



XLV MEĐUNARODNI NAUČNI SKUP
XLV INTERNATIONAL SCIENTIFIC MEETING 27 - 30. SEPTEMBAR 2011. NIŠ

ДАНИ ПРЕВЕНТИВНЕ МЕДИЦИНЕ DAYS OF PREVENTIVE MEDICINE

ИНСТИТУТ ЗА ЈАВНО ЗДРАВЉЕ НИШ
PUBLIC HEALTH INSTITUTE NIS

УНИВЕРЗИТЕТ У НИШУ
МЕДИЦИНСКИ ФАКУЛТЕТ У НИШУ
UNIVERSITY OF NIS
FACULTY OF MEDICINE NIS

СРПСКО ЛЕКАРСКО ДРУШТВО
ПОДРУЖНИЦА НИШ
SERBIAN MEDICAL SOCIETY OF NIS

111 ГОДИНА ПАСТЕРОВОГ ЗАВОДА У НИШУ



BOOK OF ABSTRACTS



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Zbornik rezimea - Book of abstracts

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SESIJA MIKROBIOLOGIJA - MICROBIOLOGY SESSION

OKRUGLI STO – ROUND TABLE

WELCOME ADDRESS TO THE PARTICIPANTS OF THE ROUND TABLE: **ONE WORLD ONE HEALTH: INTEGRATED APPROACH TO THE SURVEILLANCE OF FOOD-BORNE INFECTIONS**

Ladies and gentlemen, dear colleges and participants,

First of all we would like to welcome all of you present in the room today, our invited lecturers, and especially our lecturers who came abroad and accepted to give not only plenary lectures for microbiology session, but also to contribute to the round table, as well as to all participants.

As it could be seen in the Program, there is a complexity of issues mirrored by variety of themes. Thus, making an order and composition of topics was not easy task, and a final choice was to follow the general principle of deduction and than to discuss single topics.

Foodborne diseases are worldwide problem, not only in non-industrialized countries, but also in developed world. It is common sense that those diseases are not leaving historical stage since the Beginning. Food is very suitable vehicle for a variety of pathogens: bacteria, viruses/prions and parasites. Despite all changes in incriminating chain 'from farm to the fork', the well-recognised food-borne pathogens such as *Salmonella* spp., *Campylobacter* and *Escherichia coli*, persist in its ability to cause diseases, evolve and adjust to the novel surrounding. Human foodborne pathogens are mobile, play the role in global pandemics, in large and dispersed outbreaks. They are carrying, transferring and acquiring new resistance genes. Sometimes, they are highly opportunistic, affecting only the most high-risk subpopulation. Nevertheless, the spectrum of foodborne infections has changed over time and some of well-established pathogens have been controlled or eliminated.

For the vast majority of foodborne diseases the etiological cause still is not known, and some more entities remain to be discovered. In addition, previously unknown food-borne pathogens, many of which are zoonotic or silent zoonosis, are constantly emerging. New pathogens can appear because of changing ecology or changing technology. Intestinal colonization of EHEC may be regulated by Quorum sensing, and this ability of microbes plays an important role in the colonization of microbes in food and on food processing equipment. Bacterial pathogens also arise *de novo* by transfer of mobile virulence factors.

Awareness and surveillance of viral food-borne pathogens is generally poor but the role of Norovirus, Hepatitis A, rotaviruses and newly arising viruses such as SARS should be emphasis. Also, hepatitis E virus is a potential emerging food borne pathogen and swine may serve as a source of infection in human. Tick-borne encephalitis virus infection, either thick borne or caused by consumption of raw milk, is an increasing trend in the industrialized part of the world.

Also, parasitic food-borne diseases are generally underrecognised, because of inadequate systems for routine diagnosis and monitoring or reporting which makes the incidence of human disease and parasite occurrence in food underestimated. Few of these diseases are effectively monitored in

foods, livestock and wildlife. Globalization of the food supply, increased international travel, and increase of the population of highly susceptible persons, change in culinary habits, aquacultures and improved transportation and distribution systems make them a health threat. The more demand for animal proteins in developing countries increases, the more increase the risk of zoonotic infections.

Waterborne parasites of great importance transmitted by contaminated food are *Cyclospora cayetanensis*, *Cryptosporidium*, *Giardia*, human fasciolosis, fasciolopsiosis. A few parasites have received renewed attention, such as *Toxoplasma gondii*, or reemerged, such as *Trypanosoma cruzi* and *Echinococcus* spp. Also, *Saccharomyces cerevisiae*, important in food industry can be an opportunistic human pathogen. Meat of reptiles, amphibians and fish can be infected with a variety of parasites, including trematodes, cestodes, nematodes, and pentastomids that can cause zoonotic infections in humans when consumed raw or not properly cooked.

The burden of diseases caused by food-borne pathogens remains largely unknown, nevertheless it is quite substantial. Data indicating trends in foodborne infectious are limited to a few industrialized countries, and even to fewer pathogens. Sustaining food safety standards will depend on constant vigilance maintained by monitoring and surveillance. Indeed, the rising importance of other food-related issues enhances planning in food security management. In addition, the pathogen populations relevant to food safety are not static.

The overall challenge is the generation and maintenance of dialogue and partnership between public health, veterinary and food safety experts, bringing together multidisciplinary skills and multi-pathogen expertise which is also the goal of this round table. Such collaboration is essential for monitoring the trends in the well-recognised diseases and in detection of emerging pathogens. Generally, there is an urgent need for better monitoring and control of food-borne infections using new technologies.

Our special thanks are given to Prof. Dr. Lai-King Ng, International Activities Advisor, National Microbiology Laboratory, Public Health Agency of Canada, World Health Organization, for offering stimulating keynote lectures.

We would also like to thank Prof. Dr Filipa Vale, Faculty of Engineering of the Portuguese Catholic University, for exchanging important ideas in application of cutting edge methodology.

Prof. Dr Biljana Miljković-Selimović

Prof. Dr Branislava Kocić

ONE WORLD ONE HEALTH: INTEGRATED APPROACH TO THE SURVEILLANCE OF FOOD-BORNE INFECTIONS

Lai-king Ng

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Food supply in Canada is considered to be safe and of high quality. However, food-borne infections continue to be a large and growing public health concern. These concerns are often due to outbreaks (local and international), natural disasters (local or international) and other international events. Some of the food-borne infections are preventable and controlled with well-coordinated and team efforts.

One public health strategy used to reduce the negative impact of food-borne outbreaks is integrated surveillance. In Canada, the food-borne surveillance system is designed to take into consideration of the determinants of food safety (globalization, trade, travel, natural and intentional disasters, consumer practices, animal health and consumer behaviour). It is important for the surveillance system be able to monitor the points of entry of pathogens into the Canadian food system “from farm to fork” so that proper interventions can be introduced to as a means of reducing the risk of exposure to food-borne pathogens. At the same time, when an outbreak has occurred, it is important that we can trace the contaminant back to the source of the problem so we can prevent infections in the future. A sensitive system is required to timely detection of outbreaks.

The National Microbiology Laboratory collaborates with epidemiologists in evolving the National Enteric Disease Surveillance Program to continually improve the sensitivity and timeliness in detecting outbreaks. These include implementation of PulseNet Canada which uses molecular tests to find clusters and employs an electronic information sharing and discussion forum. In addition, the Canadian Integrated Program on Antimicrobial Resistance Surveillance monitors the trends of antimicrobial resistance in pathogens from farm-to-human processes as well as monitoring the use of antibiotics in animals and humans. The information from the surveillance system is shared with regulatory authorities for them to use in their risk assessments and for translation into effective food safety policies.

Coordination and communication are important to for Canada’s ability to prevent and control food-borne outbreaks and to mitigate their public health and economic impacts. Scientific based food safety policies require translation of information from multiple sources. Network of networks system encourages the participants of professionals of different disciplines including microbiologists, epidemiologists, veterinarians, clinicians, risk assessment and risk management specialists, and policy- and decision-makers. The success of an integrated approach requires team work and mutual trust, respect, and strong agreements to collaborate.

MIKROBIOLOŠKI KRITERIJUMI U PREVENCIJI BOLESTI PRENOSIVIH HRANOM

MICROBIOLOGICAL CRITERIA IN THE PREVENTION OF FOODBORNE DISEASES

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Foodborne diseases are usually caused by pathogenic microorganisms such as bacteria, viruses or parasites, and their toxins, present in food. Most of these microorganisms can be found in the intestinal tract of healthy animals intended for food production. Therefore, food can be contaminated in all links of production from farm to fork. Contamination of food by pathogenic microorganisms can occur in contact with contaminated surfaces and of latently infected workers dealing with food. Since there is a risk of food contamination by pathogenic microorganisms or their toxins, it is necessary along the food chain to stop contamination by microorganisms or prevent their proliferation, eliminate microorganisms in foods by application of appropriate procedures and prevent recontamination of food already produced.

In order to achieve a higher level of protection of human health today, food is produced according to the principles of good manufacturing practices, good hygienic practices, good agricultural practices and the implementation of comprehensive integrated food safety systems based on hazard analysis and management of food safety at critical control points along the food chain.

One of the tools in the system of food safety are the microbiological criteria for foods. They provide a basis for making assessments about the acceptability of food as well as its production, handling of food during storage and distribution. Application of microbiological criteria is an integral part of the implementation procedures based on HACCP and other hygiene control measures.

According to the Law on Food Safety (Official Gazette of RS 41/2009) the Regulation is adopted on general and specific conditions of food hygiene at any stage of production and processing operations (Official Gazette RS No. 72/10) that contains only the microbiological criteria. In that Regulation two types of microbiological criteria are given: criteria of food safety and hygiene criteria in the production process. Food safety criterion is the criterion to determine the acceptability of the product or series of products applicable to products placed on the market. These criteria are not applicable to products intended for further processing by the entity in the food business. The criterion of hygiene in the production indicates an acceptable functioning of the manufacturing process. It sets the values for the parameters of contamination above which corrective measures are necessary in order to maintain the hygiene of the process in accordance with food law.

The Regulations set criteria for specific microorganisms important to food security, their toxins and metabolites, including *Salmonella* species and *Listeria monocytogenes*, for a particular category of food. For cheese and milk powder, evidence should be provided for enterotoxins in some cases, and for certain types of fish rich in histidine detection of histamine is planned. Microbiological criteria for hygiene in the production process generally involve determining the number of aerobic colonies, of *Enterobacteriaceae*, of *E. coli* and of coagulase-positive staphylococci. In examining the food a reference test methods specified in the regulations must be used. In addition to

microorganisms, the Regulation defined food category, a sampling plan, the threshold value, reference methods, the phase in which the criterion applies and measures in case of unsatisfactory results.

Application of microbiological criteria should ensure that the products are obtained under good hygienic conditions and are safe for consumption from a microbiological point of view, and to separate acceptable from unacceptable products or to separate acceptable from unacceptable manufacturing practices. In addition, microbiological criteria are intended to be used for validation and verification procedures of Hazard Analysis Critical Control Points (HACCP) and good hygiene practices.

Keywords: food, the threshold values, microbiological criteria, sampling, food safety

FOOD-BORNE DISEASES-THE HEALTH PROMOTION ASPECT

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Food-borne diseases are a widespread, growing and a preventable public health problem, both in developed and developing countries. The newborn, young children, pregnant women, elderly and individuals with weak immune system are more susceptible to food-borne illness. Much of this burden can be prevented through simply education techniques. The issues will review health promotion aspect of food-borne diseases. WHO "5 keys" strategy - a series of five simple actions which people can undertake at home or at work while preparing and consuming food was analyzed, as well as the basic approaches to health promotion (medical, behavior change, educational, empowerment and social change) in the case of the food-borne diseases. National authorities have been undertaking range of measures to strengthen food safety along the entire food supply from production to consumption to protect the large number of people. Knowledge, attitudes and practice regarding the factors associated with safe food handling are crucial for the prevention of food-borne diseases. This paper suggests that health promotion activities are effective in the control of the food-borne diseases.

Keywords: foodborne diseases, health promotion, food safety

HUMAN AND *H. PYLORI* DIASPORA: A HISTORY OF CO-MIGRATION

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Helicobacter pylori colonizes the human stomach and is associated with gastritis and peptic ulcer, among others. This ubiquitous association between the bacteria and humans has been attributed to be present since the origin of modern humans. This particular bacterium that co-evolved with humans presents clear phylogeographic differentiation among distinct geographic isolates.

The similar human and *H. pylori* geographic diversity and distribution suggests a co-evolution between bacteria and man, which can be used to understand human migrations (Covacci *et al.*, 1999). Several *H. pylori* world populations were identified based on the analysis of seven housekeeping genes identified seven (*atpA*, *efp*, *mutY*, *ppa*, *trpC*, *ureI*, *yphC*) and one gene associated with pathology (*vacA*) (Achtman *et al.*, 1999). These populations are hpEuropa, hpAfrica1, hpAfrica2, hpNEAfrica, hpAsia1 and hpAsia2 (Linz *et al.*, 2007). The *H. pylori* distribution pattern follows the human migration, which suggest that the human stomach colonization event occurred before modern man left East Africa (Linz *et al.*, 2007; Cavalli-Sforza, 2001; Covacci *et al.*, 1999). For example, strains of *H. pylori* isolated from Peru have a high homology with those from Asia, which supports the evidence that *H. pylori* was associated with the Asian host before the Asian man crossed the Bering Strait and settled in America, some 20,000 years ago. However, the region of the *cag*-PAI of Peru's strains has homology with those of Europeans counterpart, which seems to demonstrate that this pathogenicity island was acquired only after the spread of European strains across America, nearly 500 years ago (Devi *et al.*, 2006). This means that it is possible to study the human migrations through the genetic diversity of this colonizing bacterium. Besides these housekeeping genes other genes also present a clear geographic distribution. This is the case of *cagA* gene, presenting five types of deletion, insertion, and substitution motifs were found at the right end of the *H. pylori cag* pathogenicity island associated with different human populations (Kersulyte *et al.*, 2000); the *rpoB* gene, coding for a RNA polymerase subunit, which presents allelic diversity between Asian and non-Asian strains at the amino acid threonine, which is only present in Asian strains (two thirds of the Asian strains) and is replaced by the amino acid alanine in western originated strains. (Lee *et al.*, 2004).; the transposable element ISHp60 that presents a non-random distribution according to the geographic region, being more frequent in Latin America and rarer in East Asia (Kersulyte *et al.*, 2002), and for restriction and modification systems that present a pattern of geographic distribution (Vale *et al.*, 2009), among others. This pattern of co-migration is closely related with the transmission route of *H. pylori* that is yet to be ascertained. The difficulty in the identification of the transmission route may be due to the fact that more than one possible route of transmission may occur. The transmission route of *H. pylori* has two main models: i) the vertical transmission from parents to children within the framework of the same family, by direct person-to person contact, probably by gastro-oral or faecal-oral route; and ii) the horizontal transmission, by ingestion of contaminated food or water, or via intensive contact between infants and non-parental caretakers. Most likely in urban (developed) areas the vertical transmission represents the main form of transmission, while in rural (non-developed) areas, the horizontal form appears to play a major role, but not to the exclusion of the first (Vale and Vitor, 2010).

