables and control over the activities in dental medicine.

**Keywords:** Covid-19, viral infection, disinfection

18) **Tooth wear in children – prevalence, clinical characteristics and risk factors**
*Marianna Dimitrova, Maya Rashkova, Nadezhda Mitova – Med. Uni. Sofia, Bulgaria*

**Abstract:**
Tooth wear is a physiological process resulting from the chewing function of a person during his life. When it does not correspond to the age of the individual in degree and severity, it is referred as pathological tooth wear, which can be commonly found in childhood.

**Purpose.** The purpose of the research is to study the prevalence of tooth wear, its clinical characteristics and its relationship with bruxism and orthodontic malocclusion in childhood.

**Material and Methods.** The object of the study are 222 children in 5 age groups - from 3 to 7 years. The examined children underwent a clinical examination, during which the following were registered: dental status, type, degree and prevalence of tooth wear, oral hygiene status and orthodontic malocclusions. After the examination, the parents of the examined children received a questionnaire about the children’s general health, eating and oral hygiene habits, presence or absence of bruxism, harmful habits, etc. The results were statistically processed with SPSS-19.

**Results.** Tooth wear was present in 2/3 of the examined children, without gender dependence. In 1/3 of the examined children sleep bruxism was found. In 89.4% of the children with bruxism, there was a relation between bruxism and tooth wear. Dependence was found between orthodontic malocclusions and tooth wear as well.

**Conclusions.** Tooth wear is common in the examined group of children and a statistical dependence was found between the presence of bruxism and the presence of orthodontic malocclusions.

**Keywords:** tooth wear, bruxism, orthodontic malocclusion

19) **Changes in auditory perceptions in patients with tinnitus**
*Boris Borisov, Mariana Dimova-Gabrovska, Mario Milkov, Desislava Dimitrova, Vladislav Mitronin – Med. Uni. Varna, Bulgaria*

**Abstract:**
Tinnitus is one of the most common otological problems and causes various somatic and psychological disorders that affect quality of life.

**Purpose.** The purpose of this study was to analyze current scientific data on the changes in auditory perceptions in patients with tinnitus.

**Material and methods.** An electronic search was performed in electronic databases by using keywords in different languages. The data from 49 literature sources were analyzed and summarized.

**Results.** The main changes such as hearing loss, presence of abnormal sounds, disturbances in dorsal cochlear nucleus and in central auditory pathway were examined. Data on the qualitative and quantitative method for assessment of the deviations were analyzed.
Conclusion. There is a need to obtain up-to-date data on the current methods of treatment and management of the consequences of tinnitus.

Keywords: auditory perceptions, tinnitus, otological problems

20) Relations between tinnitus and temporomandibular joint dysfunctions
Boris Borisov, Mariana Dimova-Gabrovska, Mario Milkov, Desislava Dimitrova – Med. Uni. Varna, Bulgaria

Abstract:
Temporomandibular dysfunctions are a heterogeneous group of conditions affecting the mandibular joints, masticatory muscles and related structures. Some of the most common accompanying symptoms are tinnitus, dizziness and otalgia.

Purpose. The purpose of this study is to analyse the current scientific data on the relations between tinnitus and temporomandibular dysfunctions.

Materials and methods. By means of electronic search in electronic databases 78 scientific publications on the topic have been identified, and the information from them is analyzed and presented.

Results. The different theories of causal relationships between temporomandibular dysfunction and the presence of tinnitus are considered and compared. The risk factors for the occurrence and influence of both conditions are summarized, as well as the modern methods for their research and diagnosis.

Conclusion. It has been found that the frequency and intensity of tinnitus is higher among patients with temporomandibular joint dysfunction.

Keywords: tinnitus, temporomandibular dysfunctions, craniomandibular disorders

21) Evaluation of Facial Profiles in Three Age Groups using New Method of Extraoral Photo Analysis

Abstract:
Purpose. The purpose of this study is to assess the applicability of a new method for soft tissue analysis, made on extraoral photos of orthodontic patients, compare and evaluate the profiles in three age groups.

Materials and Methods. A new method for extraoral photo analysis was used to evaluate the extraoral status of 105 orthodontic patients, divided into three groups, based on their age, as follows: I group - 32 kids with mixed dentition; II group - 38 adolescents with permanent dentition (12-18 years); III group 35 adult patients (19 - 45 years). Extraoral left and right profile photos were evaluated for each patient. The requirements specified in the methodology were met: the patient is without glasses, earrings and other accessories; the eyes are open, the gaze is straight ahead; the ear is visible; camera settings are specific; the patient’s arm is touching the wall, on which a large graph paper poster is placed for photo calibration. The profile photos were evaluated with IC Maeasure software. The soft-tissue landmarks were positioned: Glabella (Gl), Nasion (N’), Pronasale (Pn), Columella (Cm), Subnasale (Sn), Labrale superius (Ls), Stomion superius (STMs), Stomion inferius (Li), Stomion inferius (STMi), Submentale (Sm), Pogonion (Pog’), Menton (Me’). The changes in total facial height (N’-Me’), lower facial height (Sn-Me’), full facial convexity convexity (Gl-Pn-Pog’), facial convexity angle (Gl-Sn-Pog’), frontonasal (Gl-N’-Pn), nasolabial (Cm-Sn-Ls) and labiomental angle (Li-Sm-Pog’) were investigated.

Results. Changes were observed in the average values for lower facial height - 7,094cm (I group); 8,000cm (II group); 8,186cm (III group), facial convexity angle - 140,969° (I group); 137,000° (II group); 136,143° (III group), frontonasal - 145,219° (I group); 141,658° (II group).
group); 145,014° (III group), and nasolabial angle - 117,344° (I group); 112,737° (II group); 109,129° (III group). No changes were observed in the other parameters.

**Conclusion.** The method is easily applicable and indicative of changes occurring in the profiles of patients both during growth and before, during and after orthodontic treatment.

**Keywords:** extraoral photo analysis, orthodontics, dentistry

22) **Clark’s vestibuloplasty – a comparison between epithelial autograft and new grafting materials**

*Tasho Gavrailov, Ivan Chenchev, Dimitar Atanasov – Med. Uni. Plovdiv, Bulgaria*

**Abstract:**

**Purpose.** The purpose of this study was to evaluate and compare the short term and long term grafting capacity of autogenous epithelial graft and new soft tissue grafting materials - PRF membrane and collagen matrix in keratinized soft tissue augmentation procedures on edentulous areas.

**Material and Methods.** 20 patients with totally edentulous mandibular alveolar ridges, which underwent vestibuloplasty in the anterior mandible. Clark’s technique was applied in 10 of the patients, placing epithelial autograft on half of the surgical site and a PRF membrane on the other half. The same technique was performed for the other group of 10 patients, with the only difference that the grafting material was this time epithelium on one half and xenogeneic collagen membrane on the other half.

**Results** show a significant amount of new keratinized mucosa after period of six months in the edentulous anterior mandible in the site where the epithelial autograft was placed, and similar but lesser amounts of keratinized tissue gain in areas where either a PRF membrane or a collagen matrix were placed.

**Conclusions** further investigation is needed for complete understanding of the different results between the epithelial autograft and the new grafting materials and possible grafting combinations should be considered, but new grafting materials show great promise.

**Keywords:** from 3 to 8 keywords or short phrases for indexing your abstract.

23) **Detection and antibody response to Porphyromonas gingivalis in subjects with rheumatoid arthritis**

*Elena Firkova, Pavel Selimov – Med. Uni. Plovdiv*

**Abstract:**

**Purpose.** Periodontitis has been proposed as one of the risk factors for the initiation and progression of rheumatoid arthritis. Porphyromonas gingivalis is one of the most potent periodontopathogens, that has been suggested to play a major role not only in pathogenesis of periodontal destruction, but also in peptide citrullination (the post-translational modification of arginine residues to citrulline residues by peptidylarginine deiminase [PAD]). Autoantibodies to cyclic citrullinated peptides (anti-CCP antibodies) and mutated citrullinated vimentin (anti-MCV) antibodies are associated with disease severity in RA and play a crucial role in the disease process. The purpose of our study was to evaluate if PG could be detected in subgingival plaque samples from RA patients and healthy controls and if higher prevalence and concentration of anti-CCP and anti-MCV could be observed and correlated with PG presence in groups.

**Materials and methods.** Polymerase chain reaction for detection of PG was performed in 30 patients with rheumatoid arthritis and 24 healthy controls. Periodontal status for cases in both groups was not known. IgG anti-CCP and anti-MCV antibodies were measured using ELISA, considered to be positive when serum concentrations were ≥ 20 U/ml.

**Results.** PG was detected in 80% of subjects with RA and 29% of healthy subjects. Correlation between presence of PG and seropositivity for anti-CCP and anti-MCV was tested using odds ratio. 83% of PG positive RA patients were also positive for anti-CCP, while the
other 17% of PG positive were anti-CCP negative. Odds ratio is statistically significant for the second immunological parameter also – 79% of PG positive patients are positive for anti-MCV also.

Conclusions. Presence of PG is more common in patients with RA, compared to healthy controls, irrespective of their periodontal status. There is a positive correlation with the immunological status in terms of positive anti-CCP and anti-MCV antibodies. Periodontal treatment aiming at reduction the levels of PG infection in RA patients could be beneficial for the long-term stability of RA.

Keywords: periodontitis; rheumatoid arthritis; Porphyromonas gingivalis; anti-CCP, anti-MCV

24) Advantages and disadvantages of virtual patients application in dental students education
Dzhendo Dzhendov, Gergana Georgieva – Med. Uni Varna

Abstract:
Digital technologies are present in dentistry in recent years. Thanks to this development clinical practices and laboratory techniques are part of digital processes. Routine diagnostic methods include digital radiology and photography; treatment concepts take advantage of modernized work processes with intraoral scanning, computer-assisted implant surgery and rational production of dentures. The merging of these digital puzzles into one whole is the logical continuation of this trend - the creation of a 3D virtual patient. The entire treatment plan can be simulated non-invasively, shared through network-mediated communication tools and integrated into patients' expectations. But how far are we in virtual dentistry? Today there are more questions than answers.

The purpose of this report is to present the advantages and disadvantages of existing virtual patients that are used in the education of dental students.

Material and methods. An analysis of the characteristics of existing virtual patients has been made. Twelve simulators of different manufacturers were studied.

Results. This review is limited to one area of e-learning in dentistry. The fact is that small number of studies have been published to compare the effectiveness of new virtual and augmented reality systems in dental education. However, it is obvious that their use in this area has increased over the last decade. Many of the systems described are very new and require in-depth long-term evaluation. The use of appropriate technology has the potential to improve the quality of dental education and clinical skills of the students before applying these skills to patient care, thus minimizing the risk of iatrogenic injury.

Conclusion. Future virtual reality systems will provide accurate representations of many other procedures and will be valuable simulators. However, it is essential that they meet the educational needs. This does not discard the human factor in dental education.

25) Guidelines for orthodontic treatment in primary and mixed dentition in children with difficult nasal breathing

Abstract:
Purpose. The aim of this study is to create a protocol for early prevention and treatment in children with varying degrees of expression of predisposing factors in difficult nasal breathing

Material and Methods. For the purposes of study 1667 children from the city of Varna between the ages of 3 and 12 were studied. The results of the clinical examination of each child were evaluated by 19 indicators, and then recorded on a statistical map. A total of 120 cephalographies of children in mixed dentition were analysed by 16 angular, linear and
proportional indicators. The were further divided according to their gender and type of dentition – deciduous dentition, early mixed and late mixed dentition. All of the studied children were examined by the same doctor of dental medicine, and the children with mouth breathing were consulted and diagnosed by an ear-nose-throat specialist as well.

**Results.** In view of the peculiarities in the morphology of the craniofacial anatomy and the incomplete skeletal growth in children with difficult nasal breathing it is necessary to apply a complex treatment approach for orthodontic treatment in collaboration with an ENT specialist, which includes the following stages:
- Therapeutic and surgical treatment at the discretion of the ENT specialist in accordance with the degree of the nasal obstruction
- In the case of a spontaneous recovery of the nasal breathing, the occlusal proportions need to be improved in order to achieve normal occlusion
- In the case when nasal breathing persists as a harmful habit, we recommend: exercises for correct nasal breathing, myogymnastics of the various muscle groups at the discretion of the orthodontic specialist and improving the position of the lower jaw and the occlusal proportions.

**Keywords:** children, difficult nasal breathing

26) **Investigation of the light intensity of LED light curing units after different periods of use**

*Georgi Georgiev, Vladimir Panov, Tsanka Dikova – Med. Uni. Varna, Bulgaria*

**Abstract:**
Since the beginning of the 21st century LED light curing units (LCUs) are mostly used for polymerization of resin based composites. Various factors can cause a decrease in the light intensity of LED LCUs, one of which is diode aging during long time of exploitation. The aim of the present paper is to study the change in light intensity of LCUs after different periods of intensive use. The light intensity of 94 (68 mounted on the dental unit and 26 wireless) regularly used and fully charged LED LCUs of 6 brands, aged between 1 and 10 years, is measured with a digital radiometer. It is found that regardless of the type and model of LCUs, there is a direct relationship between the time of use and light intensity - the longer the period of operation of a device is and the more used it is, the lower its intensity is. The decrease in light intensity with increase of clinical age of the devices is different for different models, as well as for different devices of the same model. In the studied LCUs with a 10 year period of use, 77.5% have a light intensity lower than the required minimum of 400 mW/cm², which makes them unusable. To ensure the longevity of the restorative procedures, dentists should regularly monitor and measure the light intensity of their LCUs, especially with the increase of their period of use.

**Keywords:** light curing units, LED, light intensity, period of use

27) **Aneurysmal bone cyst of the mandible: A case report**

*Meri Hristamyan, Rosen Tsolov – Med. Uni. Plovdiv, Bulgaria*

**Abstract:**
Aneurysmal bone cysts are benign osteolytic lesions with rapid growth, thin walls, containing numerous blood-filled cavities. They are rarely diagnosed within the facial skeleton. This case report presents a 14-year-old boy with Burkitt’s tumor (Non-Hodgkin’s lymphoma), previously diagnosed with an aneurysmal bone cyst a year ago. He came for treatment in the clinic of Maxillo-Facial Surgery of the University Hospital “St. George” Plovdiv, due to pain and swelling in the left molar area of the mandibula. A recurrence of an aneurysmal bone cyst measuring 55/25 mm, which does not require resection of the mandible, was found. After a decision for surgical removal of the formation, under
general anesthesia, and preparation of a mucoperiosteal flap, the mandibular bone, which is lysed and thinned by the formation. is trepanned. The roots of the affected teeth are resected, and the formation is extirpated. A gauze draina is placed in the formed cavity and the wound is sutured.