CAMPYLOBACTER: ONE WORLD

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Campylobacter belongs to the Kingdom: Bacteria, Phylum: Proteobacteria, Class: Epsilonproteobacteria, Order: Campylobacterales, Family Campylobacteraceae, and Genus: Campylobacter which comprises of 17 species. Twelve of them are related to human disease. Most of the infections are due to *C. jejuni* and *C. coli*, while *C. upsaliensis* and *C. lari* are rarely isolated in patients. Although a usual clinical presentation is mild form of disease, in some patients bacteria can enter the blood stream and cause a life threatening infections. After acute onset of disease, chronic postinfectious sequels can be neuromuscular (Guillain-Barré Syndrome, Miller Fisher Syndrome) and musculoskeletal disorders, inflammatory bowel disease, immunoproliferative small intestinal disease.

What ecological niches campylobacter can populate? Campylobacter has been identified in surface waters such as lakes, rivers and streams. Survival of Campylobacter in environment outside of warm blooded animals is poor, but Campylobacter can multiply in amoebas which can be the way of sustaining the bacteria. Its presence was detected in samples of recreational waters in marinas, too. Also, campylobacter is often isolated in shellfish and mollusks being the obvious threat for human health as well as in sea mammals: otters, elephant seals and dolphins.

Campylobacter spp. have been found in wide verity of wild bird species in domesticated birds such as broiler, turkeys, geese, ducks, ostriches and quails. Campylobacter have been detected in migrating species of waterbirds. Also, Campylobacter have been recovered from a broad spectrum of wild animals. Nevertheless, relatively small number of campylobacter strains isolated from wild bird and animal species share clonal similarity with strains isolated in humans and chickens. Campylobacter have been isolated in cat and dogs, in adult animals and puppies as well in pat and stray dogs. Also, it was detected in the soil and manure samples, and vegetable samples from farms.

Poultry products account for the majority of Campylobacter infections in humans. Campylobacter is an often colonizer of pigs with *C. coli* as predominant species. In cattle, prevalence of campylobacter can be different.

Which mechanisms are implicated in campylobacter adaptation to wide range of hosts and environments? Campylobacter is designated as fastidious microorganisms, but many findings indicate that it responds quite successfully to stress, high and low temperatures, oxidative stress, osmotic stress and starvation. Those characteristics seem to enable survival of campylobacters in different food storage conditions.

Very early, poultry was identified as a risk factor for Campylobacter infection. Other risk factors are: consumption of undercooked pork, beef, turkey, meat or sausage prepared at a barbecue, occupational exposure to raw meat or animal carcasses, drinking or handling raw/contaminated milk, eating barbecued food, raw shellfish. Important risk factors are also travelling abroad, contact with diarrheic animals, and pets, and swimming in natural waters. Additional risks may be prior use

of antibiotics and proton pump inhibitors, HIV infection, severe primary hypogammaglobulinemia without IgA production, diabetes mellitus.

While most infections are sporadic, outbreaks are relatively rare events. Outbreaks are usually caused by contaminated water. Also, contamination of raw unpasteurized milk can be the reason for outbreaks. Over time the reported sources of outbreaks have changed and foodstuffs tend to be implicated in approximately 50% of the cases.

Under-ascertainment of infectious intestinal disease is well-recognized, and the true population burden is greater than that given by national surveillance programs. Of paramount importance to control the campylobacteriosis and consequences of the diseases, should be control in the chain 'from farm to table'.

MOLDS – CURE OR HEALTH THREAT

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Always present in the environment of man, they have been used for centuries in food preparation, but also for therapeutic purposes. Today, they have great importance for applications in biotechnology (production of alcoholic beverages, baked goods, cheeses, antibiotics, enzymes).

P. chrysogenum is a source of materials in the industry of penicillin. Fungi-molds are used in the production of oriental foods, juices, cheeses and other fermentative products. In Japan, Taiwan, Korea, *Aspergillus oryzae* is used to make sauces, for example: soya sauce, miso souce, and others. In the same time, it also can cause disease in humans and animals, by the production of their toxins (mycotoxins), and by biodegradation of different materials.

Today it is known more than 300 types of microfungi wich can produce mycotoxins, secondary metabolites that cross the substrate on which mold was developed.. Entering the food, mycotoxicosis can cause illness – mycotoxicosis in animals and humans. They have a cumulative effect, symptoms of disease are difficult to detect in its early stages. Aflatoxin is a mycotoxin known cancerogen substance of biological origin. Four most important mold: *Aspergillus*, *Penicilium*, *Fusarium* and *Stachybotrys* are used to produce chemical weapons.

Mycotoxins are completely insensitive to the normal processing of food (freezing, refrigeration, cooking, smoking, drying, grinding) and all previous attempts to eliminate mycotoxins ended in the usual way - in failure.

HELMINTHES AND FOOD

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The mission of sanitary parasitology is to stop the transmission of zoonoses through valid diagnostic, proper therapy, treatment, prevention and control of parasitic infections.

Helminthes can be present in the meat of animals that are their definitive or transient host, or because the food contamination in consequence of bad practice.

Helminthes are present in many animals. Most of them are microscopic, do not mature in food, can cause a foodborn diseases but do not cause a foodborn intoxications.

In our region, meat can be infected by *Taenia spp. (solium, saginata)*, *Trichinella spiralis*, *Toxocara canis* and *Diphylobotrium latum*. However in imported food (fish and mollusk) many infective species of helminthes can be present (*Clonorchis spp.*, *Anisakis spp.*, *Angiostrongylus spp.*, *Capillaria spp.*)

Veterinary control of meat is the most important preventive measure to prevent transmission of helminthiosis. Beside this, parasitic food control include catering from reliable purchasers, cooking meat on proper temperature, properly freezing the sea food so it can be served raw and using the safe water for rinsing and preparing the food

SESIJA HIGIJENE – HYGIENE SESSION

TEME: ISHRANA I ZDRAVLJE - ŽIVOTNA SREDINA I ZDRAVLJE
TOPICS: NUTRITION AND HEALTH – ENVIRONMENT AND HEALTH

UVODNA PREDAVANJA
INVITED LECTURES

JAVNO ZDRAVLJE – OVDE I SADA
PUBLIC HEALTH – HERE AND NOW

Marija Jevtić

University of Novi Sad, Faculty of Medicine

Nowadays when public health has been highlighted again as an issue of interest of health, research and scientific public circles, we are being challenged by the problems associated with organization and functioning of public health sector in our country.

According to the well-known definition given by the World Health Organization, health is not only the absence of an illness but it is a complete mental, physical and social well-being. However, public health is also defined as both the science and practice of health protection and promotion within a local community through preventive medicine, health education, infectious disease control, sanitary surveillance and monitoring of environmental hazards. Public health is a science and an art combined together to promote health, prevent disease and prolong life by organized efforts exerted by a community.

In addition to classic fields, new public health endeavors to cope with the problems related to just utilization of public health services, environment protection, public health policy, the association between health and economic development.

Within its specialties, preventive medicine tries to overcome challenges in the respective fields. However, not a single preventive medicine branch can achieve an effect by acting individually and separately. New public health synthesizes the traditional approach with the management of health and public health services and actions in a community. This new approach to public health reflects the necessity for some changes in the organization and ways of solving public health challenges and promotion of population health.

In order to improve the level of population health it is necessary to undertake a multi-sector action with the special emphasis on environmental factors such as housing conditions, nutrition, working conditions, safe drinking water supply, proper waste disposal, and environment pollution control. Specific measures should be oriented towards prevention of certain diseases, production of safe food, application of protective measures for preventing both accidents at work and traffic traumatism, etc. Population health is influenced by many physical, behavioral, social, cultural, economic and other factors, which are present in the urban environment.

Education of experts engaged in public health requires multi-disciplinary approach and connection between education and other relevant fields in order to define professions and planned documents which should give support to further creation of work places in various institutions that would contribute to the same objective by creating preconditions for healthy life of good quality. Education of experts in the field of public health is of utmost importance because their participation in monitoring the environment and assessing risks is necessary, besides the close co-operation with non-medical sector and experts from other fields important for population health.

The existing network of public health institutes, which has been being developed for a long time, represents the basis for the introduction of modern, multi-disciplinary and inter-disciplinary approach for tackling the public health issues.

The law on public health is a guideline for decision makers and gives the basis to public health activists, i.e. public health institutes, to act in the fields of physical, mental and social health of the population; health promotion; environment protection and population health; working conditions and population health; health management, quality and efficacy of the health system; integrated information system of public health for monitoring, assessment and analysis of the population health status and reporting to the authorities and public; public health in natural and other disasters and states of emergency.

The health balance and health potential integrate important aspects of socio-ecological approach and, being what they are, they represent the key dimensions of the health definition which states that health is the expression of two inter-related aspects of socio-ecological system, the health balance (which implies the maintenance of physical, mental and social balance) and the health potential (as a capability of an individual to interact with the environment) in the terms of maintaining the dynamic equilibrium, which has the sustainability in time in its foundation.

Special attention should be given to environmental factors, such as: housing, nutrition, safe drinking water supply, proper waste disposal and control of environment pollution. Specific measures should be directed towards prevention of certain diseases, such as hygienic food production, in order to prevent spreading of diseases by food, administration of protective measures for prevention of accidents at work, etc.

Therefore, the elements of population health potential are: nutrition, quality of the environment, quality of housing conditions, employment, income and social insurance, proportion of funds allocated to health promotion, social protection, access to health, educational and other public services, efficacy of health policy and administration.

Nowadays, risks cannot be avoided, but it is important to reduce them to their minimum and to nourish all the components in the community which make the life of both an individual and the population in general as good as possible. In spite of great diversity of health problems, both developing and developed countries have to struggle with difficulties in providing equal possibilities in achieving the desirable level of health, which represents an important indicator of the level of development of the country concerned.

The successful changes in the habits and style of life can also be achieved through the co-operation of health sector with other services and institutions of non-medical sector, which have an indirect impact of health. The health sector has a role of initiating actions in health promotion, but non-medical sectors have executive roles in such actions. A very important part of the strategy in health promotion is to make a change in behavior, to accept healthier style of life, healthy nutrition,

regular physical activity, moderate alcohol consumption and to stop smoking, which could be achieved only through active endeavors of the whole community.

Consequently, each level of the authorities should determine their own priorities and action plans according to the defined criteria and principles of public health. Without healthy population, the development of society and sustainable development are not possible, and, therefore, priority activities of every community should be directed towards the actions resulting in health promotion and higher quality of life of all categories of population.

The multi-sector co-operation within the concept of health promotion at all levels of organization of the society implies numerous elements which are to be correlated within the mutual strategy aimed at maintaining and promoting population health and sustainable development (education, social and cultural sector, trade and agriculture, economy and industry, finance, housing, energy supply, transport, traffic, environment, health and social protection, the best available technologies).

Serbia is also facing big environmental problems and challenges in the field of public health care, and within social, economic, scientific, educational, legislative, institutional, and other spheres of life, as well as in the field of sustainable development and urban planning. Many other documents important for the implementation of the Strategy of sustainable development of the Republic of Serbia have been prepared and they emphasize the correlation between the environment and social aspects of sustainable development. The Strategy for reducing poverty in Serbia is the first multi-sector document, having the character of a programme, which has been formulated by the Government of the Republic of Serbia with the participation and contribution of the representatives of a great number of various governmental and non-governmental organizations and institutions. Numerous documents and strategies, which have been adopted to tackle the promotion of health care system, are of great importance for the local community and its development. A part of these strategic documents is the health promotion among the citizens of Serbia and the prevention of risk factors, such as smoking, inadequate nutrition, physical inactivity and excessive alcohol consumption as well as anti HIV/AIDS campaign and problems regarding food safety. The Environment and Child's Health Action Plan has been adopted by the Government of the Republic of Serbia to provide necessary pre-conditions for the good quality of life of future generations in the urban environment.

The current approach to public health implies the following:

- Monitoring health status to identify community health problems,
- Diagnosing and investigating health problems and health hazards in the community,
- Evaluating effectiveness, accessibility, and quality of personal and population-based health services,
- Assuring competent public health and personal health care workforce,
- Informing, educating and empowering people about health issues,
- Mobilizing community partnerships to identify and solve health problems,
- Developing policies and plans that support individual and community health efforts,
- Enforcing laws and regulations that protect health and ensure safety,
- Connecting people with required personal health services and assuring the provision of health care when otherwise unavailable,

- Impacts Assessment in Public Health, Policy and Quality Assurance

In order to achieve positive results in the field of public health in near future it is necessary to:

- get prepared for necessary changes in the process of education of experts, changes in the curriculum of undergraduate, specialist, master and doctor studies, competence and skills,
- ensure continuity of work in laboratories in charge of analysis of public health indicators,
- ensure adequate and continuous financing of public health programs,
- bring our legal and sub-act regulations into line with those of the European Union,
- ensure close co-operation of several ministries which share competence and jurisdiction in certain public health fields,
- Ensure a proactive approach in the co-operation in international processes in the field of public health by developing institutional capacities within our public health institutes (environment and health, protocol on water and health, the European Environment and Health Information System (ENHIS) indicators, implementation of CEHAP, etc).

The development of an individual and the society in general is ensured by providing better health-related information, education and skills. Health can be promoted by concrete, efficient and constant social activities, by determining priorities, making decisions, planning and implementing strategies for improving health and by enabling communities to dispose of their money and to control their own activities and purpose.

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SPECIFIČNOSTI ISTRAŽIVANJA UTICAJA RUDARSKE INDUSTRIJE NA ŽIVOTNU SREDINU I ZDRAVLJE ČOVEKA
SPECIFICITIES OF INVESTIGATING THE IMPACT OF MINING INDUSTRY ON LIVING ENVIRONMENT AND MAN'S HEALTH

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Water, air and soil are main factors of biosphere, i.e. environment in which life takes place. Air and soil are exposed to pollutions that affect them. Those pollutions can emerge from natural sources or under impact of human activity (artificial pollution), and by their composition they can be organic and non-organic. One of the widely present non-organic pollutions is heavy metal pollution, and one of the main sources of this pollution is mining industry.

There are evidences on the beginnings of exploitation and processing of ores, on the territory of today's Serbia, since BC. Expressed mining-metallurgical activities have existed in the period of Middle Ages (1300.-1500.). Development of the system of contemporary industrial production has begun more than 80 years ago. From the very beginning, and in later development of industry, there wasn't sufficient attention paid both on industrial zones and ecological environment. Thus a paradox was reached that particular inhabited places are located between industrial plants or landfills, or that even the industry was developed in urban areas. This has resulted in rather complex and critical state of living environment in industry development areas.

Current situation is such that one number of industrial plants still works, while the other are closed and do not function. However, consequences of this institution's work, for the environment and man's health, still can be noticed in areas where the production is stopped. Through primary emission, this industry produces pollution that represents primary air pollution, while through industrial landfills (so-called tailings) it produces primary pollution of soil.

Pollution from air, by deposition of hard metals, is transferred to soil and water, and pollution from soil, through eolation and flushing, is transferred to air and water. In that way, this pollution, secondary, becomes pollution of entire biosphere and all its factors, through which it affects man's health. Toxic effects of heavy metals can be: acute, chronic and subchronic. Factors that affect toxicity are: interaction with essential elements (e.g. Pb/Ca,Fe; Cd/Fe), formation of metal-protein complex (metallothioneins, ferritin), age of the organism, life style, immune status, etc.