Keywords: aneurysmal bone cyst, mandible, jaws, surgery

28) Case report: Platelet-rich fibrin treatment of medication-related osteonecrosis of the jaw followed up for two years
Meri A. Hristamyan, Veselka P. Hristamyan – Med. Uni. Plovdiv; St. George University Hospital, Plovdiv, Bulgaria

Abstract:
The use of platelet-rich fibrin (PRF) in surgery represents a new alternative method of treatment of Medication-related osteonecrosis of the jaws (MRONJ). This report presents a case of a patient undergoing PRF treatment. The patient is a 76-year-old male who was admitted for treatment in 2018 at the Clinic for Maxillofacial Surgery with Osteonecrosis of the Lower Jaw on the right. In 2012, he was diagnosed with prostate cancer and underwent bilateral orchiectomy, followed by a therapy with Xjeva. The patient was diagnosed with medication-related osteonecrosis of the mandible jaw in 2017 after tooth extraction. The treatment was performed at the Clinic of Maxillofacial Surgery of St. George University Hospital, Plovdiv, Bulgaria. When initial antibiotic therapy failed, surgical therapy was undertaken using PRF. The patient was followed-up for two years and no osteonecrotic lesion was detected recurring in the intervention area. Compared to conservative treatment, PRF treatment shows much better overall long-term results with computer tomography follow-up at month 12. PRF treatment is characterized by a significantly higher percentage of patients with high bone shadow intensity, whereas conservative treatment is dominated by a low bone shadow intensity.

Keywords: alternative method, PRF, osteonecrosis, maxillofacial surgery

29) Study the relationship between body posture and stomatognathic system
Miroslav Stoykov, Antoaneta Tsvetkova – Med. Uni. Varna, Bulgaria

Abstract:
Posture is understood as the relative position of various body segments in relation to each other and relative to the environment. Postural control is characterized by the ability to adapt our use of sensory information to changing tasks and environmental conditions. The stomatognathic system also plays an important role in postural control. The stomatognathic system is a functional unit characterized by several structures: skeletal components (maxilla and mandible), dental arches, soft tissues (salivary glands, nervous and vascular supplies), and the temporomandibular joint and masticatory muscles.

Purpose. The present study aims to review the papers that have shown a relationship between the stomatognathic system and body posture.

Material and methods. The following research databases were used for the study: MEDLINE, Scopus, EMBASE and PubMed from 1996 to 2020. For search we used the keywords: stomatognathic system, posture and postural balance.

Results. For the period 1996-2020 are published 189 review articles and 1 739 research articles. The main disorders of the cranio-cervico-mandibular system, which often affect human posture, are the temporomandibular disorders. Deviations of cervical vertebral column morphology were significantly associated with a large sagittal jaw relationship, retrognathia of the jaws, a large inclination of the jaws, and a large cranial base angle. Other studies further suggest that dental occlusion may influence body posture and spine curvature. Positive correlations between different cranio-facial morphologies and postural attitudes have been
reported, such as an anteriorly displaced posture in class II malocclusion, and a posteriorly
displaced posture in class III malocclusion.

**Conclusion.** According to the literature review, we believe that there are real correlations
between posture and the stomatognathic system.

30) **Case report – complex orthodontic-prosthetic treatment in unilateral incisor
hypodontia**

*Kiril Gogushev, Metodi Abadzhiev, Zornica Vulcheva – Med. Uni. Varna, Bulgaria*

**Abstract:**
Hypodontia is defined as the developmental absence of one or more teeth. The two major
alternative treatment options are orthodontic space closure or space opening for prosthetic
replacement.

**Purpose.** The aim of the present study is to evaluate the clinical success of an implant
placement to restore the unilateral hypodontia of maxillary lateral incisor after completing the
orthodontic treatment and during the retention period.

**Material and methods.** This is a case report for a 18 years old girl in permanent dentition with
unilateral congenitally missing maxillary lateral incisor (tooth 22) and peg-shaped
contralateral lateral incisor. For the patient the implant is one of the treatment options,
especially when it comes to replacement of missing maxillary lateral incisor.

**Results.** We treated the patient with space opening which is usually the best option when
there is spacing. Implants are commonly used to replace congenitally missing lateral incisors
in adolescent orthodontic patients.

**Conclusions.** Management of missing lateral incisor is a challenging and complex process
that involves a multidisciplinary approach in order to restore the esthetics and function.

**Keywords:** hypodontia, implant, combined orthodontic prosthetic treatment

31) **Profile of lichen planus patients visiting Dental Allergology unit**

*Miglena Balcheva - Med. Uni. Varna, Bulgaria*

**Abstract:**
*Introduction.* Lichen planus is a skin disorder of unknown origin, but it is supposed that
inflammatory, infectious and immune mechanisms lead to its development. It affects 1-2% of
the population, as middle-aged females prevail. Lesions are localized on skin, genitals and
oral mucosa. Occasionally, oral lesions are associated with allergy to drugs, dental materials
and hygiene products, and the name “lichenoid reactions” is used.

**Purpose.** To present the profile of patients with suspected lichen planus who visit Dental
Allergology department for diagnostics.

**Patients and methods.** The study covers patients from both sexes and all age groups, who
visit us in the period 2010-2020. Patients are taken medical history and are thoroughly
examined. Skin allergy tests are performed with dental allergenic extracts (metals, acrylates,
resin composites and dental amalgam), corrosion potentials are measured in the appropriate
cases, and diagnosis is confirmed histologically after biopsy by a surgeon.

**Results.** We have diagnosed 59 patients with Lichen planus, which is about 1% of all the
examined ones. These patients are between 23 and 82 years old, as the average age is 56,25
years. Females prevail, as the male:female ratio is 2:4. These data are consistent with those
reported in other studies.

In 31 of the cases, we have confirmed the diagnosis histologically. We have tested 37 of the
patients in order to confirm or reject sensitization to dental materials, and in 11 of them, we
have read positive results. Patients are sensitized most commonly to metals – nickel (8 cases;
38,1%), cobalt (4 cases; 18,2%), chromium (2 cases; 9,5%), gold (2 cases; 50,0%). They react
rarely to methyl methacrylate – just one case (7,1%). Neither of the studied patients is
sensitized to mercury and Bis-GMA. About 18% of these with metallic restorations have pathological values of the corrosion potentials. Patients are prescribed local corticosteroids, antihistamines and replacement of dental materials (if allergy is confirmed). Local application of Tacrolimus is also an option.

Conclusions. The profile of patients with Lichen planus who visit Dental Allergology department corresponds to the data in other researches.

32) White spot lesions (WSL) and gingival health in patients during treatment with fixed orthodontic technique

Elena Dimova, Radosveta Andreeva – Med. Uni Varna

Abstract:

Introduction. During their growth, patients go through periods of high risk of caries, as they undergo changes in lifestyle and oral microflora. Furthermore, the fixed orthodontic treatment also hampers the oral microflora and increase the risk of oral diseases. Braces design influences both caries risk and periodontal parameters (1). The plaque accumulation around orthodontic appliances may cause periodontal disease and caries (2), following placement of fixed appliance there is gingival inflammation in almost all orthodontic patients fortunately, and this inflammation is transient and does not lead to attachment loss (3). Oral hygiene indices serve to assess the oral hygiene situation and evaluate oral health status.

Material and Methods. The study sample was composed of 40 subjects with age ranged between (12-18) years old. The subjects are divided into two groups: Group I was composed of 15 subjects (7 females and 8 males) who were not wearing orthodontic appliances. Group II was composed of 25 patients (11 females and 14 males) who were wearing fixed orthodontic appliances at least for three months before conducting our study. Plaque index, gingival index and bleeding on probing were measured for all groups.

Results. The plaque index, gingival index and the bleeding scores were significantly higher in the group of subjects with orthodontic appliances for both males and females.

Conclusion. The results of this study suggest that orthodontic treatment with fixed technique increase the plaque accumulation and may lead to gingival inflammation. Patients wearing fixed orthodontic appliances should maintain a good oral hygiene, including tooth surface protection, optimised use of mechanical and chemical plaque control.

33) Guided enamel regeneration with self-assembling peptide P11-4

Alexander Bonchev, Radosveta Vasileva, Elena Duylgerova – Med. Uni Sofia, Bulgaria

Abstract:

Introduction. The biomimetic approach for enamel remineralization is a new, modern alternative in the treatment of early stages of caries. One of the materials used for enamel regeneration is self-assembling peptide P11-4. When it is applied to the carious lesion, the peptide undergoes one-dimensional self-assembly, including formation of nanotapes, ribbons, fibrils and fibers. As a result of this process a biomimetic scaffold within the initial enamel caries lesion is produced, supporting the natural remineralization driven by saliva.

Purpose. The aim of this study was to evaluate the potential for remineralization of initial carious lesions using self-assembling peptide P11-4.

Materials and methods. A total of 30 healthy sound samples (buccal surfaces) of extracted human posterior teeth were artificially demineralized in lactic acid for 6 days. They were divided into three groups. The remineralization in the test group was done using self-assembling peptide P11-4; the samples in the positive control group were remineralized with fluoride varnish and the negative control group didn’t receive remineralizing agent. Specimens were stored in artificial saliva for 1, 4 and 8 weeks. At the end of this periods buccal enamel was examined by means quantitative light-induced fluorescence (QLF). The
evaluated parameters were ΔF – fluorescence loss, lesion’s depth; ΔQ – lesion’s volume, using Qray Cam Pro (Inspektor Research Systems, Amsterdam, The Netherlands). Two-way ANOVA was used for statistical analysis.

**Results.** Two-way ANOVA analysis showed that the time and the remineralizing agent are statistically significant for the lesion’s volume decrease (ΔQ). Self-assembling peptide P11-4 and the fluoride varnish significantly reduced lesion’s volume but the difference between them is non-significant. The application of P11-4 reduced the lesion’s depth (ΔF) in comparison with the two control groups.

**Conclusion.** The self-assembling peptide P11-4 is a new alternative for a biomimetic enamel remineralization, which can transform the traditional reparative, “drill and fill” approach into a regenerative one. This allows the treatment of caries as a chronic disease, to be more curatively rather than symptomatically focused and follows the perspectives of the modern medicine.

34) **Polymer controlled system for remineralization of demineralized enamel – an in vitro study**

*Alexander Bonchev, Radosveta Vasileva, Elena Duygerova – Med. Uni Sofia, Bulgaria*

**Abstract:**

**Introduction.** Dental caries is a microbial disease of the calcified tissues of the teeth, characterized by demineralization of the inorganic portion and destruction of the organic substance of the tooth. The extensive studies on remineralization have led to the development of newer technologies that promote enamel remineralization and prevent enamel demineralization providing promising oral health assistance.

**Purpose.** The purpose of this study was to evaluate the potential for remineralization of the PDMAEMA (poly(2-dimethylaminoethyl metacrylate)/Carbomer with in situ formed calcium phosphates on artificial caries lesions.

**Materials and methods.** Intact buccal surfaces of 30 extracted wisdom teeth were demineralized in 0.05M lactic acid for 6 days, pH = 4.5. The remineralization was done using PDMAEMA/Carbomer with calcium phosphates for 7 days. The specimens were investigated after demineralization and after remineralisation procedure with infrared spectroscopy (IR) and scanning electron microscopy (SEM).

**Results.** The formation of phosphate phases in the lyophilized PDMAEMA/Carbomer sample is indicated by the IR intensity increase in the range of most intensive stretching modes of the phosphate group at 1100-1140 cm⁻¹ and less intensive bending vibrations at 532-580 cm⁻¹. The most intense peaks of phosphate group in hydroxyapatite shifts from 1045 to 1026 cm⁻¹ and from 1100 to 1120 cm⁻¹. Other weak peaks, that are not due to apatite, are registered at 743, 1226, and 1714 cm⁻¹, indicating the formation of polymer layer on the surface. The SEM showed that acid-demineralized enamel lesions were covered by enamel-like structures with newly formed intra-crystalline and inter-crystalline minerals with tendency to reproduce the original enamel microstructure.

**Conclusion.** Phosphate phases were formed on the enamel surface which is indicated by the intensity increase in the range of most intensive stretching modes of the phosphate group and new enamel-like layer was revealed on SEM. The new system PDMAEMA/Carbomer/CaP has the potential to promote the remineralization of enamel lesions.

35) **Assessment of the strength of adhesion between ZrO2 and dental tissue**

*Ivan Denkov – Med. Uni. Varna, Bulgaria*

**Abstract:**

Zirconia has occupied an increasingly important role, thanks to its excellent mechanical and biocompatible characteristics. The purpose of this study is to evaluate the strength of adhesion between ZrO2 and dental tissue.

**Materials and methods.** The mechanical tensile strength tests were performed using a universal testing machine. The tensile strength of the specimen was calculated by dividing the
maximum stress over the cross-sectional area of the specimen. 168 samples were examined and evaluated.

**Results.** The surface treatments significantly influenced the μSBS (p < 0.05). For the four surface treatments, Gcem Linkace presented significantly higher μSBS (p < 0.05). For both resin cements, the best result was produced by the MDP-based primer – Gcem link force (mechanical retention with preparation) – 593N± 14.3N. Previous studies have shown that some conventional and self-adhesive resin cements presented low bond strength when applied to intact surfaces of ZrO2 ceramics. These findings support the results of the present study, in which both resin cements (ARC and UCem) presented the lowest μSBS values in the control group, ie, ZrO2ceramic without treatment, confirming the frequent finding that it is difficult to establish a reliable bond between resin cements and inert ZrO2 ceramics without any previous surface treatment.

**Conclusions.** The ZrO2 surface treatment with Alloy Primer significantly increased the μSBS values. The self-adhesive resin cement presented better bonding to ZrO2 ceramic material than did conventional resin cement. Furthermore, although the three surface treatments increased the μSBS of self-adhesive resin cement to ZrO2 ceramic material, the use of Alloy Primer (MDP-containing) seems to be the most reliable alternative for increasing the bond strength to ZrO2 ceramic material.

**Keywords:** ZrO2, MDP-based primer, strength of adhesion, assessment

36) **Postural abnormalities in adolescents**
*Marina Dimova-Gabrovska, Desislava Dimitrova – Med. Uni. Sofia, Bulgaria; Private Dental Clinic, Sofia, Bulgaria*

**Abstract:**
The posture of the body is an expression of the functional balance of the whole organism.

**The aim** of the study is to analyze and determine the trends in the postural balance of adolescents in Bulgaria.

**Material and methods.** 109 children (56 girls, 53 boys) aged 14-18 years, who applied for dental treatment to 4 dentists for the period from August 2018 to September 2020, were studied.

**Results.** Postural harmony was found in 39.4% of the subjects. The ATP test shows disharmony in 60.6%, which depends statistically significantly on the results obtained by the Fokuda test.

**Conclusion.** The presented results serve as initial information and point to the need for a wider study at this age in Bulgaria. It is necessary to establish the risk factors for postural dysfunctions among adolescents in our country.

**Keywords:** posture, adolescents, posturology

37) **Postural abnormalities in children with bruxism – current scientific evidences**
*Mariana Dimova-Gabrovska, Desislava Dimitrova – Med. Uni. Sofia, Bulgaria; Private Dental Clinic, Sofia, Bulgaria*

**Abstract:**
Bruxism affects both adults and children.

**The aim** of the study is to present the latest scientific data on postural changes in early childhood in clinically diagnosed bruxism.