There is no unique attitude about the limit between density and atomic mass from which metals can be classified in a group of hard metals. Harmful effects on living environment and a man are, however, entirely clear. Today's level of hard metals in nature, almost entirely, is a result of human activity (from mining industry and metals processing, other industries, urban areas, agriculture...). Hard metals are resistant to natural degradation and they are characterized by phenomenon of bioaccumulation, from the simplest organisms to more complex ones. In that way a man, who is at the top of food chain, is the one who is the most exposed to heavy metals bioaccumulation. This implies that a man will largely be exposed to its negative, toxic effects. The first three places on a rank list of risky substances are occupied by heavy metals – As, Pb and Hg, while ten heavy metals are found within the first hundred.

The best insight into specificities of investigating the impact of mining industry on living environment and man's health can be achieved through the presentation of the project "Industry of lead and zinc production, consequences on population and regulation and protection of ecosystem" that is implemented by eleven member-institutions in Ministry of Education and Science of the Republic of Serbia.

As goals of this project, the following ones were set:

- Determine the level of environmental pollution by activities of mining industry
- Determine health condition of persons exposed and point to specificities of testing health condition.
- Examine the connection between the level of environmental pollution and indicator of health condition of persons that live in that environment.
- Determine proposed measures for the promotion of living environment and health of population.

In order to create a possibility for implementation of goals mentioned and provide complete scientific coverage, six scientific institutions were included in research: Medical Faculty, Faculty of Technical Sciences, Faculty of Natural Science and Mathematics and Faculty of Agriculture of the University of Pristina – Kosovska Mitrovica and Medical and Technological Faculty of the University of Belgrade. From the aspect of the user of research (participant) the following were included: Municipal Assembly of Zvecan, Department of public health Pristina-Kosovska Mitrovica, Health Centre Zvecan, public utility company Standard and public utility company Vodovod.

By touring the research area, it was determined that critical points for the environment and population's health in the area of Kosovska Mitrovica, Zvecan and Rudnica are industrial landfills of lead and zinc, while in the territory of Leposavic municipality, in addition to industrial landfills, critical points are also active parts and production plants of the industry of lead and zinc production.

After obtaining an insight into examined area and defining critical points, conditions for defining measuring points for sampling water and biological material are created. Firstly, eight measuring points for sampling the water were defined. Following measuring places for sampling the water from the river of Ibar, places for sampling vegetables and grains (as biological material) are also defined and specific thing was that each place for sampling the water had to be followed by two places for sampling the crops. One place that is in alluvium of Ibar and it is irrigated from the river and the second place that is far away from Ibar and there is no possibility for it to be irrigated from Ibar. Such an approach to the research enables us to observe dispositions of heavy metals pollution from rivers.

Procedure of examining health condition of the population can be carried out in many different ways, depending on characteristics of data which we strive for in the research.

In order to carry out the estimation of the impacts of environmental factors on population's health in the area examined, preliminary research was carried out within which a sample of population was formed and on this sample testing was carried out and the concentration of lead in blood was determined. 50 µl of blood was taken for the analysis, and concentration of lead was determined on a device "ESA-LEAD CARE ANALYZER", product of American company "Magellan biosciences company" with original reagents and range of sensitivity from 0-650 µg/l. Due to increased concentration of lead in the air, analysis of samples in the field hasn't provided a

sufficient level of reliability in results obtained. As for determination of lead in blood by device "ESA-LEAD CARE ANALYZER" we need a certain time period, there was a possibility for particles of lead from the environment to reach into the sample if the entire procedure of measuring would be carried out in camps. This problem was solved by creating a possibility to take blood samples at the spot in lead-safe conditions. Blood samples, taken in camps were transferred after collection into the premises of the Centre for lead at the Department of public health where, in lead-safe conditions, concentration of lead in them was determined.

By random choice of respondents, four groups were formed:

I group: Workers in lead industry (of different professions),

II group: Health workers of Health Centre,

III group: Children aged up to 6 in Gypsy camp,

IV group: Children aged up to 6 from preschool institution.

For concentrations of lead in blood, standards of WHO for professional and non-professional exposition are expressed in micrograms per dl of blood. The proposal when it comes to non-professional exposition of sensitive categories of population, which are children up to the age of 6 – III and IV group of respondents, is separately applied.

By statistical analysis of groups examined which differ according to the possibility of contact with unprotected lead source, we have determined that there is a significant difference in concentrations of lead in blood. It is especially stressed in groups that are not professionally exposed to lead, especially group II, as well as group III. Differences that we have encountered between the groups III and IV are highly significant and conditioned by different life habits, hygiene and other conditions of living.

Mentioned results on the sample of population have shown the feasibility of one such project. The appearance of numerous spades in examined groups, especially in those that are not related neither personal nor family anamnesis for lead industry, points to accidental contacts with unprotected source and contamination.

We need to have in mind that concentration of heavy metals in blood and biological material is not always an adequate indicator of their toxic effect on human organism. For that reason, it is necessary to carry out tests of respondents, as well as analysis of biochemical indicators, such as, for example, the level of delta-aminolevulinic acid in case of lead poisoning etc.

For the estimation of health condition, we can also use different types of questionnaires – surveys. Those can be standardized questionnaires or questionnaires that research team should create by itself. If standardized questionnaires are chosen, it is mandatory to verify whether they are subject to licensing because the use of non-licensed questionnaires can endanger the results of entire research. In our research, we have predicted the use of both types of questionnaires. Questionnaire that we have created is based on the presence of sign and symptoms of chronic saturnism, where a level of lead edge, colic, paresis and paralysis was determined in respondents. For the self-estimation of health condition of respondent, we have predicted the use of SF-36 health survey (licensed variant in Serbian) through which we can obtain values for each of eight scales: physical functioning, limitations in achievement of life roles due to the issues of physical health, body pains, general health, vitality (energy/fatigue), social functioning, limitations in achievement of life roles due to emotional problems and psychological health. From the scales mentioned, we can obtain two

basic scores: score of physical components of testing and score of psychological components of testing.

Quality of research in this field can also be contributed by the use of computer programmes that are based on mathematical models – simulations, such as programme WRPLOT™ 7.0.0 (Wind Rose Plots for Meteorological Data) in which it is necessary to enter data on intensity and direction of wind in the research area, and which can, in addition to usual presentations of wind rose, to connect itself, via Internet, to Google Earth where in conjunction with that programme it provides a projection of the disposition of pollution from source to the environment, taking into consideration geographic parameters as well. Obtained projections can help us reduce the number of errors, to more correctly direct our research and undertake adequate measures towards living environment and population in areas where harmful effects are the most expressed.

Having in mind the complexity of studying the impact of mining industry and metals processing on living environment and a man, as well as range of activities that need to be performed, it is completely clear that multidisciplinary approach is the only one that can enable proper implementation of such studies.

**USMENE PREZENTACIJE
ORAL PRESENTATIONS****BEZBEDNOST VODE ZA PIĆE-VODA SA ČESME ILI FLAŠIRANA VODA
SAFE DRINKING WATER-TAP WATER OR BOTTLED WATER**

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Packaged (bottled) water include water for human consumption, packaged and sealed in bottles or other containers to proper sanitation. Serbia's population uses drinking water from tap-end points of the water supply system which is under the strict control of authorized institutions. Although bottled water is not an alternative to tap water (consumption in our country is only 70 liters per capita per year), large companies are advertising that tap water is not healthy, and that is real good commercial for the bottle in the world. There are two rules to perceive this issue In Serbia. Standards on hygiene of drinking water from 1998 compared to the liberal norms of the 2005 Regulations on quality and other requirements for natural mineral, natural spring and table water (which is in line with the EU norms) messing around in the market. In Slovenia, a distinction is made between natural mineral water and spring water which used for drinking and as such must conform to drinking water. In this paper we compare different legal standard regulation issued by the two ministries, as well as regulations of neighboring states. Monitoring of bottled water, regulated by the Ministry of Health and provides us with insight into the validity of domestic and imported bottled waters. On the other hand, continuous monitoring of drinking water from municipal water supply have proved Public Community Firm work to ensure the safe health drinking water.

Under the food safety, drinking water and water in containers, the jurisdiction of the Ministry of Health. By-laws on safety of water intended for drinking, along with the harmonization of regulations with EU norms, but to preserve their own values, the mission of health professionals involved in water hygiene.

Keywords: drinking water, safety, tap water, bottled water

ODREĐIVANJE SADRŽAJA TEŠKIH METALA U SUSPENDOVANIM ČESTICAMA

DETERMINATION OF HEAVY METALS IN SUSPENDED PARTICLES

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The atmosphere is discharged millions of tons of various pollutants, gases, vapors, particles from different sources (households, power and industrial plants, metallurgy, transport), and they emit a large amount of different air pollutant. Suspended particles are a complex mixture of organic and inorganic materials, whose composition depends on the emission sources, and the length of survival in the air depends on the size, shape and density of particles.

According to the Decree on conditions and requirements for monitoring air quality (Official Gazette of RS 75/2010 br.11/2010 i) the level of air pollution is monitored by measuring the concentration of suspended particulate matter (PM 10 and PM 2.5) and further analysis of suspended particles in the PM10 the heavy metals lead, arsenic, cadmium and nickel. The procedure involves taking sample preparation, retrieval, storage, transportation to the laboratory where they perform physical-chemical testing of samples. The results of measuring the concentration of pollutants compared with the prescribed limit, tolerance and target values. The measurements were performed with the sampling-clock for ten days a month, from January 2011. until July 2011., the points on the Institute of Public Health-Niš, and determined the concentrations of PM10, lead, arsenic, cadmium and nickel.

Threshold of 24 h sampling for PM10 fraction of suspended particles is 50 $\mu\text{g}/\text{m}^3$, while the tolerance for the same parameter value 75 $\mu\text{g}/\text{m}^3$. For the same period of tolerance and righteousness limit for lead at 1 $\mu\text{g}/\text{m}^3$. In the first three months 2011.the concentration of the fraction of PM10, crossed the border in three cases and the tolerance value, the concentrations of heavy metals remained far below the limit values and tolerant.

Keywords: air pollution, suspended particles, heavy metals

NOVINE U UPRAVLJANJU MEDICINSKIM OTPADOM U SRBIJI NEW DEVELOPMENTS IN HEALTHCARE WASTE MANAGEMENT IN SERBIA

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Healthcare Waste Management in Serbia is a significant element of healthcare services quality. Different waste streams generated in the course of healthcare, both in human and in veterinary medicine, require the application of different practices defined in the national legislation, harmonized with regulations and good practice guidelines of European countries in this field. This treatise will describe the need for applying new technologies in segregation, collection and disposal of healthcare waste streams in Serbia, quantities of healthcare waste generated in day-to-day activities of healthcare institutions and veterinary organizations, as well as basic recommendations for the improvement of service quality in this field, as a part of the integral approach to healthcare waste. Activities of the "Technical Assistance in Healthcare Waste Treatment in Serbia", funded by the EU and implemented, with the cooperation of three ministries (Ministry of Health, Ministry of Agriculture - Veterinary Directorate and Ministry of Environment, Mining and Spatial Planning), by Cowi and Euro Health Group, pertain to improvement of waste management practices for this type of waste, in cooperation with healthcare institutions and veterinary organizations who contribute through their active participation. The study of generation of different categories in these waste streams and their respective quantities demonstrated the need for applying different technologies and practices, in line with the national legislation and recommendations provided in EU Directives in this field. Monitoring the generation of healthcare waste is one of regular activities of healthcare and veterinary institutions, lead by the National Institute of Public Health „Dr Milan Jovanović Batut“, as well as the Environmental Protection Agency, while the improvement of work quality in this field is a continual activity requiring a multidisciplinary approach, through which professionals of different profiles contribute to the improvement of this process. The treatise will present the results of the study of basic healthcare waste streams production in Serbia, as well as technologies for their handling and disposal in line with European guidelines. This paper has shown that Serbia produces approximately 5000 tons of infectious healthcare waste per year in healthcare institutions, as well as 57 tons of pharmaceutical waste. Generation of pharmaceutical waste is declining, which is attributed to improved procurement planning in healthcare services. Historical pharmaceutical waste in Serbia comprises over 200 tons of total waste accumulated over a period of several decades. In further improvement of waste management practices, an upcoming challenge is cytostatic waste, as well as chemical waste originating from healthcare and veterinary institutions.

Keywords: healthcare waste, rate of healthcare waste production, healthcare waste treatment technologies, healthcare waste management

**KVANTITATIVNI POKAZATELJI UPRAVLJANJA INFEKTIVNIM
MEDICINSKIM OTPADOM U MESTU CENTRALNOG TRETMANA
QUANTITATIVE INDICATORS OF INFECTIOUS MEDICAL WASTE
MANAGEMENT IN A CENTRAL TREATMENT POINT**

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This article describes outcomes of infectious waste management (i.w.m.) in three healthcare facilities in Serbia, Belgrade: two primary health care centers (PHCs) and the National Institute of Public Health (NIPH) in the year 2010. At the same time, NIPH is a generator and a Central Treatment point of i.m.w. The i.m.w. from PHCs is generated during outpatient visits, while the only source of it within IPHs are microbiological test of human tissues, food staff, and environmental media. The results show that waste generation rate for the PHCs is in line with the ones measured during preliminary tests in 5 Belgrade PHCs (WGR= 0.01kg/outpatient visit), undertaken for the purpose of waste management planning, temporary storage, transport and treatment undertaken in 2007. The results show that WGR for the NIPH is a ten-fold value compared with WGR for the PHCs. Values for a daily waste generation in three facilities are: PHC Savski Venac 16.5 kg/day; PHC Stari Grad 24.75 kg/day, and IPHS 46.94 kg/day.

Keywords: Infectious waste, waste generation rate, outpatient visit, microbiological tests

**KONTROLA KVALITETA PREHRANBENIH PROIZVODA OD UVOZA I
DOMAĆEG PROIZVODSTVA
QUALITY CONTROL OF FOODSTUFF FROM IMPORTED AND
DOMESTIC PRODUCTION**

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The aim of the paper is to display the foodstuff accuracy in terms of quality from imported and domestic production in the Republic of Macedonia. Material and method of work. Data are obtained from the Institute of Public Health - Skopje and related to the period of 2009. It is applied a descriptive and statistical analysis of the results. Results. There are analyzed 10,644 samples, where 6693 are from imported and 3951 from trade and domestic production. Deviations in relation to quality standards are noted in 1.2% from tested samples for quality, where 0.5% from imported, and 2.1% from trade and domestic production. The highest percentage of quality deviation has the milk group (11%) dairy products (4.6%), meat products (7.5%). There is a high percentage of samples 9% and spices group with 4% at wheat group, flour and flour products. These results refer to the products from domestic production and trade. Imported cooking salt displayed a high percentage of irregular samples (9.6%), which justifies the control of this product. Conclusion. The control of foodstuff should be strengthened from imported and domestic production in terms of quality, in order to ensure safer food for the population.

Keywords: control, quality, foodstuff

**HIGIJENSKO - SANITARNI NADZOR U OBJEKTIMA DRUŠTVENE ISHRANE
U SRBIJI
SUPERVISION ON HYGIENIC SANITATION SITUATION IN OBJECTS OF
SOCIAL EATING IN SERBIA**

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In this review we show status of objects of social eating which are examined during 2002. until 2010. by the experts from institutes for public health in Serbia, as a part of Programme for protection population of contagious disease, with the aim to make lower risks which may lead to contagious disease. Data is processed and analysed in Institut for Public Health of Serbia, according to methodology which accompany Decree for protection population of contagious disease. Four thousands objects were included in our research. Almost 50% of objects in 2010. were satisfying the standards of Hygienic sanitation, comparing with 2002., when this percent was 30,3. In 2010. 43 440 smears were examined, while in 2002. that number was 25 831. But the percent of infectious smears in 2010 was lower than in 2002. The same situation was with the examination of food. In 2010. the greater number of food was examined (16 977) , than in 2002.god. (13 356), but the percent of food that was not food safe was much lower (3,5%) than in 2002.god. (11,3%). Comparing with results from 2002. and according to trends status in objects of social eating in Serbia is improved. Improving and harmonising methodology in this area is needed, also monitoring and supporting forcing implementation of corrective measures.

Keywords: restaurants, social eating, smears, food

SLEDENJE BIOLOSKE VREDNOSTI ISHRANE U PREDSKOLSKIM
USTANOVAMA U PODRUCJU CENTRA ZA JAVNO ZDRAVLJE BITOLA U
PERIODU 2005-2010G KAO DEO STRATEGIJE PREVENCIJE MALNUTRICIJE
KOD DECE

**BIOLOGICAL VALUE OF NUTRITION IN PRESCHOOL INSTITUTION IN
AREA OF CENTER FOR PUBLIC HEALTH BITOLA BETWEEN 2005-
2010Y. AS PART OF A STRATEGY TO PREVENT MALNUTRITION IN
CHILDREN**

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Goal: Nutrition has a fundamental importance in modern public health as one of the most important factors for health of individuals and communities. The goal of this effort is to point to the efforts of public health to look at values and to make recommendations for daily energy and nutritional needs of children of preschool age children and create a healthy eating habits that were the basis for the future adolescent and adult development.

Material and Methods: Data were used Centers for Public Health Bitola in the period 2005-2010g for the biological value of nutrition in preschool institutions: energy and nutrient composition of food, Analysis lists of meals and quantitative diversity of food expressed in units. Comparatively, an analysis of the nutritional status of children who have “all day stay” status in the institution.

Results: Of the surveyed 120 meals (20 complete meals for each year for 350-450 consumers) noted the surplus (Na and K) and deficit (Fe, Mg, Zn) of some nutrients. They noted the deficit and the total energy values and low diverse vegetables. Analysis of the nutritional status of children shows 22% of children with increased body weight.

Conclusion: The development of national health strategies for feeding must be the result of multi-sectoral cooperation. The quality of nutrition and the use of innovative methods of enriching food products with essential vitamins and minerals must be the result of continuous analysis in order estimate the development of children, and health education to enable children to gain healthy eating habits and to prevent diseases caused by malnutrition.

POTREBE ZA UNAPREĐENJEM ISHRANE KOD STARIH LICA THE NEED FOR IMPROVING THE NUTRITION OF THE ELDERLY

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Elderly people have very specific dietary needs, which are conditioned by their needs for energy intake, as well as the characteristics of their health. In addition to the health recommendations in relation to the characteristics of nutrition in the late period of one's life, the greatest segment of this population is not acquainted with any details related to eating healthy in old age, and therefore, does not adhere to them. On the other hand, the pathology of the elderly is what is dominantly related to inadequate nutrition as a risk factor. The aim of this paper is getting acquainted with the needs that the elderly have for adequate nutrition, which would improve their health and reduce the risks to their health. The work methodology is based on gathering data and statistical analysis from the survey which involves 1295 elderly people from the area of the city of Nis (3.5% of the elderly). Research results: self-evaluation of one's health in relation to physical health, measured by the χ^2 -square test emphasizes a more favorable evaluation of one's own health by women and the younger population. The most frequent ailments and states that the respondents cite are conditions of the heart and the blood vessels (28.0%), diabetes (20%) and rheumatisms (13%). Among the well-known risk factors, the elderly rank inadequate nutrition as the third most significant factor (after poor hygiene and physical inactivity), while obesity is in the final position out of nine offered risk factors. Every fifth male respondent and every sixth woman consider that they are partially responsible for their own health, which is concordant with the educational and socio-economic characteristics of the respondents. Less than 50% of the elderly are not satisfied with the provided health recommendations in relation to eating healthier; the vast majority of them adhere to the advice and recommendations of acquaintances and friends (40.2%), and then the family members (26.8%). When it comes to the selection of food products, most of the elderly do not adhere to the recommendations related to fat intake (65.6%), meat selection (58.8%), bread selection (57%), while every tenth individual fully adheres to the physician's recommendations regarding dietary changes. It has been concluded that elderly people in Nis possess an unsatisfactory awareness regarding the significance of healthy habits in nutrition and that they do not respect them enough. The author proposes solutions for the considered problem in the form of striving for the promotion of the level of general culture and the culture of health through intensifying relevant health-promotional activities by selected physicians, institutes and public health institutions, as well as relevant structures within the community.

Keywords: elderly, nutrition, healthy habits

GOJAZNOST – NEBRIGA O ZDRAVLJU OBESITY–LACK OF HEALTH CARE

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Purpose: To show that obesity is associated with other risk factors for chronic non communicable diseases and that it is increasing in our environment and threatens a large number of patients in the future who suffer from cardiovascular disease and diabetes mellitus type 2.

Material and methods: A retrospective method, the used data comes from the records of preventive work of active people.

The result of the research: The study included data for 200 individuals, 151 (75%) females and 49 (25%) males. The average age of respondents was 44 years (+ -8). The Body Mass Index (BMI) was 25-29.9 kg/m², respectively 32% pre obese women and 51% pre obese men, and 17% women and 35% of men had a BMI of > 30 kg/m². 80% women and 80% of men had LDL cholesterol > 3 mmol / l. 2% of women and men had HDL cholesterol of > 1.3mmol / l , and > 1 mmol / l. 25% women and 47% of men had triglycerides > 1.7 mmol / l. 8% of women and 4% of men had fasting glucose > 6.1 mmol / l. Each of these disorders by themselves increase the risk for heart and blood vessels diseases, and when they unite the disruption risks are multiplied. 1% of women and 8% of men have the so called Metabolic Syndrome, where the increased waist circumference (abdominal obesity necessarily present) is joined with 4 additional risk factors. 7% of women and 8% of men have an increased waist circumference with 3 additional risk factors, and 12 % women and 30% men have an increased waist circumference with 2 additional risk factors. If we add a risky behavior to obesity and all metabolic disturbances that follow it, the risk of diseases increases even more. We have concluded by monitoring risky behavior that 33% examinees were smokers, both women and men. 66% women and 59% men had improper diets. 53% women and 57% men lack physical activity.

Conclusion: The result show that the number of obese people is rather large and that the proportion of obese men is larger, then obese women. Men own more risk factors for cardiovascular diseases and diabetes mellitus type 2. Obesity decreases the quality of life, working ability and decreases the life expectancy. Therefore it is crucial to start the treatment immediately. Healthy lifestyle should be taught from childhood, and implemented throughout whole life.

Keywords: obesity, waist circumference, metabolism, risk factors, disease

POSTER PREZENTACIJE
POSTER VIEWING

HIGIJENSKA ISPRAVNOST VODE ZA PIĆE U PROCESU PROIZVODNJE
SISTEMA NIVOS, GRADA NIŠA
HYGIENIC SAFETY OF DRINKING WATER IN THE "NIVOS"
PRODUCTION PROCESS

Dragana Randelović, Katarina Popović, Slaviša Vukadinović

JKP "Naissus"

In the territory of Niš, organised public supply of tap water for the population and industry, requiring high water quality, is provided by distribution of ground and surface waters. Karst aquifers: Ljuberađja, Divljana, Mokra, Krupac i Studena, are one of the main sources in Regional water supply sistem of Niš. The large water reservs, the good quality of water as well as the relatively favourable conditions of protection in mountaineus catchment area offer very good prospect for sufficient water supply to be provided in the future.

During the observed period (2010- th), basic parameters (microbiological and phisico- chemical parameters) of water health quality were systematically assesed.

Results show that the water from karst aquifers are the first class and by the adequate water treatment, the quality of water impruve to the level required for drinkoing water.

Keywords: Water suppling, physicochemical determination, microbiological determination.

PRIMENA BIOLOŠKOG TRETMANA OTPADNE VODENE EMULZIJE IZ
PROCESA OBRADNE METALA
**APPLICATION OF BIOLOGICAL TREATMENT FROM METALWORKING
WASTE WATER**

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The aim of the researches within this paper was the development of biological wastewater treatment process from technological process of metalworking. The following procedures have been performed: the isolation of strains with decomposing ability and its rapid growth on water emulsions of mineral oil, the isolation of strain of microorganism from wastewater and their identification to the genus level. On the basis of biochemical characteristics of isolates and comparison with the characteristics of gram-negative bacteria, it can be assumed that the isolated bacteria belongs to the genus *Pseudomonas*.

Keywords: biological treatment, waste water, metalworking.

UTICAJ KOMUNALNE BUKE NA PONAŠANJE ŠKOLSKE DECE INFLUENCE OF COMMUNITY NOISE ON BEHAVIOUR OF SCHOOL- AGED CHILDREN

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Community noise (ranged from 50 to 55 dB A) influence psychical functions, first of all cognitive ones, and also social reactions. Children are particularly sensitive to noise at school and a cause of it they have difficulties to attend classes, read worse and had inferior results in school tests compared to their compeers going to schools situated in more quiet areas.

Aim of this study was to evaluate the influence of community noise on behaviour of children in schools and to assess noise risk management.

We chose students of two elementary schools situated in the city of Nis, Serbia. Schools were situated in city areas undergoing regular assessment of community noise. Elementary school “Duško Radović” was considered as noisy school with daily noise levels from 51 to 68 dB A, while elementary school “Njegoš” was classified as quiet school with daily noise levels from 47 to 52 dB A. Study was performed in both school in February 2011. There were 491 participants; 335 of them attended a noisy school and 156 attended a quiet one. Questionnaires were fulfilled by school teachers and were referred to every single student.

There was no statistically significant difference in the behaviour of students attending a noisy school compared to students attending quiet school, evaluated by: attention disturbance ($t=1.112$; $p>0.05$ n.s.), hyperactivity ($z= -0.212$; $p>0.05$ n.s.), social adaptability ($t=0.185$; $p>0.05$ n.s.) and opposition ($z= -1.686$; $p>0.05$ n.s.).

It may be recommended to perform a parallel study in the summer months (at the beginning and at the end of the school year) a cause of increased intensity of traffic and more frequent window opening for airing. We also recommend to locate stations for noise measuring inside the school buildings other than in the city streets.

Keywords: community noise, behaviour of school-aged children

KOMUNALNA BUKA U NIŠU I EKSTRA-AUDITIVNI EFEKTI KOD
IZLOŽENOG STANOVNIŠTVA
NON-AUDITORY HEALTH EFFECTS OF COMMUNITY NOISE

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Exposure to noise constitutes a health risk. There is sufficient scientific evidence that noise exposure can induce hearing impairment, hypertension and ischemic heart disease, annoyance, sleep disturbance. Aim of the paper is to assess relationship between community noise and daily activities and mental work. Noise measurements were performed and intervju method was used too. A questionnaire and a ten-graded noise annoyance scale were applied to a sample of 190 inhabitants of Niš, aged 19-30 years. All examinees were divided into an exposed group (daily period $Leq \geq 55$ dB A and night $Leq \geq 45$ dB A) and nonexposed group of community noise (daily period $Leq \leq 55$ dB A and night $Leq \leq 45$ dB A). Descriptive statistical methods mean values, standard deviation, OR and 95% confidence interval were done. Statistical significance of parametric and attribute characteristics between groups tested by using Student t-test and Pearson Chi Squared test. Significant differences in average noise sensitivity scores were observed. There was no significant effect noise on the daily activities and mental work, compared to the quiet condition.

Keywords: community noise, non-auditory effects

UTICAJ BUKE NA NASTANAK PSIHIČKIH SMETNJI KOD EKSPONOVANIH
RADNIKA
**THE IMPACT OF NOISE ON THE OCCURRENCE OF PSYCHOLOGICAL
PROBLEMS IN EXPOSED WORKERS**

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Introduction: The prolonged effect of noise leads to increased irritability, reluctance, anxiety, insecurity and intolerance towards the environment, resulting in a change of personality or character of a true mental disorder.

Objective: Assessment of the importance of hits in the early detection of mental disorders among workers exposed to noise.

Methods: Studies have included measurements of workplace conditions and health testing of employees of the Tobacco Factory. The tests employed were performed under control and regular inspection and periodic check-ups in 2010. The sample and exposed to (300) and control group (50) consisted of employed in a tobacco factory. Workers from the exposed group were exposed to continuous professional noise of different intensity from 75 to 105 dB and noise control workers never century by working in a noisy environment. The elements of workers' health examinations are: medical history, subjective disability, clinical examination specialists in occupational medicine (general clinical examination), review of a psychiatrist, laboratory tests (standard and biochemical tests: cholesterol, triglycerides, glucose) and ECG.

Results: Of the total number examined (300) of workers exposed to noise showed that 32 (10.66%) patient was diagnosed. Analyzing the data revealed that with conduct disorders (irritability, impulsivity, intolerance towards the environment) is 20 (6.66%) workers and 17 (5.66%) of workers has a hearing impairment. Of neuroses (anxiety-depression) is a sick 12 (4%) and workers all have a hearing impairment.

In the control group of workers who were 50, with conduct disorders was 8 (16%) of workers where 3 (6%) of workers with hearing impairments.

Neurosis found is 5 (10%) of workers and 1 (2%) the worker is exposed hearing damage. The damage exposed group average tenure is 18.49 years. 16.38 as a control. (most of the women work from 10-20 years. and men from 20-30god). The average age of 48.23 years exposed group. A control group of 44.86 years.

Conclusion: Views we found that the psychological problems affected a relatively large number of people. The importance of these views is that some patients began treatment, ill treatment and was corrected were sent for further treatment.

Keywords: noise, irritability, impulsivity, intolerance towards the environment, neurosis, anxiety-depressive disorders

BUKA U ŽIVOTNOJ SREDINI GRADA NOVOG SADA U PERIODU 2002-2011.
GODINE
**ENVIRONMENTAL NOISE IN THE CITY OF NOVI SAD IN PERIOD 2002-
2011**

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Aim: The aim of work is to categorize the average daily equivalent noise level into the groups determined by the EU Directive 2002/49/EC and national regulations and to determine linear trends of the average daily equivalent noise levels measured on a network of measuring points in the City of Novi Sad.

Material and methodology: Determination of environmental noise was performed at 18 sampling locations in the City of Novi Sad in the period April 2002 – March 2011, according to legally prescribed methodology.