**Material and methods.** 35 children (17 boys and 18 girls) aged 4-8 years, who applied for dental treatment because of severe abrasion of their teeth, were studied. The patients underwent postural examination according to AIROP protocols.

**Results.** 34.3 % of the children have postural harmony. In the others, deviations in the Barre L-L test were found, which correlated with the Angle class.

**Conclusion.** Postural abnormalities in early childhood should be diagnosed and prevented, as postural disharmony affects the health of the whole organism. The data obtained point to the need of comprehensively study of the problem.
1) **Health system resilience: Review of the concept and a framework for its understanding**

*Stefka Koeva, Maria Rohova – Med.Uni. Varna, Bulgaria*

**Abstract:**
Resilience and capacity for resilience is an emerging concept in health system governance and a comparatively new dimension of health systems performance, an area in which health policy faces problems and challenges not sufficiently explored. Although it has been attracting significant attention, the conceptualisation of health system resilience that goes beyond the normative interpretation of the construct is still not well developed. This paper contributes to a growing knowledge on this topic. We review the concept of health system resilience and the existing frameworks and try to extend the current understanding in the context of health system governance. Drawing on the results of our review, we propose a conceptual framework for health system resilience.

The review shows that resilience is grasped as a property in the context of the health system as a complex adaptive system. Moreover, resilience is contextual; it is highly context-dependent and path-dependant. It refers to the dynamics of the system and reflects the changing environment. We interpret the resilience as the capacity of the health system to resist everyday shocks and disturbances and to anticipate, withstand and respond to crises, i.e. to maintain its core functions, which is related to the abilities to absorb shocks and stresses, adapt to changes and transform its structures and institutions. The proposed framework builds on and extends the existing knowledge and core frameworks, identifying three types of mechanisms (compensatory, adaptive and transformatory/transition) which help the system to achieve and maintain short- and longterm resilience. The framework can help advance the understanding of the health system resilience and guide actions to strengthen health systems.

**Keywords:** health system; resilience; framework; concept; complex adaptive system

2) **Monte Carlo Simulation of the Bulgarian GDP predicted Public Health Expenditure**

*Nikolay Atanasov- Med.Uni. Plovdiv, Bulgaria*

**Abstract:**

**Purpose.** The present research provides a simulation of the financial variable with health nature like the public health expenditure (PHE) using the Monte Carlo methodology.

**Material and Methods.** Two dynamic rows are built for the public health expenditure and the gross domestic product (GDP) of Bulgaria with length of 30 observations (1990-2019). The study uses methods like testing statistical hypotheses for autocorrelation and stationarity, random number generation following a definite type of distribution and regression analysis with OLS.

**Results.** It is found a statistical significant short and long term relationship between the health expenditure and gross domestic product. The long-term model of the public health expenditure provide a cointegration constant of 1.023 (p-value < 0.05) on the basis of logarithmic values and first order differences. The simulation with random numbers of the gross domestic product following an assumption of normal distribution and using a cointegration model, the expected value of ΔPHE is BGN 0,966 million with standard deviation BGN 2.863 million.
Conclusions. The Monte Carlo method is applicable to the health system’s macroeconomic analysis and provides interesting for the financial policy results. Relying of the properties of the normal distribution, it can be assumed that in 68.3% of all cases the GDP predicted first differences of the public health expenditure will fluctuate in the interval [-1.897; 3.829].

Keywords: public health expenditure, Monte Carlo method, cointegration model, income elasticity

3) Study of body weight and height of adolescents from different ethnic groups in the Plovdiv region

Abstract:
Purpose. To study the body weight and height of adolescents and to compare them with gender and age standards. All the children are from the Plovdiv region.

Material and methods. About 185 children from three different ethnic groups have been studied. Also have been developed and used specifically for this purpose an author's questionnaire for students, which contains open, closed, and mixed questions. Have been used descriptive statistics for quantitative (mean±SD) and qualitative (percentage±SEp) variables, also T-test for proving statistically significant differences between two independent samples. A p-value < 0.05 had been considered statistically significant for all tests. For the statistical processing we have used the data analysis software IBM SPSS Statistics v. 25.

Results. The study was conducted in the Plovdiv district in the period of May 2019 - July 2019. The subject of the study has been 185 adolescents from different ethnic groups. Logical units of the study were schools in Plovdiv and the village of Karadzhovo, which is part of the Plovdiv municipality. The gender distribution is 101 (56.6%) boys and 84 (45.4%) girls. The study covered mainly 96 Bulgarian children (51.89% ± 3.67), followed by 30 Turkish (16.22% ± 2.71) and 59 Roma origin (31.89% ± 3.43). The group of adolescents has been included students aged 11 – 15 years old. In the group of 11-year-olds, 61 (32.97%) Bulgarian children usually play sports out of school, followed by 29 (15.67%) Roma and 16 (8.65%) Turkish children. We have proved statistically significant differences between mean weight, measured in our sample compared to the population standard for the age of 11 years old boys (n=28, 45.84±13.42 kg vs n=134, 39.74±7.15 kg; t-test=2.34, p=0.026) and girls (n=35, 45.49±10.46 kg vs n=135, 41.60±9.03 kg; t-test=2.24, p=0.029), respectively. The height measured for both genders in this age group had been not statistically significant different, compared to the standard. No other differences between sample point estimates and population standard had been obtained by age groups and gender.

Conclusion. For the age of 11-12 years old children, higher body weight had been found in the Bulgarian boys. The girls with the average highest values had been of Turkish origin.

Keywords: adolescents, height, body weight, gender, ethnicities.

4) Legal and ethical aspects of dissemination of information relevant for the public health in extraordinary situations
Svilen Issaev, Mariela Deliverska - Med.Uni. Sofia, Bulgaria

Abstract:
Purpose. The study examines the legislative framework currently in effect in Bulgaria and the ethical aspects of the dissemination of information that is relevant for the public health in extraordinary situations

Material/Methods. The study uses the documentary method by examining provisions of several relevant legislative acts. In addition, the study examines several cases of the recent
months related to dissemination of information or opinions by state authorities or members of professional organisations with responsibilities in the healthcare sector.

Results. The examined legislative framework and recent cases reveal tension between the freedom of speech and the freedom of expression as basic human rights on one hand, and the right to life and the right to health in times of crisis. In present days information from various sources is accessible to large groups of people but often such information may have direct consequences on the health and wellbeing of the society. The COVID-19 pandemic raised the question whether and to what extent the expression of opinions or positions should be limited or set in certain boundries. One of the reasons is that persons from various institutions and with different authority make public statements, which may directly or due to incorrect interpretation by non-professionals to negatively or even fatally affect the health. On the other hand, it is particularly important the public to be properly informed for measures or recommendations that may be beneficial or may even save lives. However, for such recommendations and measures there is often lack of unanimity specifically with respect to their benefits.

Conclusions. In emergency situation, the standard rules regarding in the currently effective legislative acts and ethical norms regarding information relevant for the health reveal certain deficiencies. Therefore, certain improvements to the present framework may be recommended in view of better protection of the public health and wellbeing.

Keywords: health information, freedom of speech, covid-19, emergency situations, legislation

5) Pharmacy Network Readiness to Support Medical Management of Organophosphate Area of Chemical Damage


Abstract:
The Organophosphate compounds are widely utilized into the agriculture nowadays. Nearly 40% of all the pestisides are based on organophosphates. These compounds are highly soluble in lipids, therefore pentrate easily through the skin and respirtatory tract. Intoxication could also occur after ingestion, when organophoshates are rapidly absorbed. Every year a number of casualties are reported among the farmers and field workers. Several are the intoxications reported due to consumption of not properly cleaned products treated with these pesticides. The variety of forms - solid, liquid and gas, as well as their rapid absorbtion via all routes of exposure and widespread are determinants of the high risk level related to the organophosphates. Once absorbed these chemicals are reaching the synapses and binding with the enzyme cholinesterase, inhibiting its activity.

As a result of the excess of acetyl-cholin in synapses a hyperstimulation of both M and N receptors is observed. Depending on the dose entered into the body variety of clinical symptoms could be reported from mild disturbances into the vision, respiration and movements to the almost instant death because of hypoxia caused by the extreme bronchoconstriction, bronchorrhea and ineffective respiration activity due to the muscle discoordinated contraction. Provision of the first and first medical aid has to be performed as early as possible for prevention of complication and long lasting effects. Antidote therapy as well as the required steps into first medical aid are well defined.

The aim of this study is to analyse the Varna regional pharmacy network readiness to support medical management of organophosphate area of chemical damage.

Materials and Methods A survey among pharmacists working in Varna region was conducted in order to understand how many of the required for efficient antidote and supportive therapy means are available and stored within the pharmacy network. Review of
the literature has been performed for assessing the level of preparedness of the pharmacies into the neighboring countries.

**Results and Discussions** Results of the performed survey and review is revealing that there is severe shortage into the means for self and buddy aid - the autoinjectors with atropin and cholinesterase activators prescription that are available into the foreign countries pharmacy networks. The need of focused on disaster medical support to chemical area of damage pharmacy policy has to be noted.

**Keywords:** Organophosphates, Chemical area of damage, Autoinjectors, Disaster medical support, Pharmacy network.

6) **Decontamination in Non-conventional Terrorist Attacks**
   *Nikolina Radeva, Maria Panteleeva, Hristianna Romanova – Med. Uni. Varna, Bulgaria*

**Abstract:**
The increasing number of terrorist acts, including on Bulgarian territory, in recent years has led to the necessity for healthcare system to prepare its units for possible threats of chemical, biological, radiological and nuclear (CBRN) agents. Healthcare facilities should plan the admission of potentially dangerous (contaminated) patients in order to limit the extent of the consequences.

The purpose of the study is to introduce main rules for decontamination at medical facilities to provide medical care to patients contaminated by CBRN agents.

A documentary and graphical methods were used. A study was undertaken to research the opinion of specialists as well as literary sources were analyzed to gather and summarize the collected data.

The main rules are presented in chronological order, not according to the importance of each one and they include: early recognition of the accident (optimized communication between all stakeholders and training of hospital staff); decontamination procedures and evaluation of the decontamination program. The introduction of the basic rules is of the utmost importance for the normal functioning of medical facilities in the event of a possible risk of a CBRN terrorist attack.

**Keywords:** contamination, chemical, biological, radiological and nuclear (CBRN) substances, decontamination, medical facilities

7) **Awareness and self-management over chronic diseases by elderly people**
   *Albena Andonova, Mima Nikolova, Silviya Kyuchukova - Trakia Univ., Stara Zagora, Bulgaria*

**Abstract:**
The proportion of elderly people with two or more chronic diseases increases with age. In order to maintain the quality of life of elderly people with chronic diseases, they must be informed and trained by medical professionals to control their health through self-monitoring and self-management.

**Purpose.** The purpose of the research is to establish the level of awareness of elderly people for self-management of chronic disease.

**Materials and methods.** The study was conducted in the period of 2018-2019 with 113 adults - over 65-year-old from Stara Zagora Town. A specially developed questionnaire was used. The study data was processed with SPSS Statistics for Windows.

**Results.** The study found that 50.4% of the respondents had two chronic diseases, as they were in the age group up to 75-year-old. More than 2/3 of the respondents knew the normal values of physiological indicators. A statistically significant relationship was established \( p \leq 0.001; \chi^2 = 294.506 \) the elderly people with two chronic diseases were the best informed. Only 24.64% of the respondents recorded their physiological indicators, as the people with diabetes
and hypertension predominated among them. In case of established deviations from the norm in their health condition, 55.8% of the chronically ill people are seeking consultation with their GP. There was found a statistically significant relationship $p \geq 0.000; \chi^2 = 30.656$ showing that the elderly people with two chronic diseases most often seek help from their GP.

**Conclusions.** The elderly people with chronic diseases should be active participants in the process of protecting their own health through training for self-management and self-monitoring

**Keywords:** self-management, awareness, elderly people, chronic diseases, training

8) **Impact of conflicts on the work of medical specialists**

_Ekaterina Raykova, Maria Semerdjieva, Dimitar Shopov, Georgi Nikolov- Med. Uni. Plovdiv, Bulgaria_

**Abstract:**

**Purpose.** To study the impact that conflicts have on the work of medical specialists.

**Material and methods.** The study was conducted at four general hospitals on the territory of the town of Plovdiv and town of Asenovgrad, Bulgaria. Via direct individual poll was studied the opinion of 302 medical employees about the impact of conflicts on the work. The data were analyzed by using descriptive statistics and non-parametric analysis at a level of significance for the null hypothesis, $p < 0.05$. The statistical analysis was performed using SPSS statistical software package ver.16.0.

**Results.** Conflicts directly affect the effectiveness of the work performed by medical specialists, as they redirect their attention and energy to the conflict situation, thus their ability to make adequate decisions is impaired. The contradictions that have arisen negatively affect the effective performance of the respondents in terms of their direct duties. Based on their long-standing observations, senior-level medical specialists rate workplace clashes more often as a waste of time.

**Conclusions.** Workplace conflicts have a significant negative impact on the work of medical specialists. This requires timely identification, rapid and effective intervention in order to minimize the adverse effects and to optimize the effectiveness of medical teams.

**Keywords:** conflict, medical specialists, impact of conflict

9) **Digital Transformation in Health Care Sector – Ethical Dilemmas, Challenges and Opportunities for Balancing the Interests of Stakeholders**

_Desislava Serafimova – Unive. of Economics - Varna, Bulgaria_

**Abstract**

Digitalization is associated with a growing transformation in all spheres of public life, including the health care sector. Its influence is not perceived unambiguously, apart from opportunities it also leads to challenges, controversial perceptions, fears of negative effects, and raises ethical issues. Effective management and regulation of public relations in the digital environment requires a study of its impact and potential effects on a wide range of stakeholders – patients, managers, owners and staff of healthcare organizations, government and municipal structures, agencies, educational institutions, civil society, etc.

The aim of the study is to outline the main trends, challenges, ethical dilemmas and factors influencing the health care sector caused by digitalization, outlining opportunities for improving the management models of healthcare organizations in the digital environment, meeting the expectations of various stakeholders and adhering to ethical conduct.

A comprehensive literature review was carried out based on articles available in the databases Scopus, PubMed and ScienceDirect. As a result, the main conceptual views on the existing ethical dilemmas caused by the digital transformation in the health care sector and guidelines for regulating the relations between the interested parties are presented. In conclusion,
opportunities for balancing the conflicting interests of stakeholders arising from digitalization are outlined, the opportunities to enhance its positive effects and reduce the negative ones through the application of socially responsible practices are described. Guidelines are offered for their implementation in the management models of healthcare organizations.

**Keywords**: Digital transformation, Health care sector, ethical dilemmas, socially responsible practices.

### 10) Health digital technology in Covid-19 pandemic context

*Irena Hambarova, Nonka Mateva – Med. Uni. Plovdiv, Bulgaria*

**Abstract:**

**Purpose.** The aim of this study is to examine how COVID-19 and the pandemic environment have influenced the development of mobile healthcare technologies and what virus-related health applications are being applied in different countries.

**Methods.** This article is a review which using a systematic approach. A systematic search of the literature was conducted using electronic databases and manual searches to locate peer-reviewed studies.

**Results.** The conducted literature analysis shows that the consumption of digital health technologies indicates a significant growth worldwide. Digital health solutions have huge potential to overcome the pandemic. They already have a leading role and are available in many countries for the purpose of tracking new cases, contact and at-risk people. Data analysis tools, artificial intelligence and machine learning are just some of the technologies used by governments to detect areas of potential COVID-19 outbreaks. Web-based applications such as triage questionnaires or chatbots help to manage the limited testing capabilities. Many governments encourage telehealth solutions to be used by hospitals for remotely monitor patients and for protection of medical staff health. There is also a change in the attitudes of patients, who are increasingly inclined to turn to telemedicine services.

**Conclusions.** The COVID-19 pandemic has caused major changes in the digital healthcare industry. Although a radical change is not possible in such a short time, the virus crisis will still have a significant impact on the way health care is provided. The situation created by the pandemic could accelerate the digitalization of healthcare, preparing it for an adequate response to future potential pandemics and crises.

### 11) Management of the blood supply during a pandemic

*Janina Ivanova – Med. Uni. Varna, Bulgaria*

**Abstract:**

Although the WHO noted in 2003 that no cases of SARS-CoV infection due to transfusions of blood and blood components have been reported, the risk of transfusion transmission of this new virus, although theoretical, cannot be ignored in this stage. The most significant impact that the pandemic has had on blood donation is the reduction of donors, the reduction of the demand for blood and blood components and the economic consequences for the blood centers. **Purpose.** The purpose of the present study is to assess the socio-economic nature of the impact of the pandemic on the activities of the Blood Center Varna and on the basis of the results to propose measures to overcome the crisis.

**Material and methods.** For the period March-July 2020, a retrospective analysis of the data on the attendance of donors in the blood center, the blood and blood components provided to the medical institutions and the impact on the economic results of the COVID-19 center was made. Data were processed using SPSS, version 20.0, using comparative and correlation analyzes.

**Results.** There was a significant decrease in blood donation by 22.7% for the period compared to the same period in 2019, as well as a decrease in demand for blood and blood
components due to the suspension of planned surgical interventions in hospitals. All this leads to financial losses for the blood center. Conclusion: The transition to normal functioning will most likely depend on the extent and duration of this pandemic and the associated change in behavior that is expected to remain in place far from the original predictions.

**Keywords:** management, pandemic, crisis, blood supply, blood center

12) **Pharmacy Network in Varna Region Capability to Support Cyanide Intoxication Mass Casualty Incident**


**Abstract:**

Cyanides are chemical compounds with potential to create area of chemical damage with high risk for both life and health to the affected population. Notwithstanding that cyanides are produced by several bacteria, fungi, and algae, as well could be found in plants and some foods, as almonds, the main health hazards are related to the man-made activities. Cyanides are extensively used into mining and metal producing industries - for electroplating, metal cleaning, and removing gold from its ore etc, therefore, industrial incidents or improper use, storage or waste management could cause a major incident with mass intoxicated casualties. Sources for environmental pollution and population intoxication are also fires, where a burning plastic materials release into the combustion products certain amount of cyanides. Cyanide compounds are also the major ingredient into the fumigants used for exterminating rodents and verminets. The high probability of exposure to the cyanides is not the only concern of the disaster medical managers and planners. The main healthcare providers fears are related to the cyanid dose-related tissue hypoxia that is developing extremely rapidly and is threatening with high percentage lethality and residual changes into the tissues and organs. This high level of health risk associated with cyanide intoxication requires rapid implementation of the antidotes as first step of the successful casualties’ management. The objective of our study is to analyse the pharmacy network in Varna region capability to support cyanide intoxication mass casualty incident.

**Material and Methods.** Descriptive and comparative methods are applied into analyses of the literature sources discussing the required methods of antidote and supportive therapy in case of cyanide intoxication. Based on the findings of the performed references review a survey regarding availability of the required antidotes, pharmaceuticals and consumables was performed in Varna pharmacy network.

**Results.** Toxicological and disaster medicine communities almost unanimously have agreed on the protocol for medical support provision to the cyanide intoxicated casualties. Application of three main groups of antidotes are included into the first medical aid algorithm. The survey revealed the absence of these three a must antidotes into the pharmacies and even into the emergency physician sanitary bags.

**Conclusions.** Results of the thoroughly performed analyses and the survey highlight the requirement of amendment of the pharmacy policy, in order life-saving antidotes to be purchased and available into the pharmacy network.

**Keywords:** Cyanides, Pharmacy network, Antidotes, Disaster Medicine, Toxicology

13) **Physiotherapeutic potential before and after implantation of intrathecal baclofen infusion pump for treating spasticity in child with cerebral palsy**

*Mariya Gramatikova, Stamenka Mitova - South-West Univ. Blagoevgrad, Bulgaria*

**Abstract:**

**Purpose.** To monitor and analyze physiotherapeutic potential before and after implantation of intrathecal baclofen infusion pump for treating spasticity in child with cerebral palsy.
Material. We present a 6-year-old girl with a massive spastic dystonic motor disorder, after hypoxic brain damage, based on an aspiration event in 2017. The first 6 months after the accident, the child is in a coma, 8 months in a state of awake coma. He has been conscious since the beginning of 2019. The diagnosis is bilateral spastic-dyskinetic paralysis, structural epilepsy, suspected cerebral blindness, subluxation of the hip joints bilaterally. Condition after gastrostomy, replacement with Button, application of ventriculo-peritoneic shunt, botulinum toxin therapy, implantation of intrathecal baclofen infusion pump for treating spasticity. From the third month after the accident, until now, physiotherapy is performed 3-4 times a week, monitoring the condition and changes in the functional capabilities of the child.

Results. Before the baclofen pump, physiotherapy is mostly preventive, against contractures and ankylosis. The child’s functional capabilities and learning in motor activities are severely limited by central spasticity. 6 months after the placement of the baclofen pump, muscle tone decreased and the child’s physiotherapeutic potential increased.

Conclusions. The physiotherapeutic potential is significantly increased after implantation of an intrathecal baclofen infusion pump, as muscle tone is significantly reduced.

Keywords: pediatric neurorehabilitation, functional neurosurgery, baclofen pump, neuromuscular scoliosis

14) Using FLOW for public health enhancement
Emanuil Manasiev, Evgeni Grigorov - NCPHA, Sofia; Med. Uni. Varna, Bulgaria

Abstract:
Based on the idea of the connection between happiness and human health, a correlative connection was made with the concept of M. Csikszentmihalyi Flow. Flow is a highly productive and highly creative state and is therefore in high demand in organizations. And because its achievement is rare, it has been considered with high scientific attention. Flow is a state in which a person is so immersed in his occupation that it seems as if nothing else matters, and the experience itself delivers such pleasure that one is ready to make a huge effort just to experience it again1. It clearly proves the idea that in all flowing experiences, the subjective feeling of happiness increases, expanding the field of knowledge 1. The mechanisms for this phenomenon are both psychological and purely physiological and the state of flow leads to a decrease in cortisol levels and produces the neurotransmitters dopamine, endorphins, serotonin and oxytocin, which have a direct effect on the feeling of pleasure, happiness and pleasure and positively affect the physiological state 2. Based on this, the article argues the conclusion that the state of flow positively affects the level of public health 3. Based on the concept that Flow is directly related to the feeling of optimal experiences, a connection was sought for its achievement in an organizational context, and hence its transfer to a larger part of the community 4. Research in the field of experimental experiences among different groups of athletes and some professions such as surgeons, writers, artists and musicians was considered, outlining the common in the conditions and ways to achieve Flow. The links between levels of happiness and prosperity and their impact on some organizational and economic indicators were also examined 5. From the analyzes and personal observations, we can conclude that the increase in flow experiences in organizations leads to an increase in flow experiences among a larger society. Increasing the experience of flow in the community leads to an increase in the level of experience of happiness from society, which in turn leads to an increase in the level of public health. Also, the state of optimal experience leads to increased satisfaction, motivation and engagement among employees. High engagement, in turn, has a direct effect on economic efficiency and has a directly proportional relationship between flow and some macroeconomic indicators.
1) **Occupational medicine – leading the modern healthcare system**

*Nevena Tzacheva – Med. Uni. Sofia, Bulgaria, Bulgarian Academic Society of Occupational Medicine*

**Abstract:**

**Introduction.** Over the last decade, EU social policy has strategically included the characteristic of the Member States’ workforce by determining the importance of the “disease-health” relationship in the context of work-related factors. The EU Strategy for 2014-2020, defined by the Communications Committee with Council and European Parliament resolutions, includes new quantitative elements related to the factors of the working environment, which is a clear proof that occupational medicine is becoming a leader in the healthcare system of each country.

**Objective.** Analytical review of the evidences based on occupational medicine data as necessary for the development of a modern healthcare system.

**Methods.** Documentary - systematic and situational analysis of official statistical documents and targeted surveys of the labor force in Bulgaria for a 10-year period.

**Results.** First of all, the harmonization of the national legislation with the European one for health and safety at work is completed with 700 normative documents, forming a "normative pyramid" of the most necessary ones, arranged in a hierarchy, directing the health system for health and safety at work activities. The developed specific module of health problems related to work and important for occupational medicine distributions of the workforce by occupational status, length of service, with strong emphasis on digitalization of workplaces aimed at accidents at work, occupational diseases and absenteeism are the second group evidence of the modernization of the health system. And third and last but not least, the developments of a number of researchers on the health status and its determinants of the workforce in high-risk jobs, working with specific labor needs, as well as information and training as a public policy for health and prevention.

**Conclusion.** The modern organization, the communication and the coordination of such a health system includes reliable data sources, their digitalization with the formation of an effective module for health and safety at work. The completeness of the data with the consolidation of the incoming information in the e-health is important for the prevention of occupational disabilities and the promotion of the health of the country's workforce.

2) **Semantic Interoperability of Medical Information Systems and Scientific Repositories**


**Abstract:**

This study presents the implementation of European health informatics standards in the Hospital Information System (HIS) and the Scientific Repositories working in the University Specialised Hospital for Active treatment of Endocrinology. The patient is in the centre of the integration of all clinical and administrative data. Documentation and messages conforming to the rules of UN/EDIFACT are created [1]. The standard EN ISO 13606 on Electronic Health Record (EHR) communication and archetype paradigm are applied. Roger’s definition for
Minimum Basic Data Set (MBDS) is adopted – the core of information with most commonly available set of items and most extensive range of usages.
Several medico-administrative, clinical and laboratory data can be transferred from the Hospital Information System to the Register of rare endocrine diseases, keeping the context of their registration, structuring the measured results, used nomenclatures and methods in archetype concepts satisfying the Archetype Object Model of EN ISO 13606. In the register the ICD 10 codes are mapped to the Orphanet nomenclature of rare diseases and respective ORPHA codes.
The international LOINC and SNOMED-CT codes are also implemented.
This approach of standardisation at all stages of data transmission give the possibility to transfer the data between our national register and the international repositories, using the European standard for an International Patient Summary (IPS) (prEN 17269).
Acknowledgement. This research is supported by the National Scientific Program “e-Health in Bulgaria”.
Keywords: Semantic interoperability, archetype object model, Health informatics standards, Medical Information Systems, Hospital Information Systems (HIS), Clinical registries

3) Conceptual model of occupational health record
Abstract:
Purpose. To present the structure of the occupational health record.
Material and Methods. In preparing the structural model, normative documents were used, which regulate the work of the Occupational Medicine Services. Documents related to the reporting of occupational diseases, accidents at work and temporary incapacity for work.
Results. The concept of occupational health record has been developed in two directions. The first is related to the health status of employees: data from the preliminary medical examination; data on registered occupational diseases; accidents at work, employment and permanently reduced working capacity; data on the performed periodic medical examinations, data on temporary incapacity for work. The second direction is information about the work environment: working environment; type of work performed; chemical factors; physical factors; biological factors. The model also includes the personal data of the employee, data about the company and data about the Occupational Medicine Service.
Conclusions. The occupational health record will serve both employers and physicians working in Occupational Health Services. The unified conceptual model will improve the opportunities for making adequate decisions to ensure good occupational health.
Keywords: model, working, occupational health record

4) Modelling and Management of ePrescriptions on openEHR platform in Bulgarian eHealth
Petko Kovatchev - Sofia University St. Kliment Ohridsky, Sofia, Bulgaria,
Abstract:
Purpose. The need for improved quality of health services is one of the main reasons for adopting prescriptions in electronic format (ePrescription) as a preferred way for purchasing medicinal products. The objective of this paper is propose a methodology for modelling and management of ePrescriptions using openEHR specifications [1].
Material and Methods. The proposed ePrescription model is a template composed of openEHR archetypes corresponding to clinical concepts in existing National Health Insurance Fund (NHIF) prescriptions. An open source openEHR platform is configured for evaluation the practical implementation of basic functional requirements of the model.
**Results.** An INSTRUCTION archetype model of ePrescription is created employing openEHR specifications. The model incorporates all the health data in a prescription as it is specified by the NHIF. A multitier web application is developed for database management of ePrescriptions on openEHR platform[2]. The client part of the application is used to create and retrieve ePrescriptions with real life data employing user friendly web interface.

**Conclusions.** The here proposed methodology allows to transform existing XML schema definitions used by the Bulgarian NHIF into archetype based models with inherent semantic interoperability of clinical documents exchanged by other EU countries. The implementation of this methodology is novelty in the existing literature, where known ePrescription software applications allow basic functional interoperability of clinical documents.

**Keywords:** openEHR information model, archetype object model, ePrescription, openEHR platform

5) **Management of Clinical Concepts in Bulgarian Healthcare Using openEHR Specifications**

*Simeon Abanos, Evgeniy Krastev - Sofia University St. Kliment Ohridsky, Sofia, Bulgaria*

**Abstract:**

**Purpose.** The objective of this paper is to outline a methodology for management of typical clinical concepts in the scope of Bulgarian healthcare by means of openEHR archetypes [1]. The methodology covers essential stages in the development a fully functional web application allowing semantic interoperability in management of clinical path reports by the National Health Insurance Fund (NHIF).

**Material and Methods.** This paper employs openEHR information model concepts to build an archetype object model of a clinical path report according to the XML schema model provided by the NHIF. The applicability of the algorithm is validated by processing a real life collection of clinical reports on a openEHR server.

**Results.** An openEHR template of a clinical path report is designed. An algorithm is developed for transforming health data from existing heterogeneous information models into instances of a template composed of openEHR archetypes. The design of the user friendly web interface enhances the business process for openEHR management of such reports [2].