Results: The determined values of the average daily equivalent noise level in the City of Novi Sad exceeded the value of 65 dB(A) in 89% of the measuring points in the period 2002-2011. Two measuring points are ranked in group II (60-64 dB(A)), 12 are ranked in group III (65-69 dB(A)) and four are ranked in group IV (70-74 dB(A)). Linear trend of the average daily equivalent noise level has increased at seven (39%) and decreased at 11 (61%) measuring points.

Conclusion: It is recommended to study the impact of environmental noise on the health of inhabitants of Novi Sad and to select appropriate preventive measures for protection of the human health.

Keywords: Noise, Environment and Public Health

TREBA LI SE ČUVATI SUNCA? SHOULD WE STAY OUT OF THE SUN?

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Purpose: To estimate our knowledge about the harmfulness of UV radiation and protection from it.

Materials and methodology: Survey questionnaires drawn up by researchers. The survey was conducted among health and non-health workers

The results of the research: 256 respondents have filled out the survey, of which 90 (35%) were health workers and 166 (65%) non-health workers aged from 30 to 59. There were 198 (77%) women and 58 (23%) men among respondents. When asked which part of the solar spectrum harms living beings the most, both groups responded with 90% in favor of ultraviolet (UV) radiation. What increases the radiation of the Sun? the most common answer was: the damage of the Ozone layer (96%). Are sun beds harmful for the skin? Both respondent groups 97% gave a confirmative answer. Which source of radiation is more harmful: the one that comes from the Sun, or the one that comes from the sun beds? 73% of health workers and 52% non-health workers responded that both of them are equally harmful, and 22% health workers and 40% non-health workers responded that radiation that comes from sun beds is more harmful. At which time of the day is the Sun the most harmful? Both groups answered the same with 90% of respondents that the Sun is the most harmful from 10am to 5pm. Does the skin record and add up the effects which the Sun has on it? 89% health workers answered confirmatively, and 67% non-health workers answered, respectively. What does UV radiation damage in people? 97% of members of both groups answered with skin, while health workers added eyes in 40% of respondents. How does the skin defend itself from UV radiation? 92% of respondents in both groups answered with melanin. What are the consequences of repeated radiation of skin? The most common answer in both groups (96%) was malignant melanoma and skin cancer. Who is particularly at risk from UV radiation? 80% of respondents in both groups answered with blond and red haired people with light skin, while 90% of health workers added people younger than 18 years of age, and people with multiple moles. How can we protect ourselves from the Sun and UV radiation? Health workers named all aspects of protection: clothes, hats, sunglasses, sun creams with high SPF 15, while non-health workers only named the use of sun block with a SPF >15.

Conclusion: The majority of respondents is familiar with the dangers of overexposure to Sun, but they still aren't familiar with the harms of the sun beds. Since a tanned tone came into fashion, the malignant melanoma has increased in the young. Therefore it is imperative to act preventively and continuously keep warning about the dangers of UV radiation and about the measures of protection.

Keywords: Sun, sun beds, UV radiation, skin, protection

TREND KRETANJA OSNOVNIH ZAGAĐUJUĆIH MATERIJA U VAZDUHU
GRADA LESKOVCA U PERIODU OD 1994-2010.GODINE
**THE TREND OF THE MAIN AIR POLLUTANTS IN THE TOWN OF
LESKOVAC IN 1994-THE PERIOD OF 2010**

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This multi-year analysis of basic polluting materials in Leskovac air shows that human activities pollute the environment.

The goal of the study is to show the trend of average annual and maximum annual concentrations of sulfur dioxide, soot, nitric oxides and sediment materies in Leskovac in the period 1994-2010. Institute of Public Health Leskovac monitors air quality in keeping with the valid Law regulative, based on standard and acredited methods for determination of basic polluting materials. Results are shown in a table and graph. The trend of average annual and maximum concentrations of SO₂ is descending, the reduction is more pronounced with maximum values of SO₂. Average annual concentrations of sulfur dioxide moved from 1,53 to 124µg/m³/24h. The trend of average annual concentrations of soot is in a mild increase and the trend of maximum values is in a sligthly more pronounced increase. Average annual concentrations of soot moved from 3,24 to 38,84 µg/m³/24h. The trend of average annual and maximum values of aerosediment is descending, the decrease is more pronounced for maximum values. Average annual quantities of aerosediment ranged from 114 to 708mg/m²/24h. The trend of average annual and maximum concentrations of nitric oxides is constant. Unique living conditions and economic activities during sanctions,NATO aggression and the decline of economic activity in Leskovac brought about changes in the use of fosil fuels and as a result changes in air quality.

Keywords: sulfur dioxide, soot, aerosediment, nitric oxides, trend

UTICAJ NAČINA GREJANJA NA POJAVU RESPIRATORNIH SIMPTOMA
KOD ŽENA
**INFLUENCE OF WAY OF HEATING ON OCCURRENCE OF
RESPIRATORY SYMPTOMS IN WOMEN**

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Way of heating is a very important source of indoor air pollution, which primarily causes changes in the respiratory organs in terms of occurrence of respiratory symptoms and disease. The aim of this study was to examine the influence of a way of heating on the occurrence of respiratory symptoms in women. The study included 300 respondents from Niš, aged 20 to 60 years, professionally unexposed pollutants from the air, which depending on the method of heating the rooms are divided into groups exposed and nonexposed. To collect data on the presence of respiratory symptoms modified World Health Organization questionnaire was used. The results showed that in exposed group of women significantly more likely to occur during the cough and cold outside, morning cough in the autumn-winter season, and nasal congestion compared to the nonexposed group. Way of heating may be a risk factor for the occurrence of certain respiratory symptoms in the female population.

Keywords: heating, indoor air pollution, respiratory symptoms, women.

VLAŽNOST VAZDUHA U ŠKOLAMA KAO RIZIK PO ZDRAVLJE ŠKOLSKE DECE U NIŠU
AIR HUMIDITY IN SCHOOLS AS A RISK TO HEALTH OF SCHOOL CHILDREN IN NIS

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Introduction: Health of school children depends both on physical and mental development of children, so a substantial extent, from the academic environment in which children reside. The most common factors that affect the health of children present in the school environment microclimatic conditions on school premises, such as humidity, temperature and brightness.

Objective: The aim of this study was to examine the influence of humidity in the schools on the health of school children.

Method: The study was carried out humidity in ten primary schools in Nis city. Assessing the quality of air humidity was performed Termohigrometer device type "test" 608-H1, the three measuring points in each school: classrooms on the ground floor, classrooms on the first floor and gym. Measurement of these apparatus is performed by a device placed on the breast height (1.2 to 1.5 m above the floor), a few seconds in the hand, and the display read directly microclimatic parameters.

Analysis of the morbidity of school children with special reference to respiratory diseases was made on the basis of the data report of the Health of Nis diseases diagnosed in the period since 1998. to 2008

Results: calculated average relative humidity in the test on the ground floor classrooms was 44%, and in classrooms on the first floor 52%. The calculated average relative humidity in the gymnasium halls was 56%. The obtained values were compared with the requirements for relative humidity of certain facilities in schools (RS - Educational Bulletin no. 4 / 90). Number of pupils with respiratory symptoms and diseases in this period give a specific picture of gradual decline, with maximum values in 1998 (87.79%). The trend of respiratory diseases decreased during the test period.

Conclusion: The quality of humidity was evaluated on the basis of humidity relative meet hygienic requirements for microclimate conditions of school facilities. Respiratory diseases are the leading place in rank in the structure of outpatient morbidity in school children. Monitoring air humidity in the school environment can affect poboljšanje health of school children. Since the testing was done in urban schools need to initiate tests and extension to rural areas.

FAKTORI RIZIKA PO ZDRAVLJE DECE U ŠKOLSKOJ SREDINI ENVIRONMENTAL HEALTH RISK IN PRIMARY SCHOOLS

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Institute for Public Health "Dr Milan Jovanović Batut"

In this review we show status of the primary school objects which are examined during 2010. by the professionals from the network of Institutes of Public Health in Serbia, with an objective to improve the health status of pupils through decreasing adverse impact of inappropriate school environment. Data are processed and analysed in the Institute of Public Health of Serbia, compared with the data from 2004. involving 1126 primary school facilities. Condition of schools is satisfying in 73,1%. In almost 50% of facilities drinking water is distributed from potentially unsafe installation. Waste disposal is unsafe in almost 25% of total number, while 58% of them dispose waste water in the sewerage. The majority (51,2%) of schools doesn't have a gym, and only 39,4% of them are fulfilling the standards. School kitchen exists in 53,6% facilities, out of which 45,5% are satisfactory. Central heating exists in 58,2% of the schools, while 40,9% use local heating. Compared with the results from 2004. school status is improved related to water supply, waste disposal, classrooms and gyms, while conditions concerning sanitation and school kitchen are degrading. Improving and harmonising methodology in this area is needed, together with monitoring and supporting forced implementation of corrective measures.

Keywords: Children`s health, school, hygiene conditions

UPOTREBA TRANSFODESIGNA U EKOLOŠKOM OBRAZOVANJU USING TRANSFODESIGN IN ENVIRONMENTAL EDUCATION

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We live in a consumer society; the consumerism has grown to the level of obsession. Although it has positive impact on the global economy, it is evident that it provokes many problems. For instance, we face overproduction and accumulation of unneeded goods, which eventually end up in massive amounts of waste (on average a person produces around 2kg of residues per day).

The aim of this paper is to present the mission and the main concept of transfodesign, employing the design as a tool in the problem solving process. Employing the already established Cradle to Cradle and the 3Rs (reduce, reuse and recycle) concepts, Transfodesign moto is that everything can be given a second life by its transformation. The reuse of salvaged materials is the ultimate form of resource efficiency, satisfying the three milestones of sustainability- environmental, economic and social.

Transfodesign, was conceptually conceived and opened to the public in 2009 serving as an educating and working tool for various social groups offering the necessary solutions and support to meet their needs. The results and products from series of workshops and initiatives will be presented. Experience and lessons learned can be relevant for education, public health issues, DIY solutions for housing, as well as waste management and reduction. Therefore, Transfodesign can be applied in the architecture, the landscape design, through urban interventions, within the educational methods, in the industrial production, the construction etc.

Keywords: Transfodesign, transformation, design tool, recycling, reuse.

PROMENA NAČINA ŽIVOTA I OMEGA-3 POLINEZASIĆENE MASNE
KISELINE EPA I DHA KOD LIPIDSKIH POREMEĆAJA
**LIFESTYLE CHANGES AND OMEGA-3 POLYUNSATURATED FATTY
ACIDS EPA AND DHA IN LIPID DISORDERS**

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Introduction: Lipid disorders are an important risk factors for coronary disease. Therefore, the trend in all developed countries is to undertake an active diagnosis of risk factors and not just the secondary level, but especially for primary prevention. The starting point includes recommendations to modify diet and physical activity. A diet with high intake of fish oil, has led to the reduction of diseases such as coronary disease.

The aim of the work: To show the importance of the dietary regime and lifestyle changes, and the role of dietary supplements for patients with abnormal lipid levels, the population of able-bodied and physically active patients.

Method: The research in this pilot study included 20 patients, ages 33 ± 13.44 , in which the parameters of lipid status in two consecutive measurements, the first time above the reference value and the value of blood glucose, urea, creatinine, AST, ALT within normal range, and no additional comorbidity. Requested data was obtained history, clinical examination and laboratory findings total cholesterol, HDL, LDL, TG, glucose, transaminase and nitrogen products. We used the methods of descriptive and analytical statistics.

Results: Using advice hygienic dietary regime and the use of omega - 3 polyunsaturated fatty acids EPA i DHA (235mg + 192mg), after one month, the results were as follows: in the patients with elevated values total cholesterol, LDL fractions and triglyceride, and which was 14 in 11 (78 %) of the following month, the values were within normal range. In 3 patients the values were still elevated. In the group of patients with elevated LDL fraction and total cholesterol, which was 4, on 3 (75 %) patients after one month, the values were within normal range. In the group of patients with elevated triglyceride levels, and which was 2, with both (100%) after one month triglyceride levels were within normal range.

Conclusion: The importance of lifestyle changes, with a disturbed lipid and implementation of hygienic dietary regime in conjunction with the omega-3 polyunsaturated fatty acids, was confirmed by this pilot study.

Keywords: dyslipidemia, lifestyle changes, omega-3 polyunsaturated fatty acids.

PREVENTIVNO- MEDICINSKI ASPEKT ISHRANE KOD MASOVNIH
NEZARAZNIH BOLESTI
**THE IMPORTANCE OF NUTRITION IN PREVENTION OF MASS NON-
COMMUNICABLE DISEASES**

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Despite the intense fighting in their prevention, mass non-communicable diseases show no tendency to decline, but on the contrary, more and more growth. Obesity and inadequate nutrition are mentioned as one of the causes of mass non-communicable diseases.

The aim of this paper is that, by examining the contemporary literature, highlight the importance of proper nutrition in the prevention of mass non-communicable diseases. Numerous studies have shown that inadequate and unbalanced food intake, especially the excessive use of fats and sugars, and reduced intake of vitamins, fiber, unsaturated fats, can significantly increase the risk of chronic non-communicable diseases such as ischemic heart disease, diabetes, certain types of cancer. On the other hand, intake of certain foods reduces the risk and has protective effect on health.

Promotion of proper nutrition as an essential link in the chain of mass non-communicable diseases prevention, greatly reduce their frequency, particularly if implemented at all levels of health care

Keywords: nutrition, prevention, mass non-communicable diseases

**SPEKTROFOTOMETRIJSKO ODREĐIVANJE SADRŽAJA KOFEINA U KAFI
PRISUTNOJ NA TRŽIŠTU SRBIJE
SPECTROPHOTOMETRIC ANALYSIS OF CAFFEINE CONTENT IN
COFFEE PRESENT IN THE SERBIAN MARKET**

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The coffee has an average of 1-2% caffeine. It is an alkaloid of the methylxanthine family, which is present in leaves, seeds or fruits of more than 60 plant species worldwide. Pharmacological effect express 200 mg of caffeine. Lethal dose is achieved (gained) by taking about 100 cups of coffee for the short period.

The aim of this study is to determine the caffeine content in different types of coffee on the market by using spectrophotometric method according to Waniyika.

The following samples of coffee: filter coffee "Zoega", espresso coffee "Aro" and coffee "Grand" were used. Content of caffeine was determined spectrophotometrically at 274 nm. After making the calibration curve and measuring absorbance of the examined solution, the concentration of caffeine in selected samples were determined.

This analytical method provides only information about the content of caffeine in a sample. Sample espresso coffee "Aro" is the richest in caffeine content (94.35 mg), followed by filter coffee "Zoega" (77.75 mg), and the least caffeine was found in coffee "Grand" (76.00 mg). These values are in accordance with the set maximum value of 100 mg per cup of coffee.

Effects of these beverages depend on other components too (theobromine, theophylline, tanins etc.), so it is necessary to conduct further experiments.

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ODREĐIVANJE SADRŽAJA FOSFORA I NITRITA U PROIZVODIMA OD
MESA (2006-2010)
**PHOSPHORUS AND NITRITE CONTENT DETERMINATION IN MEAT
PRODUCTS (2006-2010)**

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Nitrates and nitrites are additives largely used in meat industry, and they prevent the growth of *Clostridium botulinum*, provide the products with a pinkish color, cured meat typical flavor, and possess antioxidant effects. Phosphates are used to increase the water holding capacity of cured and other meat products that stabilize color, increase tenderness, enhance binding, retard oxidation and also have synergistic effect with NaCl and nitrite, on preventing *C.perfringens* outgrowth.

Increased content of nitrites can cause serious health problems while phosphates do not cause significant problems

The laboratory of the Public Health Institute perform quality testing of meat products and the determination of nitrate and phosphate, which salts are used in their production. The tests were performed using standard methods. Total phosphorus was determined by the method SRPS ISO 13730:1999 and nitrite content using SRPS ISO 2918:1999 method

In period 2006-2010 laboratory determined nitrites and phosphorus in 560, meat products samples. Nitrites exceeded norms in 12, or in 2.14% samples, having average in whole period, 50mg kg⁻¹ nitrites, phosphates exceeded in 17 or in 3.04% of samples, having average in whole period of 4.6gkg⁻¹ P₂O₅. In this period nitrites content trend was 6.47% or 3.2 mg kg⁻¹ while phosphates had trend value 16.65% or 0.72 g kg⁻¹ as P₂O₅.

Tests have shown that the use of nitrites and phosphates were mostly within the permissible levels but there is an obvious trend of increased use of phosphates with main intention of increasing the water content in meat products, which gives a greater amount of product.

Keywords: Nitrite, Phosphates, Meat products

**ODREĐIVANJE HIDROKSIPROLINA KAO MERE SADRŽAJA KOLAGENA U
PROIZVODIMA OD MESA (2006-2010)
HYDROXYPROLINE DETERMINATION AS MEASURE OF COLLAGEN
CONTENT IN MEAT PRODUCTS (2006-2010)**

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Collagen is the most widely occurring protein in the animal body, being the basic component of the intestines and the dermal portion of the skin, and serving as connective tissue in almost every organ of major importance in bone, tendons, teeth and connective tissue of muscle.

Laboratory of the Public Health Institute perform quality testing of meat products and the determination of hydroxyproline as a measure of collagen content in products. The tests were performed using standard methods. Hydroxyproline was determined using SRPS ISO 3496:2002 and the total protein content using SRPS E.Z8.016: 1993

In period 2006-2010 laboratory determined hydroxyproline in 426 meat products samples, content of proteins of connective tissue Relative to total proteins exceed in 25 or 5.77% samples having average 14.72%, while content of proteins of connective tissue Relative to total proteins is higher 11.6% or 1.59%aps. Protein content was higher 4.94 % or 0.68%aps. Separately, increasing trend of hydroxyproline content was 20.12% or 0.04%aps

As hydroxyproline content increase , over 20%, it is not accompanied by the increase of proteins content relative to total proteins, which also increased in the monitored period. That is an indication of decrease of product quality. In this respect it would be important to control origin of proteins, as well as setting minimum of protein content of animal origin in meat products.

Keywords: Collagen, Hydroxyproline, Meat products

NEKI ASPEKTI JAVNOG VODOSNABDEVANJA JUGO-ISTOČNE SRBIJE-STANJA, PROBLEMI, PERSPEKTIVE...
SOME ASPECTS OF PUBLIC WATER SUPPLY OF SOUTH-EASTERN SERBIA-STATE, PROBLEMS, PERSPECTIVES ...

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The aim of paper is determined by its name. More specifically, the presentation of evaluated test data, and hygienic monitoring of water samples (target selected) public fountains, and the central city water supply, and „new water intake, "the author wants a professional and reasoned answers to the questions: 'status, problems and prospects of public water supply of South -Eastern Serbia. " As the work material were used: water samples 8 (eight) of public drinking fountains (with its own water supply sources) of the City of Nis, samples raw-water and surface-water during the purification and disinfection of the central city water supply Blace, as well as samples of 3 (three), new water intake in "Spa., Melts", and 1 (one), a new water intake "in Soko Banja.

Samplers all samples were experts of the Institute of Public Health, Nis. When sampling and transport of samples complied with the norms. Regulations on methods of sampling and laboratory analysis of drinking water, Fig. SFRY 33/87) and, for samples taken after 23 o4.2007 year accredited Instruction Institute of Public Health Center-Niš Hygiene and Human Ecology-on sampling of drinking water UP 06.6. All samples were tested in laboratories of the Institute of Public Health, Nis.

Scope of analysis and reading the results are respected, for certain types of water, the norms applicable Regulation on hygiene of drinking water (Official Gazette of FRY 42/98, 44/99). The results are just the collective reflection "of the situation and problems" of : water facilities, systems of purification and disinfection of water, environment and water facilities. Detailed: the water of all public drinking fountains have not chlorine residue, and consists alarming part of the fecal samples contaminated! Crude-surface-water of central city watrt supply in Blace water have been loaded with organic substrates, mudd and fecal contamination. Paradox, and a warning that water after sedimentation is, compared with water of accumulation, higher mean concentrations of nitrate! Fecal contamination persists, other contaminants have been minorly eliminated !

What, then, the perspective of public water supply? Are ambiguous, and they comprise: a high-quality waters of „ new water intakes "- with constant chemical composition, no chemical indicators of fecal pollution, unencumbered by organic substrate, no pesticide residues, with concentrations of heavy metals in the prescribed limit, and,, as expected,, , fecal contamination, which can be easily eliminated. At the same time, the most that can be, repair and properly maintain all existing water objects.

Keywords: public water supply, water facilities, repairs, new water intakes

SESIJA EPIDEMIOLOGIJA – EPIDEMIOLOGY SESSION

TEMA: EPIDEMIOLOGIJA ZONNOZA
TOPIC: EPIDEMIOLOGY OF ZONNOSES

USMENA PREDAVANJA
ORAL PRESENTATIONS

PRIONSKE BOLESTI – SVETSKA OPASNOST PO ZDRAVLJE
PRION DISEASES - WORLD HEALTH HAZARD

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Prion diseases are neurodegenerative diseases of humans and animals that are characterized by long incubation and the progressive course with fatal outcome. The causes are prions (infectious protein particles) consisting of a protein from which they were named.

In the early nineties Creutzfeldt - Jakob disease, a typical representative of prion diseases, it becomes relevant and is related to bovine spongiform encephalopathy - BSE (so-called disease "mad cow"), which was first registered in 1986 in the UK. The cause of the disease animal food (meat - bone meal) that had originated from sheep infected with scrapie. BSE is associated with the emergence of diseases in humans and new variant Creutzfeldt it - Jakob disease (vCJB). vCJB recorded appearance in 1996. in the UK and later in other European countries. So far in the world of vCJB died more than 100 people, of which over 80 in the UK. In our country, by 2010. ten deaths were registered (3 cases of domestic forms of CJB and 7 cases of sporadic forms of the CJB). In 9 of 10 deaths the diagnosis was established by autopsy. According to official data, in our country has not registered any case of BSE.

After an outbreak of prion disease among cattle, scientists warn of the danger of disease transmission through consumption of contaminated food and the consequences that may be tragic for humanity. The interest in studying and preventing the spread of these diseases in the world has increased, which contributed to the rapid development of modern diagnostic methods and their application in many countries. In several countries set up national centers for monitoring and recording vCJB and other prion diseases that are brought into correlation with the movement of prion diseases among domestic animals.

Keywords: prion diseases, prion, CJB, BSE, epidemic

KONTROLA ZOONOZA – PREDNOST ZA HUMANU POPULACIJU CONTROL OF ZOOSES - ADVANTAGE FOR HUMAN POPULATION

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Zoonoses are among the most important animal and public health issues affecting the welfare of society around the world, yet they are too often forgotten or ignored. Because most zoonoses go unrecorded, they call for reflection on research and control efforts, and economic consequences. The example shows that the intervention of brucellosis in cattle against zoonoses, which will never be cost effective when evaluated with a unique public health point of view, it can be to reduce costs when viewed from the perspective of the social.

Most zoonoses are maintained in the animal reservoir, but may be transferred to humans as a result of various risk factors and behavioral traits. Most zoonoses control usually requires interventions outside the public health sector. Taking into account the health point of view, regardless of species, including humans, domestic animals, and animals, zoonoses are part of a broader ecological concept of health systems. To try to control and possibly elimination of zoonoses, benefits to health and society needs to be demonstrated, especially in countries with scarce resources.

It is obvious that the interest of rich countries to support others in order to protect.

Zoonoses control in general should thus be seen from a global perspective and lead to calls for a global approach to control branches. International bodies such as the World Organization for Animal Health, Food and Agriculture, and who should encourage the establishment of global standards for supervision and control of zoonoses. Fostering global standards is also part of the WHO health regulations which will come into force in mid 2007 and will require all countries to do a better job monitoring the diseases spreading between countries. Although industrialized countries have been able to contain recent outbreaks of zoonotic diseases, many resource limited and transitional countries are not able to adequately respond.

Cross-sectoral assessments of interventions such as mass vaccination of animals considered human and animal health sectors from a social economic perspective. Combining the total societal benefits, interventions in the animal sector saves money and provides the economic argument, which opens up new approaches for the control of zoonoses in resource-limited countries through contributions from several sectors.

Conclusion

New pathogens and old known pathogens periodically emerge. One Health is not a new concept but a life experience. There is growing recognition of One Health, however, it has to be translated from concept into actions through country level activities. Global challenge, requiring global solutions. One size does not fit for all.

NOVOISKRSLE ZOONOZE-AKTUELNA PRETNJA PO JAVNO ZDRAVLJE EMERGING ZOOSES – CURRENT PUBLIC HEALTH THREAT

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Epidemiology of infectious diseases was dramatically changed in past three decades because of occurrence of emerging (more than 30) and reemerging infectious diseases. It is difficult to explain the reasons for this, but it's clear that a lot of factors like, evolution and adaptation of infective agents which get new characteristics due to genetic mutation, demographic changes, changes in behavior of humans, intensive trade and traffic, economical reasons (economical prosperity in some regions and poverty in others) and lack of preventive measures, contributing to those changes. Today, zoonoses with wildlife reservoir constitute a major public health problem, affecting all continents. Hundreds of pathogens and many different transmission modes are involved, and many factors influence the epidemiology of the various zoonoses. The total number of zoonoses is unknown, but according to Taylor et al., who in 2001 catalogued 1 415 known human pathogens, 62% were of zoonotic origin. With time, more and more human pathogens are found to be of animal origin. Moreover, most emerging infectious diseases in humans are zoonoses. Zoonoses with wildlife reservoir represent a large spectrum of transmission modes. Several zoonotic agents can be directly or indirectly transmitted from wildlife to humans. Many of them are spread through insect vectors. Effective prevention and control of these zoonoses necessitate an interdisciplinary and holistic approach and international cooperation.

Key words: zoonoses, emerging infectious diseases, modes of transmission, vector

BAKTERIJSKE ZOONOZE U VOJVODINI U PERIODU 2005. – 2009.
**BACTERIAL ZOONOSES IN VOJVODINA IN THE PERIOD FROM 2005
TO 2009**

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The presented work is part of the research done in the project TR31084 granted by the Serbian Ministry of Science and Technological Development

Objective: The objective of this paper is to emphasize the significance of bacterial zoonoses in Vojvodina in the period from 2005 to 2009.

Methods: The study is based on data from Health Statistical Yearbook of Republic of Serbia published by Institute of Public Health of Serbia “Dr Milan Jovanovic Batut”.

Results: Bacterial zoonoses were represented with 9.98% (4816/482596) among the total number of registered bacterial zoonoses in Vojvodina from 2005 to 2009. Among them the most frequent were salmoneloses with 73,19% (3525/4816). The most salmonella infections (935 cases) were registered in 2005. and the least in 2009 (451 cases). According to frequency Lyme disease was at second place with 22,36%(1077/4816) among the total number of registered bacterial zoonoses. Lyme disease in Vojvodina in the period 2005 -2009 had an increasing trend: the number of reported cases increased from 164 in 2005 to 294 in 2009. Other Zoonoses in Vojvodina were represented with less than 2% of the total number of registered bacterial zoonoses: Q fever 1,91% (92/4816), leptospirosis 1,29%(62/4816), brucellosis 0,56%(27/4816), tetanus 0,31%(15/4816), listeriosis 0,27%(13/4816), ornithosis 0,08% (4/4816), tularemia 0,02%(1/4816). There were no registered case of anthrax in the period 2005 -2009 in Vojvodina.

Conclusion: Causative agents of bacterial zoonoses were important pathogens in Vojvodina in the period 2005-2009. Among them the most common were salmonella and Lyme disease.

Keywords: zoonoses, salmoneloses, Lyme disease, leptospirosis

**AKTUELNA EPIDEMIOLOŠKA SITUACIJA ZOONOZA U REPUBLICI
MAKEDONIJI
CURRENT SITUATION OF EPIDEMIOLOGICAL ZOONOSES IN
MACEDONIA**

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The aim of the paper is to display the rate of zoonoses morbidity in the Republic of Macedonia. Material and method of work. The data are used from the Institute of Public Health, Skopje in the period between 1999 - 2009 year. It is applied the retrospective method of work and statistical data processing. Results. In 2009, there are 351 patients recorded in this group (17.2 Mb. / 100,000), and compared with the number of reported cases in 2008 (557) is decreased by 37.0%. Brucellosis has the highest morbidity (Mb) in this group in 2009 (14.1 / 100,000), and also in the previous five years. In 2009, brucellosis is most commonly recorded disease in this group, with 81.8% from the total number of zoonoses cases. The acute infectious diseases from this group in the period between 1999-2008, with the lowest number of patients (326) and lowest morbidity of 16.1 / 100,000 inhabitants are registered in 2004, but the highest number of cases (557) and the highest Mb. (27.2 / 100,000) in 2008. Conclusion. Brucellosis is still the most spread disease compared to other zoonoses in the Republic of Macedonia. Therefore, there is a need of strengthening the sanitary and veterinary control of livestock, as well as an increased health education of Macedonia population.

Keywords: epidemiological, situation, zoonoses, Republic of Macedonia

EPIDEMIJA BRUCELOZE U REPUBLICI SRPSKOJ 2006-2010 OUTBREAK OF BRUCELLOSIS IN REPUBLIKA SRPSKA FROM 2006 TO 2010

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Brucellosis is a disease belonging to the type of zoonoses affecting both animals and humans. The disease is transmitted from animals to humans.

Aim: to show brucellosis in Republika Srpska in last 5 years.

Material and methods: The report on brucellosis is based on data collected from the health centers of Republika Srpska, the inpatient care of the diseased in hospitals and serologic testing of serum of the people who have been in contact with infected animals.

Results and discussion: In a 5 year period from 2006 to 2010, there were 337 cases reported for brucellosis in the region of Republika Srpska.

In 2006, 4 cases of brucellosis were reported, with the incidence of 0.3%000.

In 2007, 24 cases were reported, with the incidence of 1.7%000.

In 2008, 216 cases were reported, with the incidence of 15.4%000.

In 2009, 79 cases were reported, with the incidence of 5.6%000.

In 2010, 14 cases were reported, with the incidence of 1%000.

There were no reported cases with brucellosis in 2004 and 2005.