**Conclusions.** The obtained results prove the hypothesis that existing health documents like clinical path reports can be transformed into archetype object model. Such information model enables a standards based approach to management of clinical documents and facilitates semantic interoperability between information systems in healthcare. The application of this approach allows to find cost efficient solutions to healthcare problems.

**Keywords:** openEHR information model, openEHR archetype, openEHR server, clinical path report, semantic interoperability, clinical document, management

6) **IT and bussines influences on medical requirements for local PACS selection**


**Abstract:**

The last two decades have seen a steady increase in the clinical application of PACS (PACS - Picture Archiving and Communication System [1]). The reason for this increase is the desire to both reduce costs and improve patient care. At present, this is a sustainable trend, which suggests its significant impact on the speed of changes in medical infrastructure. In general, PACS is a complete system that is responsible for the electronic storage and distribution of medical images in hospitals and medical institutions. As the term "computer system for medical applications" has undergone significant evolution today, it has also led to an extension of the definition of PACS. This term is now meaning “an inter-institutional
computer system that governs the acquisition, transmission, storage, distribution, display, and interpretation of medical images” [4][5]. As a new meaning, it imposes new forms of integration of PACS with other computer systems in hospitals and medical institutions. Problems with the complexity of installation and maintenance of new PACS most often lead to increased requirements for computer and communication infrastructure: both as architecture and as components. This further aggravates the problem of cost and maintenance. When we start to talk about local PACS the list of problem increses and most of them move from medical to regulatory, security and IT areas.

This material is going to explain and present some approaches and solutions for the problem of selection, installation and run of a local (regional) PACS.

**Keywords:** regional (local) PACS, selection, regulatory requirement, business requirement

7) **European and national occupational medicine legislation – a methodological basis for health and safety at work**

*Mladen Tairov, Nevena Tsacheva – Med. Uni. Sofia, Bulgaria*

**Abstract:**

**Introduction.** The conceptual foundations of occupational medicine include regulations to ensure minimum health and safety requirements. Council Directive 89/391/EEC on the introduction of measures to encourage improvements in the safety and health of workers at work, referred to also as the Framework Directive, has been developed as a strategic document. The Health and Safety at Work Act /1997/ transposes this Framework Directive in the national legislation, while preserving the good practices of occupational health.

**Objective.** Hierarchical systematization of health and safety at work normative documents with a view to highlighting the main ones included in the European and national legislation.

**Methodology.** Documentary and systematic analysis of official materials in this field.

**Outcomes.** The fundamental importance of the Framework Directive for the harmonization of the Member States laws has been identified. Furthermore, the development of specific directives regulating all risks to health and safety at work with general principles aimed at protection (prevention) from occupational risks, and causes of accidents at work and their elimination, information provision, training, counselling, balanced participation in cross-sector cooperation, medical surveillance, etc. have been identified. National legislation involves about 700 normative acts in this field and such principles are applied in all spheres of economic activity. It is systematized in the so-called normative pyramid as one of the pillars of the three-pillar conceptual model of occupational medicine and includes consistently: THE CONSTITUTION OF THE REPUBLIC OF BULGARIA, followed by the Labour Code and the Social Security Code, the laws: Health Act /2005/; Health and Safety at Work Act /1997/; followed by the regulations - Ordinance No. 3/2008 on the terms and procedure for the operation of the occupational health services. Ordinance No. 5 on the procedure, manner and frequency of carrying out risk assessment /1999/. Ordinance No. 3/1987 on the mandatory preliminary and periodic medical examinations of workers. on occupational diseases /2008/, on occupational accidents -2002; Ordinance on the Medical Expertise of the Ability to Work /2018/. The numerous instructions, operational rules, internal working regulations, job descriptions form the bases of the "normative pyramid".

**Conclusion.** Knowledge and proper implementation of national laws and regulations, which are necessary for the successful work and good occupational medicine practice, are key to protection of health and safety at work, in line with European legislation and modern patterns of public health programs.
8) Occupational musculoskeletal disorders of medical specialists working in a state psychiatric hospital
Lidiya Hristova, Rouja Nikolova, Simeonka Simeonova, Nikola Madjarov – Med. Uni. Sofia, Bulgaria

Abstract:
The Sixth European Working Conditions Survey states that nearly three in five workers in the European Union report complaints of musculoskeletal disorders. They are one of the most common causes of temporary incapacity for work, disability and early retirement. Not only physical factors, such as lifting, carrying heavy loads, fatigue or painful postures, but also a number of psychosocial, organizational and individual factors contribute to their manifestation.

Purpose. To study the stage, the structure and the dynamics of the incidence of temporary incapacity for work in a state psychiatric hospital for a period of one year, with an emphasis on musculoskeletal system for undertaking effective prevention measures.

Methods. Documentary from issued and accounted hospital records, the expert decisions of the Territorial expert medical commission / National expert medical commission for 2019, the risk assessment as measurement protocols, etc. For the processing of the necessary health information are used: statistical analyzes and methods for analysis - conceptual, situational, clinical - epidemiological parallels of the morbidity.

Results. The high general parameters related to the temporary disabilities of 210 medical specialists in a psychiatric hospital indicate the connection with the conditions of the working environment and the work process. From the total morbidity with temporary incapacity for work, the first place is held by the number of days of work incapacity due to musculoskeletal disorders and the connective tissue, the second place is attributed in terms of the frequency of cases. Injuries to the intervertebral discs in the lumbar and other parts of the spine with radiculopathy amount to 73% of the disability associated with disorders of the musculoskeletal system. The survey conducted among employees found that the main risks of the observed morbidity are associated with the available psychosocial risks: excessive workload, poorly managed organizational changes, ineffective communication, lack of support from management or colleagues, and unfavorable working conditions at work.

Conclusions. Temporary incapacity for work with musculoskeletal disorders is characterized by longer periods of absence compared to those without health problems. In this way, people's productivity at work decreases and "presenteeism" increases. Prevention to combat the musculoskeletal disorders is a task not only for employers, but also for workers, who are required to actively train and participate in the identification and management of psychosocial risks that play a role in the working capacity and quality of life of workers.

Keywords: musculoskeletal disorders, psychosocial risks, healthcare, prevention

9) Health and working conditions for workers from different risk and economic activities

Abstract:
Introduction. Economic activities are an integral part of the socio-political and socio-economic life of the country. They are modeled directly by all sectors according to the peculiarities of working conditions. Global changes in intersectoral cooperation, new strategies and policy priorities, incl. health have led to a kind of renaissance of interest in health and safety at work of workers in various risk and economic areas, incl. digitalization of jobs.
Objective. Study of the health status and working conditions of medical professionals for the period 2016-2018, with a view to enabling a conceptual model for the protection and promotion of health, safety and performance.

Tasks. Analytical review of the literature related to risky economic activities. Study of specific and specific working conditions in the sector "Health and social activities".

Methods. Documentary and statistical with data and facts from medical materials.

Results. The detailed review with analysis from Bulgarian and foreign language literature sources revealed the need to study the specific working conditions in various risk and economic activities. Creating an opportunity for a conceptual model based on the multifactorial conditionality of health contributes to the development of a standard in occupational medicine, necessary for the protection of public and occupational health and national security of the state. Specific risk factors have been identified in economic activity: "Health and social activities" with a predominant feminized composition in different, drawn to the older age groups and with characteristic conditions of the work environment and the labor process. The leading risks from the work environment and the work process have been identified: psychosocial, responsibility and mental stress, incl. when using high-tech equipment, work in an environment of ionizing radiation, challenges of working with patients in different situations and the urgency of the "moment", biological agents, which from the beginning of 2020, are particularly risky for the health of medical professionals.

Conclusion. For successful development in protecting the health and safety of medical professionals as a workforce responsible for national security, it is necessary to apply an innovative approach to digitalization in creating quality jobs.

10) Physiological norms of labour and rest in specialized hospital for active treatment of lung diseases - SBALBB, Pernik

Dimitar Vlaev, Nevena Tzacheva – Med. Uni. Sofia, Bulgaria

Abstract:
Physiological norms of labour and rest is a scientifically proven system about the duration, order and methods for using break periods which offer better and long-lasting efficiency, high quality work results while protecting the health and working capacity of the workers.

Purpose. The goal of the current research is to develop a physiological norm of labour and rest for the medical specialists in a hospital for treating of lung diseases which complies with the laws in place for a specific labour type depending on the type of work, loads and intensity of labour, changes in the working capacity of the workers, state of work environment, work process and the results of evaluation of the health risks of workers. Main task of the research in the COVID-19 epidemic environment is how can the hospital respond to the ideal physiological and psychological requirements for protecting the medical specialists from the new specific biological factors of the environment while they are treating patients. The methods, questionnaire and documentary, help to find the subjective perception of the developed work schedules and organization of the work with COVID-19 patients in the context of the Seventh special directive from article 16 $1 from directive 89/391 of EEU.

Results. In the questionnaires attention has been paid to the existing protection of the workers from the risks related to exposition to biological agents based on Directive 2000/54/EO of the European Parliament and the Council of Europe. It was found that extending the work time with at least 15 min. at the beginning and at the end which need to be used for putting on specialized work clothes and personal safety equipment. For 12 hour work shifts it is required to have a specialized physiological norm with suitable rest arrangements and supporting drinkables while complying with the protection measures.
Conclusion. In the environment of COVID-19 pandemic it is important to have special norms ready, considering the many specific measures which medical workers need to follow while working in the hospital for treating of lung diseases.

11) Health and safety when working with high-tech equipment

Ivan Glavandiev, Nevena Tzacheva – Med. Uni Sofia, Bulgaria, Bulgarian Academic Society of Occupational Medicine

Abstract:
Uni Hospital is a symbol of modernity, functionality, dynamics, precision, unique medical care and high-tech equipment. For the past 25 years is the largest private investment in Bulgarian healthcare. On April 29, 2015 was made the first sod of the renovation and expansion of an old municipal hospital by the Mayor of Panagyurishte Nikola Belishki and the Chairman of the Supervisory Board of Assarel-Medet AD Prof. Dr. Lachezar Tsotsorkov. In just a few months, a complete reconstruction of the existing depreciated building of the hospital was carried out and an oncology center was additionally built, technologically connected with the medical complex.

Purpose. For 2019 in “MHAT Uni Hospital” Ltd. studies of working conditions affecting the health, safety and working capacity of employees

Tasks. Conducting a direct individual survey with 640 medical and non-medical specialists on working conditions and workplace risk. Focus on psycho-emotional factors related to fatigue, anxiety, tension and anxiety as characteristic signs of occupational stress.

Methods. Sociological - for collecting primary, empirical information and Statistical analysis - Alternative and Graphic analysis.

Results. A standardized survey of 81% or 481 workers responded: high satisfaction with working conditions 75%, risk at work in 28% as the indicated risk factors of the labor process are mainly related to high responsibility, shifts and night work. operating mode. An assessment of good organization of the work process and quality jobs with very good ergonomics and safety of the work equipment was established by 63% of the employees.

Conclusions. The dynamic study of the health of employees in the hospital is important for the efficiency and success of work activities. At the heart of this are studies of both the subjective opinion of employees and an internal audit of the expertise of working capacity. Up-to-date risk assessment, training and informing employees about health prevention and promotion.

12) Occupational health and safety trainings. Study on employees knowledge level

Galya Stankova, Nevena Tsacheva - Med. Uni. Sofia, Bulgaria

Abstract:
Introduction. The EU strategy “Europe 2020” sets up the instruments and targets for better educational levels and trainings as social dialogue, awareness-levels raising, law enforcement in the field of EU and national legislation. There are resource efficient interactions with other policy areas such as public health and education. EU funds, such as the European Social Fund (ESF) and the European Program for Employment and Social Innovation (EaSI), which will support the application of rules relating to health and safety at work.

Purpose of this study is analysis and evaluation of the employees, knowledge about health and safety at the workplace and how effective were the conducted OHS trainings.

Tasks. Defining the level of awareness of workers for possibilities of health damage at work. Measuring the level of OSH trainings support for the implementation of preventive approaches to health protection in the workflow. Studying of the preliminary psychological attitude towards OHS training both for employers and employees.
Method. Survey through a questionnaire held among workers and employees in several branches of the private sector.

Results. The study provides summarized information on several subjects: workers’ knowledge about dangerous hazards in their own working environment; adherence of the safety at work rules; proper use of personal protective equipment and specific work protective equipment; types of training, outreach and education the employees have undergone; levels of basic knowledge of the law and regulations related to OHS; most common methods of OHS trainings and education and their interpretation for safety and health at work.

Conclusions. Most workers are well aware of the health risks at their workplaces. All of them have passed at least one educational course related to OHS. More than 2/3 of the respondents have participated in several types of trainings. Workers have a basic knowledge of Bulgarian employment law, but it’s incomplete and can be extended to a better degree. The most common reason for participating in Health and Safety at work trainings is obligatory both by law or higher management of the company. There is high need to supplement the OHS legislation.

Keywords: OHS trainings; employees knowledge level; Health & Safety courses

13) Research on the Occupational Health and Safety of Temporary Workers
Gancho Iliev, Nevena Tzacheva – Med. Uni. Sofia, Bulgaria, Bulgarian Academic Society of Occupational Medicine

Abstract:
Occupational health and safety are closely related to public health. The economic activities suggesting temporary employment suggest also the low - qualified workers. However, no systematic search using scientific tools has been carried out for evidence related their health and safety at work and the determinants of health.

Objective. Research evaluation and analysis of the occupational health and safety involving individuals engaged in jobs requiring low qualifications under programmes for temporary employment within the period 2017-2019 on the territory of Stara Zagora Region.

Tasks. Collecting social and statistical data for the temporary workers engaged in jobs requiring low qualifications. Studying the correlation between occupational health and safety and the temporary workers’ health, and the determinants of their health.

Methods. Sociological methods: conducting an individual questionnaire elaborated by the author involving 202 people temporary workers from Stara Zagora Region. Documentary methods: official sociological and statistical information

Results. The percentage of the temporary workers in Bulgaria in the age group 15-64 yrs. for 2018 was only 4%, whereas the average percentage for the EU was 14%. The biggest was the number of the temporary workers in the age group 25-55 yrs. (i.e. almost 100,000 people). Among the temporary workers in Bulgaria, the largest was the share of the people with a secondary or even lower education degree (i.e. 80,000 people), engaged in jobs requiring no special qualification, where the main factor for their employment is the seasonal work. About 40,000 people had a secondary school degree and about 10,000 people had a higher education degree. It was found out that all 202 temporary workers who participated in the research work in harmful working conditions: exposure to dust, biological agents, poor organization of the work process and non-observance of the Job Descriptions by the Employers.

Conclusions. The new Operational Programme “Development of the Human Resources” 2021-2027 should continue to support the continuously unemployed and disabled people and focus its intervention on prevention and measures with the active role of the Labour Offices in order to ensure efficient employment of resources and development of job-related skills.