The outbreak of this disease occurred in 2007 in the area of Srebrenica, where 16 patients were reported. Diagnosis was established according to clinical features, epidemiological survey and serological test for brucellosis. Majority of diseased were people from households with infected cattle. There were 281 diseased treated in hospital. At clinical examination, great number of infected showed arthralgia and hepatomegalia.

Conclusion: Brucellosis is a serious epidemiological and health problem. The reservoir and source of infection in the region of Republika Srpska – Bosnia and Herzegovina are sheep and cattle. It is an occupational disease of cattlemen, farmers and veterinarians.

ZOONOZE U SEMBERIJI U PERIODU 1994.-2010.GOD. ZOOZOSES IN SEMBERIA 1994-2010

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Objective: To determine the epidemiological situation and impact on public health of zoonoses in Semberia (municipality of Bijeljina) from 1994 - 2010.

Materials and methods: observational studies, descriptive method. The analyzed data came from standard official sources according to the Law on Protection of Population from Infectious Diseases in the Republic of Srpska and who arrived in the epidemiology department in Bijeljina. These were an infectious disease reports from local health center and general hospital in Bijeljina, Banja Luka Clinical Center and Institute of Infectious and Tropical Diseases, Belgrade.

Results: In that period a total of 20401 (923/100.000) of all cases of infectious diseases that were reported - 242 (11/100.000) were cases of zoonoses. The structure of reported zoonoses: trichinellosis 150 (6.8 / 100,000) represented in the form of small family epidemics with the highest incidence in 1994 to 1996. (total of 107 cases). It was followed by brucellosis epidemic that occurred 2008th with a total of 73 reported cases (56.1 / 100,000), leptospirosis 6, echinococcosis 5, viral hemorrhagic fever with renal syndrome 3 and very few of other diseases. Contact and potential exposure to rabies is relatively constant and varies between 80 and 100 cases per year (no human rabies cases).

Conclusion: in this period epidemiological situation of zoonoses in Semberia, an important agricultural region of the RS, is stable with the exception of epidemic of trichinosis in the war years, and brucellosis in 2008. It is necessary to make additional efforts towards a more intensive cooperation between veterinary and medical services and continuing education programs about zoonoses in general population.

Keywords: zoonoses, Bijeljina, public health surveillance

NEKE EPIDEMIOLOŠKE KARAKTERISTIKE TETANUSA SOME EPIDEMIOLOGICAL CHARACTERISTICS OF TETANUS

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Tetanus is a serious infective noncontagious disease is characterised by intoxication of central nervous system (CNS) and appearance of tonic and clonic muscle convulsion. The level of morbidity is fortunately, small in or contrary thanks to the immunoprophylaxis. However, lethality is still high and is about fifty per cent.

Because of the dramatic character of the disease and the common lethal result, tetanus is of the greatest importance to the patient and his family. Because of the constant possibility of the new cases, tetanus is of a great social significance and demands social commitment in searching and putting the adequate measures in to effect as well as the programme of the disease prevention.

A special problem is tetanus among babies, because of the high level of lethality which is hundred per cent at this age.

Mostly, old people, who are not vaccinated, become ill.

Considering that tetanic areas cannot be cleansed and that there are a lot of sources of the disease (a lot of animal species, especially herbivorous animals) the basic preventive measure of tetanus is immunoprophylaxis, systematic obligatory immunization as well as the prophylaxis of the hurt patients.

OZLEĐIVANJE LJUDI OD ŽIVOTINJA NA PODRUČJU BEOGRADA –
PROBLEMI I RIZICI
**INJURIES HUMANS FROM ANIMALS IN BELGRADE - PROBLEMS AND
RISKS**

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Aim: presentation and analysis of the frequency of injury to the citizens of Belgrade and coverage of animal rabies protection, since 2007. - 2010. year, and point out the problems and risks of injuries.

Materials and methods: used data from the ambulance protocol Pasteur Institute of Infectious and Tropical Diseases, annual reports on the work of the City Institute of Public Health, the results of active epidemiological studies and data Pasteur Institute of Novi Sad.

Results: In the area of Belgrade since 2007. by 2010. The clinic Pasteur Institute of Infectious and Tropical Diseases appeared injury face of 10,271 animals (dogs and cats) to provide assistance. Rabies post-expositional protection according to the indications included in this period was 5.6% (578) injured persons. Injury to people registered in all municipalities, mostly in Vozdovac (12.5%) and Cukarica (11.2%). Among the most injured school children aged 7 - 19 years (2287/22, 3%) and people aged over 60 years (1792/17, 4%). Order Republican veterinary inspection for monitoring the animal is passed for 67.5% of injuries, while 32.5% of injuries is not. Since 2000. - 2010. the diagnostic review is carried out 498 animals suspected of rabies, of which 29.9% (149) were positive. In the last decade to register an increase of positive rabies cases in animals, for about two and a half times (29.9%), compared to the period to 2000. year (12.2%).

Conclusion: The positive cases of rabies in animals in the past shown an increasing trend and confirm that the wider area of the city threatened by rabies is maintained in the population of foxes, but can not be waived or the vulnerability of urban areas of the city. Doubling the number of "street" dogs in recent years, more and more frequent injury to the citizens and the limited number of protected persons rabies vaccine is a serious health problem. The seriousness of the problem requires the intensification of cooperation and shared commitment of health and veterinary services in order to take timely measures in accordance with existing legal regulatory.

Keywords: injury persons, antirabies care, rabies, stray dogs

LAJMSKA BOLEST U SRBIJI U PERIODU OD 1990. DO 2009. GODINE LYME DISEASE IN SERBIA FROM 1990 TO 2009

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Introduction: Lyme disease is most common arthropod-borne disease in Europe that counts more than 85000 registered cases annually. Hard ticks of *I. ricinus* complex are means of transmission for *B. Burgdorferi*, which is etiological agent of this disease.

Aim of this research is retrospective analysis of incidence trend, seasonal variations, sex, age and regional distribution of lyme disease cases in Serbia in period from 1990 to 2009.

Methods: Source of data about morbidity are annual reports from Public Health Institutes of Serbia and Vojvodina. Source of population data is Statistical Office of the Republic of Serbia. Incidence is displayed per 100000 inhabitants.

Results: In the reporting period in Serbia were registered 11336 cases of lyme disease. Mean incidence in Serbia during this period was 7.67/100000. Maximum value of mean incidence was recorded in region Podunavski (21.96/100000). Incidence trend of lyme disease has demonstrated increase for last few years. Most of cases was recorded in spring and summer months in period from May to July. Disease was more often registered among female (11.08/100000) than male persons (8.91/100000), also it was most frequent in age group from 50 to 59 (16.93/100000).

Conclusion: Lyme disease attracts attention because of increasing trend of incidence. We should take into account the complicated diagnosis, treatment and possible effects on the quality of life of patients with Lyme disease and make effort to conduct all available preventive measures against this disease.

Keywords: lyme disease, incidence, epidemiology, Serbia

LAJMSKA BOLEST NA PODRUČJU NIŠAVSKOG I TOPLIČKOG OKRUGA LYME DISEASE IN NISAVA AND TOPLICA DISTRICTS

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Introduction: Lyme disease is the most common disease vector in the temperate zones of the northern hemisphere. It is characterized by polymorphic clinical presentation and involvement of multiple systems. The aim of this paper is to present epidemiological characteristics of Lyme disease in the territory of Nis and Toplica region.

Methods: The descriptive epidemiological method was used. Source of data applications - out disease and annual reports IPH Nis.

Results: In the territory of Nis and Topličkog region in the period 2006-2010. example, there were 90 cases of Lyme disease without lethal outcome and morbidity average annual rate of 3.58 per 100,000 population. Most patients was in 2009. year. The municipality Sokobanja the highest incidence rates - 37.69. Since Lyme disease is suffered more urban population - 69% more women - 62%. From May to July, half of registered patients, children 5-9 years of age have the highest rate per 100,000 residents - 31.05. A quarter of patients are pensioners. 39 people were hospitalized and laboratory-confirmed 66th

Conclusion: Compliance with preventive measures when spending time outdoors, treatment of green areas in the city and places to visit, properly remove the tick from the skin in the first 24 hours, and timely diagnosis and treatment will reduce the incidence and occurrence of severe forms of Lyme disease.

Keywords: Lyme disease incidence, prevention

ZNAČAJ OBAVEZNIH ZDRAVSTVENIH PREGLEDA ODREĐENIH
KATEGORIJA ZAPOSLENIH U OTKRIVANJU NOSILACA SALMONELA
**THE IMPORTANCE OF LEGALLY REQUIRED MEDICAL
EXAMINATIONS OF CERTAIN EMPLOYERS IN DETERMINE THE
HEALTHY SALMONELLA CARRIERS**

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Introduction: Salmonellosis is one of the most common and widely distributed food-borne diseases. It constitutes a major public health burden and represents a significant cost in many countries. The aim of the paper was to show the frequency of Salmonella carriers among adult healthy employers who produce, deliver or sell food, or work in water supply, in kindergartens in the Nishava and Toplica Districts from 2006 to 2010.

Material and method: The source of data were protocols and registers of Salmonella carriers, and annual reports of infectious diseases of Center for diseases control and prevention, Institute for Public Health Nis. Descriptive epidemiological method was done. The data were retrospectively analysis by gender, age, profession and place of residence. The most frequent types of Salmonella isolates are presented, too.

Results: During the period 2006-2010, in Nishava and Toplica Districts a total number of registered healthy Salmonella carriers was 69 (28-40,6% men and 41-59,4% women). A total number of determined healthy Salmonella carriers in Nishava District was 56 (81,2%). It was for times higher compared than in the Toplica District 13 (18,8%). The highest number of Salmonella carriers by age was in the age-group 30-39 years, and the lowest one was in the age group 50-59 (32,4% vs 7,3%). Among the employers who produce, delivery or sell food there was a total number of 55 (79,7%) healthy Salmonella carriers. There were four times less healthy Salmonella carriers, 14 (20,3%) of all determined who didn't worked directly with food, but they have been working in the water supply, in kindergartens, or they were personal in hospital, students, etc.). The most frequent Salmonella types in healthy carriers were: S. Typhimurium and S. Enteritidis. The lower number of isolated Salmonella was: S. Agona, S. Anatum, S. Hadar, S. Infantis, S. Jawa, S. Ohio, S. Sentenberg.

Conclusion: In order to prevent salmonellosis in human population statutory medical examinations of employers who produce. Deliver or sell food is of great importance. According to the presented results the number of healthy Salmonella carriers are much more frequent in employers who produce, delivery or sell food than in employers who sometimes contact with food.

Keywords: carrier salmonella, epidemiology

**EPIDEMIOLOŠKE KARAKTERISTIKE TRIHINELOZE U SREMSKOM
OKRUGU U PERIODU 1999-2008 GODINE
EPIDEMIOLOGICAL CHARACTERISTICS OF TRICHINELLOSIS IN THE
SREM REGION IN THE 1999-2008 PERIOD**

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Aim: Analysis of epidemiological characteristics of trichinosis in Srem with particular reference to epidemiological-epizootic situation of trichinellosis in Srem and Vojvodina;

Materials and methods: Data from the database to an infectious disease, the annual report of the Institute of Public Health of Vojvodina and the Republic of veterinary inspection was used.

Results: In Vojvodina registered 1504 patients of which 11.5% of Srem.

Outbreaks were recorded in all districts of Vojvodina and Srem all municipalities.

Infested meat is mostly originated from indigenous courts (64%), 8% of these are unetoj foodstuff. Demographics of patients in Srem is no different from the structures of the patients in Vojvodina.

Conclusion: Accessibility veterinary examination, strict control of production and distribution of food, the implementation of adopted and respect the laws and regulations on food safety, public education and general practitioners, better cooperation between epidemiologists and veterinary inspection; flow of information and data on the epidemiological situation and the measures epizootološkoj which in the future should be conducted in order to identify hot spots, foods and risky behavior, identify patients and combat the epidemic.

Keywords: trichinosis, Srem, Vojvodina

LEISHMANIASIS U R.MAKEDONIJI, 1975-2010

LEISHMANIASIS IN REPUBLIC OF MACEDONIA, 1975-2010

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Introduction: Leishmaniasis (Kala-azar) is a chronic and potentially fatal parasitic disease of the viscera (the internal organs, particularly the liver, spleen, bone marrow and lymph nodes) due to infection by the parasite called *Leishmania donovani*. Source of infection are wild and domestic animals and rodents. From animals to humans is transmitted by insects the Genus *Phlebotomus*. It occurs as a cutaneous and visceral form. According to the WHO, *Leishmania donovani*, is transmitted by sandfly bites in parts of Asia (primarily India), Africa (primarily Sudan) and South America (primarily Brazil) where all together there are an estimated half million cases per year. There are also several hundred cases yearly in Europe (primarily in the Mediterranean region) and a few in North America.

Aim: To show the distribution of Leishmaniasis in Republic of Macedonia during 1975-2010, with some determinate registrated data point variables of infected persons (sex, age, place of living).

Method and Materials: Data sources: Monthly and annual reports for infectious diseases from Epidemiological Department in Institut for Public Health of the Republic of Macedonia. This paper presents epidemiological descriptive study with adequate statistical methods (tabular and graphical shows, trend, percentages structure, specific morbidity rates). Results: During 1975-2010 in Republic of Macedonia are registrated totally 137 cases of kala-azar, 67% (92) males i 33% (45) females. Most common category is on the age of 0-9 years (69,56%) with average annual morbidity of 3,47/100 000 and smallest number of cases is on the age of 10-19 years (1,08%) with average annual morbidity of 0,04/100 000. Most of the cases, 31,52%, are registrated in Skopje, by 12% in Debar, Strumica and Stip, 6,52% in Struga, by 5,43% in Veles and Gostivar, and by a few cases every year in other municipality. This disease has a seasonal character, spring-summer, and increasing trend in this 35-year period.

Conclusion: According of the data we can see that kala-azar is present in our country with few cases every year. Most affected population are children on the age from 0-9 year. This disease occurs more often in the hot months because of increasing activity od the vectors and rodents. Preventive measures are necessary and they are huge, longterms and uncertain, with target to rezervoar (rodents, wild animals) and phlebotomus (vector control: hygiene and environmental sanation, insecticides, repellents). If domestic animals are affected they must be destroyed. Most important is early detection of the disease and hospitalization with goal to prevent the transmission.

Keywords: Kala-azar, transmission, prevention, vector control, environmental sanation.

**PROCENA REZULTATA PREVENTIVNIH SISTEMATSKIH DERATIZACIJA U PERIODU 2005-2010G . U GRADU BITOLA
ESTIMATION OF RESULTS OF PREVENTIVE SYSTEMATIC DERATISATION IN THE PERIOD 2005-2010G. IN THE CITY OF BITOLA**

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Goal: To determine differences in the degree infestiranosti and index density populations of harmful rodents in certain urban blocks before and after pest control carried out in the city of Bitola, continuously in the period 2005-2010g.

Material and Methods: Used quantitative methods relevant in determining the infestation degree and density of the population of harmful rodents - survey sheets, placebo baits, methods of spraying and registration marking, feces and the presence of rodents in buildings. Estimation was conducted in six urban blocks in the city of Bitola where infestiranosti level was highest, over 50%.