Keywords: workers, health, temporar
14) **Precision Evaluation of a Speech Recognition Prototype for Computer Aided Preparation of Medical Documentation**

*Stoyan Mihov, Diana Geneva, Georgi Shopov, Dimitar Tcharaktsiev, Nonka Mateva, Aneta Tosheva, Yordanka Staykova, Kiril Slaveykov, Pencho Tonchev, Kiril Statev - Institute of Information and Communication Technologies, Sofia, Bulgaria*

**Abstract:**
In the framework of the National Science Program "Digital Healthcare in Bulgaria" we are developing an Automatic Speech Recognition (ASR) prototype for computer aided preparation of medical documentation in Bulgarian. In this report we present the evaluation of the precision of our prototype on medical dictations.

There are significant differences in the speech in medical dictations compared to the normal (conversational) speech. Very often there are no full sentences in medical dictations -- speech often consists of lists of phrases only. Dictations are often spoken very rapidly, in noisy environment, just for documenting purposes. But the most significant difference is the presence of highly complex, domain-specific medical terminology, including thousands of Latin terms, drug names, and chemical compounds. This presents a significant challenge for the dictionary creation and the language modelling of the medical ASR system.

For the purpose of the medical ASR we have composed a 500 million words representative corpus of medical documents covering writings of medical specialists from various medical fields. The specialized dictionary consisting of around 200 thousands word forms and covers 98% of the word occurrences in the corpus. Using those resources we implemented a state-of-the-art ASR engine utilizing a time-delayed deep neural network architecture for the acoustic model and a 4-gram language model using the Kaldi ASR framework.

For testing and evaluation purposes we created a corpus of speech recordings of medical documents dictated by medical specialists. The corpus consists of 26 hours of speech from 50 medical specialists from 3 medical universities in Bulgaria. As a result we measured a Word Error Rate below 10%. The error analysis showed that around half of the errors are caused by out-of-vocabulary words and more than 1.5% of the mismatches are because of spelling variations. Those results are comparable with other medical ASR systems for other languages.

**Keywords:** speech recognition, word error rate, medical documentation

15) **Discrimination of occupational and psycho-social risk factors inducing chronic non-communicable diseases in physicians' employment**

*Rouja Nikolova, Slav Danev, Todor Kundurjiev, Lidiya Hristova, Simeonka Simeonova, Nikola Madjarov – Med. Uni Sofia, Bulgaria*

**Abstract:**
Most of the risk factors causing chronic non-communicable diseases arise from the persistent cognitive interaction of the individual with the occupational and psycho-social environment.

**Purpose.** The purpose of the present study is to discriminate occupational and psycho-social risk factors affecting chronic non-communicable diseases in physicians' employment.

**Material and Methods.** The following groups of individuals were studied in our study: 83 physicians and 30 employees. A detailed Job analysis has been applied and performed to investigate and determine the risk factors inherent in the professional activity of physicians. National Institute of Occupational Safety and Health (NIOSH) job stress questionnaire, validated and adapted to Bulgarian conditions and language was conducted to be analyzed and evaluated those psycho-social factors in the occupational environment of the individual that are subjectively perceived and experienced as stressful.

**Results.** Results of our study contributed to discrimination and screening of major risk factors related to the physicians' employment. Our findings revealed that: increased level of occupational risk factors; reduced level of social support from immediate supervisor, colleagues, and family; and increased level of psycho-somatic complaints in the group of physicians elevate the magnitude of cognitive load that induces potential stress response.
**Conclusions.** Stress affects and disturbs Central Nervous System (CNS) and Autonomic Nervous System (ANS) regulatory mechanisms that might potentiate and induce a risk of chronic non-communicable diseases. Stress elevates and aggravates the cognitive load and its impact disrupts the mechanisms of regulation of the CNS and ANS. Thus, the results of our study demonstrated the ability of Job analysis and NIOSH job stress questionnaire to discriminate major occupational and psychosocial risk factors and revealed that stress is a significant etiological factor in the occurrence of chronic non-communicable diseases in physicians’ employment.

**Keywords:** chronic non-communicable diseases, stress, NIOSH job stress questionnaire, Job analysis, risk factors, Central Nervous System and Autonomic Nervous System

16) **Prevention of Stress among Workers in an Environment with High Psychosocial Risk**


**Abstract:**

**Purpose.** Numerous workplaces are related with exposure to high psychosocial risk. Typical example for such employees are the ambulance workers. The aim of our research was to study the stress perception and psychosocial risk factors among ambulance workers, to find the correlation between them and to organize preventive measures.

**Material and Methods.** The study was conducted among 468 people workers in 2 emergency healthcare centers. The male participants were 58.3%, and 41.7% were female. The distribution by position was nurses - 35.8%, followed by 26.1% of the drivers, the doctors - 18.1%, the paramedics - 14.2% and the sanitarians - 5.8%. A sociological method was used - a survey. Statistical methods - descriptive statistics and Chi-square test.

**Results.** The predominant part of the participants reported that psychosocial factors like shift work, night shifts, violence, stress, interpersonal conflicts have negative impact on their work – 70.5%. Their distribution was as follows: 78.8% of paramedics, followed by doctors – 73.7%, nurses 71.7%, ambulance workers 67.8% and sanitarians 44.4%. The analysis showed that 69.7% of men and 70.7% of women gave positive answer to the question. Almost half of the respondents claimed that they were under daily stress at work (48.1%). The distribution by position was: 60.5% from doctors, 57.6% from paramedics, 49.1% from nurses, 39.5% from ambulance workers and 18.5% from sanitation workers gave positive answer. The part of workers which claimed that they were under everyday stress at work and psychosocial factors have negative impact for their work were 60.4%.

**Conclusions.** Work of the ambulance workers was stressful, overloaded and the levels of psychosocial risk factors and stress among them were high. It’s necessary to take urgent preventive measures in order to limit them.

**Keywords:** ambulance workers, psychosocial risk factors, stress, prevention programs

17) **Mental stress in social workers in conditions of exposure to CoVid - 19**


**Abstract:**

**Background.** Mental stress is characterized with extreme tendencies of distress at work, accompanied by a objective response of disturbance of the functional state of Cardiovascular system and autonomic cardiovascular control and subjective feeling of the absence of control. The focus of our research is the effect of CoVid-19 pandemic on stress level.

**Purpose.** The purpose of our study is the effect of CoVid-19 pandemic on the response of autonomic cardiovascular control and stress level among the social workers.

**Material and Methods.** Non-invasive functional diagnostic system of analysis of functional state of Cardiovascular system and autonomic cardiovascular control was applied.

**Results.** Autonomic cardiovascular control indices indicated the increase of sympathetic activity and decrease of parasympathetic activity. The proportion of employees with average levels of perceived stress is 22.5%. More than half of the staff 52.5% have elevated levels of physical and/or mental stress. Health risk is high in 16 employees, representing 40% of respondents. In 60% of the employees the functional age is unacceptably higher than the calendar age.

**Conclusions.** The results of our study revealed that the pandemic of CoVid-19 is a major indicator of the level of stress among social workers at Kozloduy City Hall. CoVid-19 appears to be a significant stress, causing disorder of the autonomic cardiovascular control and regulation. We have also defined
other significant stressors that are exacerbated by the pandemic of CoVid - 19. 30% of individuals are exposed to stress by the pandemic, 10% by the problems with children and education and 60% by the organization in the work environment. The proportion of the respondents is high, who define the deficit of time as the main professional stressor - 90%.

**Keywords:** CoVid – 19 pandemic, stress, Heart Rate Variability, social workers

18) **Progression of psychosocial stress in medical professionals in the conditions of exposure in a pandemic by COVID 19.**

*Nikola Madjarov, Rouja Nikolova, Todor G. Kundurjievi, Lidiya Hristova - Med. Uni. Sofia, Bulgaria*

**Abstract:**
Recent exhaustive research data prove that the professional society of physicians and nurses has high workload, highest responsibility for people’s health and life and highest rates of work complexity and competency while performing their professional duties. The aim is to evaluate and analyze the progression of occupational psychosocial stress in the medical staff in several hemodialysis clinics in the conditions of exposure to a pandemic by COVID 19. The Bulgarian version of the questionnaire of the National Institute of Occupational Safety and Health (NIOSH) was used for evaluation and analysis. The results of our studies show that hemodialysis medical staff has significantly higher psycho-social stress rate in the time of pandemic. It is dictated and conditioned by the nature of their work and the specific medical care practiced at work. In the physicians’ group we found increased levels of work requirements, that correlate with workload and also cognitive abilities and off-duty hours, which is an expression of the relationship and conflict between work and family responsibilities. These factors have impact on their functional and health status and work related psychosocial stress. The relevance of the study, through the NIOSH questionnaire, also determines the importance of the methodology used to assess psychosocial stress and the corresponding health impact on medical staff, which is of paramount importance for taking decisive and adequate stress prevention measures. Frequency distributions were verified by the Kolmogorov-Smirnov test (One-Sample Kolmogorov-Smirnov test). Comparison between two independent groups was performed through t-test or Mann-Whitney test. The relationship between two categorical variables was examined using the Chi-square test. The accepted significance level is \( \alpha = 0.05 \). The corresponding null hypothesis is rejected when the p-value is less than \( \alpha \). The specialized statistical package SPSS version 13.0 was used to process the survey data.

**Keywords:** psychosocial factors; occupational stress; physicians; nurses; hemodialysis; health status; NIOSH, pandemic COVID 19

19) **Potential analysis of eventual educational consequences for medical students in the year of severe Corona virus pandemic**

*Alexander Donchev – Med. Uni. Varna, Bulgaria*

**Abstract:**
We are witnessing a high level of activation of Corona virus spread around the entire world. Many countries are subjected to severe social, economic, and public restrictions. Such serious measures reflect on the daily rhythm of life in all aspects, but one of the most important issues correspond to the education, starting from kindergartens, primary schools, colleges and ending to universities.

The medical universities are to certain scales different from the rest educational institutions, due to the fact that the medical students require a personal contact with their patients, especially the pre-graduate students, when they must obtain definite clinico-practical level of their knowledge and expertise, visiting clinical wards, working on human material and having supervision from their professors in a personal contact.

The programmes for online education in the current situation with Corona virus pandemic are to be specially considered in terms of medical education and this is what we try to analyze in the present study.

**Keywords:** Corona virus, education, students, medical universities
Section: Varia
Chair: Tsveteslava Ignatova-Ivanova, Igor Resnick, Tsvetelina Kostadinova
Secretary: Sevginar Ibryamova

1) On the impact of the cooking process on the microflora of mussel Mytilus galloprovincialis Lam.
Sevginar Ibryamova, Borislava Pavlova, Radoslav Ivanov, Dimitar Dimotrov, Nikolay Natchev, Tsveteslava Ignatova-Ivanova– Shumen Uni, Bulgaria

Abstract:
From a social point of view, the safe food is a significant problem for the modern civilization. The cultivation of seafood, in particular the Black Sea mussels, is becoming an important part of the industry of the Western Black Sea coast. With increasing the number of tourists and construction works on our Black Sea coast, the pollution of the sea is also rising. These contaminants may include various pathogenic microorganisms - Escherichia coli, Straphylococcus aureus, Salmonella thyphimurium and also the causative agent of cholera (Vibrio cholera). Such pathogenic microorganisms are common found in mussels and can cause the spread of various diseases. From the other side, seafood has been found to be a source of lactic acid bacteria, which synthesize substances with antimicrobial activity against many pathogens microorganisms. We performed a study on the relation of the process of cooking of the black mussels and the available pathogenic microflora. The results showed that when boiled in water for up to 5 minutes colonies of the species Escherichia vulneris and Pseudomonas alcaligenes were found in considerable volumes. The results of the sanitary-microbiological analysis of our mussel samples must be considered when preparing mussel for food to avoid contamination. Fresh mussels should be boiled for at least 7 minutes results and our experiments provided us data concerning the effects of wine, lemon as inhibitors on microorganisms. The highest antimicrobial activity was identified in the probes treated with lemon juice.

2) On the impact of the cooking process on the microflora white sand mussel Mya arenaria
Borislava Pavlova, Sevginar Ibryamova, Radoslav Ivanov, Dimitar Dimotrov, Darina Bachvarova, Nikolay Natchev, Tsveteslava Ignatova-Ivanova – Shumen Uni, Bulgaria

Abstract:
The white sand mussel - Mya arenaria Linneaeus is an edible bivalve, inhabits littoral shores usually buried in the sand. It is an invasive species for the Bulgarian waters of the Black Sea. The samples were collected from different points on the northern and southern Black Sea Bulgarian coast in the period October 2019 to September 2020. The study of different types of microorganisms was performed by using the microbial identification system model: MicroLog M® BIO45101 BiologInc and software product GEN III. In the present study, the impact of the cooking process on the microflora of the white sand mussel M. arenaria was investigated. The results showed that after boiling in water for up to 5 minutes, the colonies of the species Pseudomonas alcaligenes were found in considerable volumes. The results of the sanitary-microbiological analysis of our mussel samples should be considered when preparing these mussels for human consumption to avoid contamination. Fresh mussels should be boiled for at least 7 minutes. We provided experiments concerning the effects of wine and lemon juice as inhibitors on microorganisms growth. Higher antimicrobial activity was identified in the probes treated with white wine.
3) Quantitative analysis of phenolic compounds and radical scavenging activity of Black Sea macroalgae Cystoseira barbata
Abstract:
The total phenolic content (TPC), radical scavenging activity (RSA) and some phenolic acids (PA) were quantified in two different extracts of brown seaweed Cystoseira barbata. The macroalgae were collected from northern Black Sea region, where they were wildly growing. Extraction procedure included 100% methanol and 100% ethanol as extractors. Both extracts of the seaweed were assessed for their RSA using two radicals DPPH and ABTS and were measured by spectrophotometer. HPLC was used for quantitative determination of five phenolic acids and quercetine. Both methanol and ethanol extracts exhibited a DPPH and ABTS radical scavenging activity among them, methanol extract (32.8% DPPH inhibition; 31.8% ABTS inhibition) demonstrated higher radical inhibition comparison with ethanol extract (14.3% DPPH inhibition; 5.9% ABTS inhibition).
Also total phenolic content was observed where methanol extract showed higher result too (2.093 µg GAE/ml methanol extract and 1.373 µg GAE/ml ethanol extract). Caffeic acid, Gallic acid, 4-hydroxybenzoic acid, p-Coumaric acid, Cinnamic acid and quercetin were determined in methanol and ethanol extracts of the brown seaweed. Greater result among all five phenolic acids were obtained by methanol extract (highest concentration 1.161 µg/g for 4-hydroxybenzoic acid).
The results suggest that methanol is better extractor of phenols than ethanol as well as this brown macroalgae possess antioxidant potential which defines Cystoseira barbata as a raw material suitable for future applications in medicine, dietary supplements, cosmetics or food industries.

4) Occupational-related injuries of the peripheral nervous system in mechanical engineering workers in Northern Bulgaria
Abstract:
Purpose. The aim of the study is to examine the damage to the peripheral nervous system in workers in mechanical engineering and to propose measures for the prevention of accidents at work and occupational diseases.
Material and methods. The subject of the study is 65 cases of damage of the peripheral nervous system in patients hospitalized in the Department of Occupational diseases, University Hospital – Pleven, in the period 2018 – 2020. The subjects are workers in machine – building enterprises in the districts of Plevens, Lovech, Vratsa, Gabrovo and Veliko Tarnovo. Clinical, laboratory, functional and imaging diagnostic methods have been used.
Results. All persons surveyed have more than 5 years experience in professional risk. Over 80% of persons work in a forced posture. 60% of people use tools that generate local vibrations. The leading clinical syndromes in the subjects are pain, radicular, vertebral and polyneuritis. Over 90% of the individuals showed improvement after functional rest, medication and physiotherapy.
Conclusions. Damage of the peripheral nervous system is an actual health problem for people working in mechanical engineering in Northern Bulgaria. An additional harmful factor is the household load and the lack of effective rest. Measures are needed to prevent occupational disabilities and to promote health at work.
Keywords: occupational diseases, injuries of peripheral nervous system, mechanical engineering
5) Dietary guidelines for protection of the occupational health of workers in forestry

Abstract:

**Purpose.** Workers in forestry are exposed to numerous and various occupational hazards. The provided healthy and safe workplaces in the Bulgarian forestry are associated with a lower relative share of accidents at work and occupational diseases among the forest workers. Strategic management in this area is also related to actions to improve the working environment, occupational health and safety, part of which is the organization of nutrition. The aim of the study is to support the occupational health of forest workers with specific dietary guidelines.

**Material and methods.** The object of the study are 150 workers employed in the forestry of Northern Bulgaria. A documentary method was used - a study of the medical documentation from preventive examinations conducted in the period from 2015 to 2019. The results were analyzed with statistical software SPSS v.20.

**Result.** Dietary recommendations in forestry are aimed at reducing the occupational health risk from contact with biological hazards, the leading physical factors (cold and hot microclimate, noise), dust and forced working posture.

**Discussion.** Dietary guidelines include adequate hydration, recommended eating frequency with mandatory breakfast, consumption of animal foods, fruits and vegetables that increase the intake of protein, essential amino acids, fiber, vitamins (A, C, B1, B2, B6), calcium, magnesium and trace elements, limiting the intake of saturated fatty acids and sodium, provision of dining facilities, clean food and clean drinking water.

**Conclusion.** The implementation of dietary recommendations based on leading occupational hazards in forestry will help to protect occupational health and safety at work.

**Keywords:** dietary guidelines, forestry, occupational health

6) Level of professional competence of student nurses at Medical university-Pleven for working in crèches

Abstract:

**Purpose.** The aim of this study is to determine the level of professional competence of students in the specialty "Nurse" at the Medical University - Pleven for working in a crèche.

**Material and Methods.** The study was conducted between March 2015 and February 2018. A total of 143 persons were enrolled: 60 students from the specialty “Nurse” at the Medical University of Pleven and 83 nurses working in crèches and crèche groups at integrated nurseries located on the territory of Pleven municipality. Documentary and questionnaire methods were used. Two types of original questionnaires were developed to examine respondents' views. The survey data were processed with STATGRAPHICS statistical software packages; SPSS 19 and EXCEL for Windows.

**Results.** According to the students, the main professional qualities for working in a day crèche are: communicative skills for working with children - 96.67% (58); observational skills- 78.33% (47); good knowledge of the educational process - 50.0% (30). Nearly half of the surveyed graduates - 46.67% (28) believe that it is mandatory for healthcare professionals to have psychological and pedagogical training to work with young children. What is of particular note is the high proportion of the group of students - 78.10% (n = 32) who claim that their pedagogical and psychological training are insufficient to perform their duties effectively.

**Conclusion.** The students defined the level of their pedagogical and psychological training as not good enough to pursue their profession in this health sphere.

**Keywords:** crèche, professional competence, students, nurse
7) Over-the-counter Pharmaceutical Products and their Connection to Public Health
Marieta Todorova, Kiril Todorov - Medical University - Plovdiv, Plovdiv, Bulgaria, University of Munich, Germany

Abstract:
Introduction. The use of over-the-counter medicines for the treatment and maintenance of good health is a part of national health policy and has a serious impact on public health. The use of over-the-counter (OTC) medicine improves consumers’ ability to self-regulate medical expenses and enables people in remote areas to access medicines. Marketing of medicines that require no prescription can have many benefits such as promoting general health care knowledge and shaping a more informed public attitude towards self-treatment and its appropriate usage, nevertheless there are concerning negative effects that require cautious consideration and extended analysis.

The purpose of this paper is to analyse and give an overview of the possible benefits and risks of the usage and marketing of over-the-counter pharmaceutical products and their connection to public health and the shifting perception of self-medication and treatment.

Material and methods. A systematic review of research published in the period 2010 to 2020 was made. The information was selected from several databases: Scopus, PubMed, as well as in the Super Searcher of Google Scholar. The reviewed papers were selected according to key words.

Results. Reviewing the potential upsides and downsides of over the counter medical products, they are often associated with their effect on the consumers purchasing such products at the end of the value chain. But advocating for a different view of the possible benefits and risks could be beneficial for the deeper understanding of the answers and problems connected with OTC medicine.

Conclusions. The link between pharmaceutical marketing of over-the-counter medicines and public health is dynamic and has a direct impact on health policy. However, its conflict of interest nature puts researchers at odds with some advocating for its positive contributions to society and public health, whereas others have high concerns about the potential harm it can cause in future.

Keywords: misuse, advantages, disadvantages, over-the-counter medicine, self-treatment, public health

8) Maritime Accidents and Their Environmental Impact
Maria Panteleeva, Nikolina Radeva – Med.Uni. Varna, Bulgaria

Abstract:
Maritime accidents and following chemical contamination is a worldwide problem. The environmental effects on seawater are serious. Human activity and especially water pollution from ships, including oil spills and oil products, waste disposal, cleaning of ships and the use or transport of toxic chemicals are a major problem.

We set a goal to investigate key man-made disasters resulting in seawater contamination. Historical and documentary methods and methods of analysis and generalization of data are used. Ship and oil rig accidents worldwide are taken into consideration. Handbooks, plans and other documents assessing the risk of marine pollution in emergency situations have been studied.

Most of the accidents are due to a suddenly occurring event and the water contamination happens rapidly in the next few hours or days. However, there are disasters where the release of dangerous agents continues for decades, usually from offshore facilities, with gradual accumulation of chemicals in the waters of a region and they are no less dangerous than the sudden ones.
The ecological effect of seawater pollution is large - depending on the type of pollutant, its quantity, the type of the contaminated area - its physical characteristics and the economic profile of the region. It affects the marine inhabitants - plankton, fish, seabirds and mammals, as well as flora. Damage along the coastline threatens tourism (yachting, diving, bathing,) and the fishing industry in the area.

The number of ships' accidents followed by large oil spills in the last few years is comparatively low than in the 1970s. There are different reasons for oil spills but most are due to collisions and groundings. Chemical accidents at sea are indicative of the need for joint action of larger organizations to quickly address and avoid environmental hazards.

**Keywords:** maritime accidents, environment, seawater, contamination

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9) **Personal responsibility for the health of people over 65-year-old**

*Silviya Kyuchukova, Albena Andonova, Mima Nikolova, Mariana Penkova-Radicheva - Trakia University, Stara Zagora, Bulgaria*

**Abstract:**

The Ottawa Charter from 1986 and the Jakarta Declaration from 1997 are focused on expanding the partnership for health and enhancing the personal ability to achieve better health. In the light of health promotion, individual health behavior is seen as a major health resource. In this aspect, personal responsibility for health is growing sharply.

As of 31 December, 2019 the population of Bulgaria is 6 951 482 people, and the people, aged 65 and over are 1 504 088, or 21.6% of the country's population.

**Objective.** To establish the degree of personal commitment and responsibility for their health of people over 65-year-old, living in Bulgaria.

**Tasks.**
- To make a questionnaire;
- Processing of the received information and analysis of results;
- Formulation of conclusions regarding awareness, health motivation and lifestyle of the respondents;
- Reporting the degree of responsibility for their health of the respondents.

**Methods.** mathematical-statistical - dispersion, comparative analysis, Spearman's rank correlation coefficient / p /; desk research; interview. Contingent: 113 people; average age – approx. 68.168 ± 8.80 years. Time: 2019

**Conclusions.** A statistically significant relationship was found: p = 0.001 and x² = 21.886.

The respondents with two chronic diseases - 40.5% are well aware of the normal values of the measured indicators; Two thirds of the respondents / 74.3% / are well informed about the normal and pathological values of the main vital indicators, which they can measure and register themselves; 76% of the respondents have received the necessary health information from the medical team / partnership model.

**Keywords:** responsibility; health; elderly people; lifestyle

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10) **Increasing the independence of old people with chronic diseases**

*Mima Nikolova, Silvia Kyuchukova, Albena Andonova, Koni Ivanova - Trakia University, Stara Zagora, Bulgaria*

**Abstract:**

**Introduction.** The demographic situation of Bulgaria is determined by the simultaneous action in a negative direction of three factors on which the development of the population depends - birth rate, mortality and migration. According to a UN report valid from January 1, 2010, Bulgaria ranks fifth in the world’s aging population. In 2025, Bulgarians over 65 will be 20% of the population. All sources - access to medical care, usability of health facilities and surveys, confirm an increase in morbidity with age.
**Objective.** By introducing a diary of self-control in patients with chronic diseases to improve their quality of life.

**Methods.** 113 people over the age of 65 were interviewed. The data are processed mathematically and statistically.

**Conclusions.** If developed and implemented in the practice of the GP, a diary for monitoring and self-monitoring of the condition, in an understandable style and containing basic data on the most common chronic diseases in the elderly and old people and the possibility of registering in it indicators basic information on disease control will improve the quality of life of the elderly and will facilitate the care of the elderly by both the GP and their relatives.

**Keywords:** old people, quality of live, training

**11) Empowering Hospital Resilience Through Disaster Medical Support Training Drills**  
*Mariya Georgieva, Rostislav Kostadinov- Med. Uni. Plovdiv, Bulgaria*

**Abstract:**

**Introduction.** Hospital disaster resilience is function of several factors, with disaster education and training as a central one. In the hospital disaster reaction plan amelioration of the medical staff knowledge and skills for proper and efficient disaster response is set as a prerequisite for maintain a resilience. In order to achieve increase into both knowledge and skills regarding the specific disaster medical response protocols and algorithms practical drills and table top exercises have to be conducted on a routine base. Disaster relief operations into recent years have proved that constantly trained teams are achieving better results into life-saving and life-supporting procedures.

**Aim.** The purpose of this study is to analyze the extent level of disaster training of the hospital medical professionals in Plovdiv region, as a prerequisite for enhancement of the hospital resilience in case of disasters.

**Materials and methods.** Between July and September 2019, on the territory of the Plovdiv Region, Bulgaria, an anonymous survey was performed among 295 hospital professionals. Participants were requested to respond to question related to the performed into their hospitals disaster medical support drills. Alternative, non-parametric and correlation analysis were applied. A value of p <0.05 is considered statistically significant.

**Results.** According to the medical staff, disaster drills are not held regularly. A small number of medical specialists have indicated that the period of conducting training events is less than 2 years. Most of the medical staff has not participated into life or table-top exercise. More than 2/3 of the respondents are not aware of whether the hospital participates in joint exercises for disaster response with other institutions.

**Conclusion.** Based on results of the analyses of the participants’ answers a requirement for amelioration of the training program for hospital medical teams has to noted. Conducting more frequent drills through role-playing games will have a beneficial effect on the hospital disaster preparedness and resilience.

**Keywords:** hospital disaster resilience, disaster drills, medical specialists

**12) Development and improvement of professional skills and qualities of future nurses during their pre-graduation traineeship**  
*Snezhana Dragusheva, Penka Petleshkova, Petya Kasnakova, Teodora Stoeva - Med. Uni. Plovdiv, Bulgaria*

**Abstract:**

The choice of an occupation is an important step in everyone’s life. The greatest risk that a wrong choice entails is for the person to be forced to do a job he/she does not enjoy. So careers advice is vital prerequisite for a successful career. Experience shows that the effective
Career is directly dependent on the successful choice of an occupation. The performance of various tasks during the pre-graduation traineeship of future nurses will make them feel satisfied with the profession they have chosen and will act as a stimulus for them to practice the said profession.

**Aim.** This study aims to verify the formation and improvement of professional skills and qualities of the nurses-to-be during their pre-graduation traineeship.

**Material and methods.** We have surveyed the opinions of trainee-nurses, students majoring in ‘Nursing’, as well as those of their mentors in the university hospitals and clinics.

**Results and discussion.** It is a positive fact that for the surveyed students the most important are the moral qualities which correspond to the moral values in the nursing profession. The fact that the respondents rate as most significant moral qualities, such as honesty, integrity, responsibility, responsiveness and empathy, can serve as grounds for positive forecasts concerning the future development of the students, provided their further development is organized correctly.

**Conclusion.** We have established that professional skills and qualities are developed and improved during the pre-graduation traineeship of the future nurses.

**Keywords:** professional skills, competencies and qualities, future nurses, pre-graduation traineeship.

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13) **Impact of disasters on disaster medicine education**  
*Elena Valkanova, Rostislav Kostadinov - Med. Uni. Plovdiv, Bulgaria*

**Abstract:**

**Introduction.** Disaster medicine is relatively new but rapidly evolving medical specialty. It emerges from military medicine with the purpose to provide care for military casualties and nuclear victims but quickly exceeds these limits and encompasses the medical support in case of all spectrum natural and man-made disasters. As the other medical specialties and disaster medicine development is evidence based. The theory and practice are amended after every disastrous event. Every single piece of information regarding the structure and organization of the disaster medical support activities is providing valuable input. The better the understanding of the shortfalls reported is, the greater will the worth for disaster medical response to the coming calamities be.

**Purpose.** The objective of the study is to analyze the impact of disasters on disaster medicine education and the lessons learned significance for practice improvement.

**Materials and methods.** By the means of descriptive method lessons learned by the disaster medical support to some of the most significant catastrophic events in the recent years are presented. Comparative and deductive analyses are performed in order to assess the influence of disasters on the evolution of disaster medical support education and training.

**Results.** Results of the performed analysis of the most consequential disasters are proving the changes into the disaster medical support planning, organization and management that have been implemented by the affected countries. These changes in policy and practice lead to amendment and advances in disaster medical tuition.

**Conclusion.** As a conclusion, has to be noted that disaster medicine education has to be based on the best practices approved throughout the disaster relief operations. Every gained experience and lesson learned have to be implemented into the lectures and seminars, thus transforming real life achievements into knowledge and wisdom.

**Keywords:** Disaster Medicine, Education, Disaster Medical Support, Disasters
14) Influence of trace elements copper and selenium on parameters assessing the iron status in pregnant women with low-risk and high-risk pregnancies

Abstract:
Pregnancy is characterized by increased requirements on erythropoiesis because of the expansion in maternal red blood cell mass and intensive tissue growth. The involvement of trace elements copper (Cu) and selenium (Se) in iron metabolism, erythropoiesis and erythrocyte functioning is a subject of extensive research with contradictory results.
The purpose of the study was to determine serum concentrations of Cu and Se and to investigate their relationships to parameters for assessment of iron status in pregnant women with low-risk and high-risk pregnancies.

Material and Methods. A total of 40 pregnant women with low-risk pregnancies (n=20) and high-risk pregnancies (n=20) were included in the study. The high-risk pregnancies were preceded by reproductive failures (n=13) and/or associated with chronic inflammatory and autoimmune diseases – Hashimoto thyroiditis (n=8) and obesity (n=3). We measured the serum concentrations of Cu and Se, red blood cell count, hemoglobin concentration, hematocrit, erythrocyte indices (MCV, MCH and MCHC), and biochemical markers of iron metabolism. The women were examined twice, at the beginning of the second and third trimester of pregnancy.

Results. We found a higher proportion of women with subthreshold serum concentrations of Se, indicating inadequate Se intakes, in the experimental group versus the control group at the beginning of the second trimester (p=0.006). A positive correlation between serum Se and MCV (r=0.657; p=0.039) was proven in women with low-risk pregnancies for the second-trimester samples, and a positive correlation between serum Cu and MCH (r=0.805; p=0.029) – in women with high-risk pregnancies for the third-trimester samples.

Conclusions. Trace elements Cu and Se have significance for the normal erythropoiesis in pregnant women. Further in-depth studies are needed for detailed elucidation of their role on iron metabolism. This would optimize the period of trace element supplementation in pregnant women with low-risk and high-risk pregnancies.

Keywords: copper, selenium, iron metabolism, erythropoiesis, pregnancy.

15) Characteristics of the basic anthropometric indicators for assessment of physical development in Bulgarian children aged between 3-6 years (Smolyan region,1998-2019)
Silviya Mladenova – Plov. Univ. Smolyan, Bulgaria

Abstract:
Purpose of the present study is to make characteristic of the main anthropometric indicators for evaluation of the physical development in children at age between 3-6 year from Smolyan region, Bulgaria in age, gender and secular aspects.

Material and Methods. A transversal anthropometric study of 330 clinically healthy children (161 boys and 169 girls), aged between 3 to 6 years from Smolyan region, Bulgaria was performed in the period 2017-2019 (Sample A). For the performance of the analysis of the secular changes, earlier anthropometric data, collected by the author, for another 406 children from Smolyan region, aged between 3-6 years, transversally studied in the period 1998-2001 (Sample B; Mladenova, 2003) were also used. Four main indicators for physical development have been measured for each child, as per the anthropometrical Martin-Sallers methods: height, weight, chest circumference and head circumference. The data have been processed through statistical software suite Statistica 10.0.

Results. Our results about age and gender differences in the dynamics of the growth of the investigated anthropometric indicators show unevenness, heterochrony and gender.
dimorphism both in relation to the absolute values of the indicators and in relation to the rate of growth and reached growth velocity. The results of the study of the secular changes show that there is secular changes in the main investigated features during the last 20 years (1998-2019), which are different for the two genders. They are expressed in significant increase of height and weight of boys at age of 3 and 5 years and the weight of girls at age of 3 and 6 years. A statistically reliable reduction in the chest and head circumference among boys at age of 6 years and a smaller chest circumference of 5-years-old girls is observed. On the grounds of these negative changes, the modern girls at age of 3 years have reliably larger chest and head circumference in comparison to their peers 20 years ago.

**Conclusions.** The our results, once again show the multidimensional character of the age and secular changes, which are presented, in various extent, in the various morphological systems of the body during the different stages of the ontogenesis and are different for the two genders.

**Keywords:** physical development, anthropometric indicators, secular changes, pre-school children.

16) **Assessment of the risk of decubitus ulcers using BRADEN SCALE**  
*Despina Georgieva - Uni Ruse, Bulgaria*

**Abstract:**

**Purpose.** Within the behavioral guidelines of hospitalized patients who need compensatory nursing care, an assessment of the risk of decubitus ulcers is recommended to be done at regular intervals, in schedule, and after each altered state. The goal of this research is to apply the BRADEN SCALE for assessment of the risk of decubitus ulcers occurring, during a hygienic toilet in sick people who need compensatory nursing care.

**Material and methods.** An assessment of the risk of decubitus ulcers via using the Braden scale is applied in 120 hospitalized patients, during a hygienic toilet. A treatment of decubitus ulcers I and II degree is being performed, when the state of the skin and wounds that have already occurred, are being established. For processing, analysis and graphic presentation of the results and data, the statistic program SPSS 20.0 is being used.

**Results.** It's reported that 50, 83% of the respondents have got quite a risk of decubitus wounds occurring, 26,67% are at great risk, and 14,17% are at a moderate risk. Only 8, 33% of all patients tested, are at light risk.

**Conclusions.** In all patients tested, a various degree of decubitus wounds occurrence, is reported. This defines the importance of the nurses’ hygienic care and activities for prevention of decubitus ulcers to occur. If the prevention measures of patients who have gotten in a risk group are not observed, every decubitus wound leads to continuous stay in the hospital, and also additional treatment and tests, which automatically prolong and raise the cost of hospital treatment.

17) **Assessment of skills and competencies of nurse students**  
*Irinka Hristova – Uni Ruse, Bulgaria*

**Abstract:**

**Purpose.** The training process in the specialty of Nurse from the regulated occupations in the Republic of Bulgaria, is in accordance to both national and European normative documents. The mission of the program Nurse for bachelor degree is to provide highly-qualified professionals for giving effective health care in terms of a changing social, economic and health environment.

**Material and methods.** Study and analysis of legal documents and modeling (model presentation).

**Results.** The philosophy of learning provides the opportunity to form personal qualities, communication skills, teamwork skills, competencies as well as developing skills and adaptability and mobility in terms of free movement of professionals in the European Union. This paper presents an
author's model of protocol for assessing practical skills and competences as well as the benefits of applying it.

Conclusions. The evaluation of the results of the training process is emphasized as particular element of the lecturer's work.

18) Hands hygiene and personal protective equipment – monitoring of their application in the nurses’ clinical practice

Greta Koleva – Ruse Uni, Bulgaria

Abstract:

Purpose. The health care–associated infections (HCAIs) are considered infections that are contracted by the patient, in connection to the medical service of another disease. The mechanism of transmitting microorganisms via contact is the most important and common one of disease transmission. This research aims to monitoring of activities requiring hand disinfection and use of personal protective equipment (PPE) by the nurses in a real hospital environment.

Material and methods. The research is held in May 2019, via a secretly structured monitoring in natural conditions at four wards in the University Hospital Kanev Ltd, Ruse, Bulgaria, on randomly selected weekdays.

Results. A total of 320 procedures of the nurse’s daily activity are being monitored, which are connected to infections with both blood and body fluids, as well as risk of looking after patients who are unable to look after themselves. In the Ward of Orthopedics and Traumatology, gloves are being used in all of the monitored activities, but after contacts with a patient, only the hands are being washed. When expected to be contaminated with blood and body fluids, the nurses don’t always use gloves, and also don’t always disinfect their hands before aseptic procedures, and when they bandage a wound.

Conclusions. The nurses don’t follow the requirements for hygienic handwashing and use of PPE. The goal of the current research was not about explaining whether this is due to lack of knowledge of cases where the use of gloves or protective equipment is required, and how and when the hands are washed.

Note:

Every participant, appropriately and correctly registered to attend and present an abstract of his/her expertise in the online sessions of the Jubilee 30-th Annual Assembly of IMAB, shall receive the Book of Abstracts, as well as the official Certificate of Attendance, with 25 academic credits for his/her participation, according to the requirements for attending a certified international forum with established accreditation, verified for IMAB.

Information for publications in the Journal of IMAB:

After completing of the 30-th Jubilee IMAB Assembly, the Board of IMAB shall discuss with the publisher of the Journal the possibilities to issue an additional number of the Journal with papers, presented in the online forum, and approved for publication. The decision and terms for applications for such issue of the Journal will be taken after the Jubilee forum.
Online forum

Certificate for Attendance

The Certificate is issued to confirm the participation of:

Authors/s/:

from:

in the online sessions of the Jubilee 30-th Annual Assembly of IMAB, performed and realized on 19 October 2020.

Section: Medicine, Dental Medicine, Health Management, Occupational medicine, Varia (please, underline the corresponding section)

Title of presented paper:

presented and included in the Scientific Programme of the Jubilee forum of IMAB.

The abstract of the presentation is published in the Abstract Book / Proceedings of the 30-th Jubilee Annual Assembly of IMAB.

According to the established rules for attendance in international scientific meetings, the 30-th Jubilee Annual Assembly of IMAB is registered and granted with the highest level of accreditation, providing 25 academic credits, given to the presenting participant in the online forum of IMAB.

President of IMAB:
Prof. Dr. Krasimir Metodiev, M D, PhD, D Sc med
19 October 2020
Greeting addresses:

The Secretariat of the Jubilee 30-th Annual Assembly of IMAB received greetings on the occasion of the Jubilee from:

The Mayor of Varna City,
The Rector of Varna Medical University,

До проф. д-р Красимир Методиев
Президент на Интернационална медицинска асоциация - България

ПОЗДРАВИТЕЛЕН АДРЕС

Уважаеми проф. Методиев,
Уважаеми колеги и приятели, членове на уникалната ИМАБ,

Приемете мояте най-сърдечни поздравления по случай 30-годишния Юбилей на Интернационалната медицинска асоциация България!

За 30-годишната си дейност ИМАБ остави име си като една от най-успешните неправителствени организации у нас. Дейността на тази Асоциация надхвърли далеч пределите на България, обединявайки колеги-медики от всички пет континента в името на медицинската наука и здравеопазването. Организираните от ИМАБ ежегодни асанбливи във Варна, с изключително активни научни и културни събития, отдавна се превръщаха в притежателен център за участие. Направените десятки дарения за български болници, изплатените с пълни стипендии над 150 български медици на дългосрочни квалификации в чужди университетски болници, организираните работни семинари с покани на водещи чужди експерти по различни актуални теми в медицината, изплатените над 60 български пациенти за консултации и лечение в чужбина, установените контакти и активни колаборации със сродни чужди организации, са ярък показател за многостранната дейност на Асоциацията.

Признателен изключително успешното взаимодействие на ИМАБ с нашата Ама Матер, защото това, което МУ-Варна реализира съвместно с ИМАБ остава, остава и ще остава широко дял в историята на Варненската медицина. Още повече, че Президентът на ИМАБ проф. д-р Красимир Методиев, е един от най-достойните професори на нашия университет.

С гордост мога да заяви, че дейността на Асанблеята е с изключително успешни резултати не само за Медицински университет - Варна, но и за българското здравеопазване и медицинската наука като цяло.

МУ-Варна организира, заедно с ИМАБ, първия в страната Уоркшоп по бистероризъм, заедно с Научния отдел на НАТО, с участието на над 45 водещи специалисти от всички държави членки на НАТО, и този форум бе една от предпоставките за приемането на България в НАТО.

МУ-Варна, съвместно с ИМАБ, създава и провежда уникалния ежегоден Семинар по контра тероризъм, с участието на водещи експерти от Израил и НАТО.

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МУ-Варна и ИМАБ включиха и провеждаха ежедневни едночасови семинари за стажант-лекарите по природни бедствия, аварии и тероризъм, който влиза в курикулума на студентите по медицина, единствено и само в МУ-Варна.
МУ-Варна и ИМАБ организират ежегодни работни семинари с водещи чужди гост-професори по актуални теми в съвременната медицина.

ИМАБ и издаваното от Асоциацията научно списание Journal of IMAB, което е с най-висок рейтинг и импакт-фактор от медицинските списания у нас, предоставя приоритетно на сътрудниците на МУ-Варна възможността за публикация на техните научни доклади.

Приемете моята, както и на колегите ми от МУ-Варна, искрена благодарност за дългогодишната съвсем успешно сътрудничество на ИМАБ с МУ-Варна, с пожеланието за успешни съвместни инициативи и през следващите 30 години! Вярвам в реализирането на нашите общни цели, защото те са водени от непрестанните ни стремеж към усъвършенстване. А както каза древният китайски философ „Който не напредва всеки ден, всеки ден изостава“.

Пожелавам на всички да си поставят високи цели, да ги преследват и да ги постигат!

19.10.2020 г.

Проф. д-р Валентин Игнатов, д.м.
Ректор на Медицински университет
„Проф. д-р Параскев Стоянов“ – Варна
The CEO BellPort Intl., Mr. Ofer Miretzky, Israel

BELLPORT CORP.

Greeting address

Dear Prof. Dr. Krassimir Metodiev, dear members of the big medical family IMAB (International Medical Association Bulgaria).

It is indeed my privilege and honor to send my warmest greetings to the 30th Jubilee of your unique association.
I am really thankful to the fact that I know Prof. Metodiev for over 15 years and I can share immediately my personal opinion that the success of IMAB throughout these three decades is his success and his achievements.

A number of excellent collaborations and plans between IMAB and Israeli institutions have been conducted and realized by the initiatives of Prof. Metodiev and I am pleased to have the chance to take part in some of the most important mutual projects, such as the annual workshops of counter terrorism, mass casualties and natural disasters, transfer of physicians between both countries, arranging of fellowships, donations and assistance for patients.

I am also happy to be invited and to attend most of the events, organized by IMAB, and I am truly embarrassed to see and feel the internal energy of the members of this association, especially when a number of initiatives have been directed to the young doctors, set to qualify in leading Israeli university hospitals.

The bridge between Israel and Bulgaria in the field of medicine, science, education and innovations is stable and active due to the leadership of Prof. Metodiev.
I know that IMAB is in good hands and wish him at the best in the coming next 30 years of IMAB.

Mr. Ofer Miretzky
CEO
Bellport Corp.
In addition, the following institutions and organizations have sent their greetings to the 30-th Jubilee of IMAB as well:

The Director General of Rambam University Hospital in Haifa-Israel,
The Chair of ICT, Herzliya-Israel,
The Dean of Bratislava Medical Faculty, Slovakia,
The Director of Belgrade Medical Faculty Hospital in Serbia,
The Chair of the Pharmacy Faculty in Iasi-Romania,
The Board of South-East European Conference Infections/Cancer,
The Chair of the National Red Cross,
The Chair of Varna Branch of Bulgarian Union of Physicians,
The Rector of Plovdiv Medical University,
The Rector of Shoumen State University,
The Dean of Medical Faculty, Pleven Medical University

and also from many Bulgarian and foreign colleagues and individual members of IMAB, from all five continents, participating in the annual meetings throughout the entire period of performance of the International Medical Association Bulgaria.

Warmest thanks to all for the collaboration, attribution, cooperation and active partnership!
Varna, Bulgaria,
30-th Jubilee Annual Assembly of IMAB (online forum),
18-20 October 2020