Result: After conducted deratistion after the first 2 years infestation fell by 5.7% (2007g) for residential building and additional 5.3% (2010g) after continuous pest control, and 13.7% (2007g) and a further 9.2% (2010g) at other public and educational institutions. The highest percentage of reduced rats infestation (28%) occurred in preschool and 19% in public educational institutions.

Conclusion: The trend of declining infestation levels and reduced density of the population of harmful rodents in the region of the city with high degree of infestation, justifies deratisation as anti epidemic pest control measure that should be continuously carried out each year in two phases. The result would be the improvement of Hygiene-epidemiological situation in the city.

SESIJA PROMOCIJA ZDRAVLJA HEALTH PROMOTION SESSION

**TEMA: PROMOCIJA ZDRAVLJA MLADIH
TOPIC: PROMOTION OF YOUTH HEALTH**

**UVODNO PREDAVANJE
INVITED LECTURE**

**PROMOCIJA ZDRAVLJA U ZAŠTITI REPRODUKTIVNOG ZDRAVLJA
MLADIH
HEALTH PROMOTION IN PROTECTING OF YOUTH REPRODUCTIVE
HEALTH**

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1. Reproductive health

Within the framework of WHO's definition of health as a state of complete physical, mental and social well-being, and not merely the absence of disease or infirmity, reproductive health addresses the reproductive processes, functions and system at all stages of life. Reproductive health, therefore, implies that people are able to have a responsible, satisfying and safe sex life and that they have the capability to reproduce and the freedom to decide if, when and how often to do so.

Implicit in this are the right of men and women to be informed of and to have access to safe, effective, affordable and acceptable methods of fertility regulation of their choice, and the right of access to appropriate health care services that will enable women to go safely through pregnancy and childbirth and provide couples with the best chance of having a healthy infant (1).

Reproductive health is directly conditioned by social, cultural and behaviour factors. Reproductive life can be made of pleasant and incentive events and conditions, such as satisfaction, intimacy and happiness, which bring love, giving birth and raising children, and happy family life, but also of those painful which endanger health, such as inequality, abusing and illness.

Regulation of fertility is one of the most significant factors, which have an influence on reproductive health. The fundamental right of a woman is to have a control over her fertility. This is particularly important when it is known that 585000 women worldwide die per year during pregnancy or giving birth (2), and 70 000 women die yearly because of the consequences of unsafe abortion, while 5 million have health consequences (3).

At the International Conference on Population and Development, held in Cairo in 1994, sexual and reproductive health was identified as an area of special concern for all national health services. This includes both prevention and care, and covers a range of issues, such as safe motherhood, reproductive choices and STI/HIV/AIDS control. The 1995 International Planned Parenthood Federation (IPPF) Charter on sexual and reproductive rights declares the “right to equality and to be free from all forms of discrimination”.

Sexual and reproductive rights as defined in the IPPF Charter comprise the right of reproductive choice based on full, free and informed consent. In this context, the right of access to full information and the widest possible range of safe, effective and acceptable contraceptive methods, the right of choice regarding marriage, to found and plan a family, the right of access to the highest possible quality of health care, the women’s right of safe motherhood and of protection from genital mutilation, as well as protection from forced pregnancy, forced sterilization or abortion, and the right of women, men and children to be protected from all forms of sexual violence and exploitation, the right of privacy in services relating to sexual and reproductive health and the right of political participation in order to advocate sexual and reproductive health and rights are addressed (4).

2. Reproductive health of youth in the world

A huge proportion of the world's population - more than 1.75 billion - is young, aged between 10 and 24 years. Adolescents (aged 10 to 19 years) have specific health and development needs, and many face challenges that hinder their well being, including poverty, a lack of access to health information and services, and unsafe environments.

One in every five people in the world is an adolescent, and 85% of them live in developing countries. Nearly two thirds of premature deaths and one third of the total disease burden in adults are associated with conditions or behaviours that began in youth, including tobacco use, a lack of physical activity, unprotected sex or exposure to violence (5).

In many countries of the WHO European Region and globally, taboos and norms about sexuality, pose strong barriers to providing information, health services and other forms of support needed by young people to safeguard their sexual and reproductive health. Yet sexual and reproductive behaviours during adolescence have immediate and long-term consequences.

The health behaviours and problems affecting adolescents are unique. Predominant among the factors that contribute to the global burden of disease among young people are sexually transmitted infections, HIV, the consequences of unsafe sex, unsafe abortion, and alcohol and drug abuse. Many of these factors are inter-related.

Multiple studies in Europe have shown that among young people, the average of first sexual intercourse is between 15,7 and 18 years of age. There is some evidence that the age of initiation may be lowering. The percentage of 15-year-olds who had experienced sexual intercourse in developed European countries goes from 15 to 47 (6) .

About 16 million girls aged 15 to 19 give birth every year - roughly 11% of all births worldwide. The vast majority of births to adolescents occur in developing countries. The risk of dying from pregnancy-related causes is much higher for adolescents than for older women.

Significant differences exist between the pregnancy rates in various countries in Europe; from a low 5.39 pregnancies per 1000 women aged 15-19 in Switzerland to a high of 64.73 pregnancies per 1000 in the Russian Federation. Examination of pregnancy outcomes reveals that more adolescents choose to terminate their pregnancy than deliver (7).

Young people aged 15-24 accounted for an estimated 45% of new HIV infections worldwide in 2007. Up to 80% of people who are HIV-positive in the European Region have not yet turned 30 (5).

According to information of WHO 36-70% of youth in the world does not use contraception (8). 8-62% of women aged between 15-29 years use modern, while 3-18% use traditional contraception. Unwanted pregnancies are the reason for 90% of unwanted deliveries, 89% of unsafe abortions (9). In Balkan, 41.3% of the boys and 20.8% of the girls had already experienced sexual intercourse. Mean age at sexual debut differed between sexually active boys (15.5) and girls (16.3). A condom was used at first sex by 73.7% of the boys and by 69.0% of the girls. Condoms were consistently used during sexual intercourse with the current or last partner by 64.3% of the boys and 48.5% of the girls (10).

Social environment has a huge influence on sexual behaviour and using contraception. The most significant factors are:

- Adequate education of sexuality and family planning,
- motivation for using contraception,
- existence of appropriate contraceptives and their availability,
- media promotion of using of contraception,
- all-conquering marketing programs,
- family role and good communication with parents,
- influence of peers (friends),
- social-economic status,
- communication between sexual partners,
- quality of a relationship and frequency of sexual activity,
- self-control, self-respect,
- knowledge.

3. Reproductive health of youth in Serbia

Various researches of reproductive health between youth in Serbia have shown that the situation is unsatisfactory. Eighty-four percent of males and 65% of females (adolescents) reported having sexual experience (11). Research between students of University in Nis has shown that 78% are sexually active students, and 68% use contraception, most commonly a condom. (12). They do not have enough knowledge about contraception, neither about sexually transmitted diseases. Research in Kragujevac showed that 41.6% of the students had sexual relations; 80% of the interviewees used

a condom during the first sexual contact, and more than half (51.6%) of the students having sexual relations did not use contraceptives (13).

In Serbia, into sexual relations entered 29% of adolescents aged from 15 to 19 years, 36,3% of males i 21,8% of females. One-third of adolescents who were sexually active in the year before the research, had used unsafe methods of contraception (infertile days, withdrawal). According to official statistic, in structure of all deliveries 7,3% are females younger than 20 years. Delivery rate of women aged from 15 to 19 years is 17,4 per 1000 women in this age. There is no precise information about interruptions of pregnancies of adolescents because of the lack of information, so there is no precise information about pregnancy rate. According to official information rate of interrupted pregnancy of females aged from 15 to 19 years was during year 2006. 4,1 on 1000, and according to information of Republic institute for statistics pregnancy rate was 21,0 on 1000.

According to assessments, in every calendar year there are about 50 pregnancies per 1000 females aged 15-19 years (in Netherlands is this number 7, and in Great Britain, which has the worst health indicators of adolescents, this amount is 28). It is estimated that in our country each year 6-7 thousands of females aged between 15 and 19 years make abortion.

Problem dimensions of sexually transmitted diseases of students in our country are not completely known because of the inadequate registration of these diseases. However, results of some researches show that huge number of youth has some sexually transmitted infection (for example: one third of sexually active females aged 19 has Chlamydia infection of genital organs). At the age under 15 HIV infection is rare (3.6% of total infected number), and in the age between 15 and 24 is four times higher (13,2%) (14, 15).

4. Ways to inform youth about reproductive health

Increasing flow of information, especially in the last decade, when youth use more internet, has enabled that information about sex become available to a huge number of youth. Since youth live in a „high-risked environment“ and meet new changes in life, it is necessary that they get an adequate education and form particular values about sexual behaviour and family planning.

Media and friends are important source of information in many countries, especially in those where is education in schools insufficient and inadequate: Greece (16), Bosnia, Macedonia and Albania (10), Slovenia (17), Croatia (18), Bulgaria (19), Romania (20), Turkey (21).

In developed European countries situation is different. In Great Britain sexual education exists in schools, so the school is the most important source of information about sexual life, in regard to friends (6). In Netherlands 74% of students has received these information in high school (22). In some developed countries like Ireland and Sweden, school and friends are equally important source of information (23,24).

In USA, half of faculties have as elective course reproductive health, but only 10% of students attend it. One of the reasons is that 68% of students in this country gets information during previous schooling (22).

In Scandinavian countries, media strongly support sexually education of youth (25).

In contrast, in Arabian countries, where is conversation about sexuality taboo, youth has no possibilities to get necessary information in school or from parents. 95% of males and 75% of

females in Algeria has received information about sexuality without parent's or health worker's help (26).

In China was sexual education introduced in year 2002, so half of youth who enter studies have already knowledge about sexuality and reproductive health. Still most of the students think that this is old-fashioned education, inadequate and it does not satisfy their needs. As the most important sources of education, students in China state: press, radio, parents, friends and internet (27).

In dormitories is organized peer education about reproductive health for those girls, who come from the rural parts of Tunis to study in the capital city (26).

For youth in Egypt and Oman is opened hotline for questions about reproductive health and HIV (28).

In USA, students who enter universities come with different level of knowledge, so the programs are made, in aim to preserve and promote their reproductive health. Program offers basic knowledge about contraception, its usage and prevention of sexually transmitted diseases (29).

Young people in Serbia are not informed about contraception from adequate sources. As a part of school programs in our country an adequate education about sexuality and using of contraception does not exist. They speak rarely about these topics with their parents, so according to research in Nis, more than half of youth get knowledge about contraception from friends or media. Only one-third of students have informed themselves at the doctor, and a little over one-fourth were informed by their parents (12). Similar situation is in Novi Sad: adolescents in Novi Sad get information from media (63,6%), friends (50,6%), parents 5% and doctors 1% (30).

5. Promotion of youth reproductive health in the world and in Serbia

There are many programs in the world, which aim to increase knowledge about preservation of reproductive health. Sexual and reproductive health issues have been set out as priorities in the collaborative agreements between the WHO Regional Office for Europe and the member states. Most programs consider young peoples' special needs in reproductive and sexual health. In some countries, programs addressed to young people are implemented in the framework of strategies to prevent and combat HIV/AIDS and STIs. In Ukraine, which adopted a national reproductive health strategy in 2006, the main objectives within the program are to implement services addressed to young people, to promote safe behaviour and to develop curricula for youth sex education on a national level. Latvia implemented sexuality education as a statutory part of school health education in 2005. In Uzbekistan, the action plan to introduce Youth-Friendly Services throughout the country and to implement school sex and reproductive health education was funded by the UNESCO in its initial phase (31).

Association for family planning in Tunis has initiated program of students' reproductive health promotion in this country. The project included 6000 female students and it consisted of promoting their knowledge about unwanted pregnancy and sexually transmitted diseases (aka. «Project of double protection»). Student-volunteers who were educated, later did peer-education with female students, they included radio stations, made forums with health workers, group sessions and individual interviews (32).

In aim of promoting family planning in developing countries, cooperation «South-to-South» was initiated, which includes 16 countries of Asia, Africa and Latin America. Ministry of Health and

Government of these countries supported this initiative. The essence of this cooperation is promoting reproductive health of population in these countries, defining mutual aims and interventions to be made to achieve those aims, and these are: integration of reproductive health into family planning services, reduction of maternal mortality, promotion of prevention sexually transmitted diseases and HIV, promotion and protection adolescent reproductive health (33).

Youth education about HIV and sexually transmitted diseases is carried out in countries of Middle East and North Africa, most frequently through media (TV, Internet) and mobile phones. In Egypt and Oman is opened «hotline» for giving information. ABC educational program is conducted, and it implies: A- abstinence, as a first possible choice for youth, B- to be faithful (to a partner), C- condom (sexually active should use condom) (34).

As for the Western European Region, there is growing awareness of the need to develop approaches that address the diverse needs, attitudes, cultural and social backgrounds of young people, in order to gather experience regarding how to promote the inclusion of diverse groups, particularly young migrants, in sexual and reproductive health program and services.

The WHO Regional Office for Europe released its Regional Strategy in 2001 to provide strategic guidance for member states in the development of policies and the implementation of program for improving sexual and reproductive health. The overall goal of the Strategy “is to support member states in their efforts to ensure sexual and reproductive rights, to improve the SRH status of the people and to generate solidarity in Europe“, in order to reduce the wide regional gap in SRH status in Europe, as well as inequalities within European countries (35).

Regarding adolescents’ sexual and reproductive health, the three objectives are:

- To inform and educate adolescents on all aspects of sexuality and reproduction, and to assist them in developing the life skills necessary to deal with these issues in a satisfying and responsible manner,
- To ensure easy access to youth-friendly SRH services,
- To reduce the levels of unwanted pregnancies induced abortions and STIs among young people.
- In connection with these objectives, the proposed targets and outcomes are:
 - To include education on sexuality and reproduction in all secondary school curricula,
 - To implement educational programs aiming at young people out of school,
 - To provide confidential, affordable Youth-Friendly Services, accessible without parental consent (one service for every 100,000 young people),
 - To actively involve young people in all educational and service activities,
 - To increase the proportion of young people protecting themselves against unwanted pregnancy and STI transmission to at least 90%,
 - To reduce teenage pregnancy by between 20% (countries with a fairly low rate) and 50% (countries with a high rate).

Within the Strategy’s implementation framework, strategies and activities proposed to advance the sexual and reproductive health of young people are:

- To use interactive methods in sexuality education and to start it before young people become sexually active,
- To integrate SRH activities in comprehensive health and social programs for young people,
- To focus sexuality education on knowledge, values and building behavioural skills,
- To focus programs with girls on strengthening self-confidence and negotiation skills, and programs with boys on their SRH needs and responsibilities,
- To develop materials for different age groups,
- To provide services where large groups of young people meet,
- To train and sensitize health, education and other professionals for adolescents' SRH needs,
- To initiate education of parents on guiding young people's sexual development.

Youth sexuality education and the SRH of young people are also addressed in other program areas, such as in the field of reproductive choice, where proposed activities are, for example, to introduce or to extend reproductive rights and family planning education in schools, universities, military services, and to remove legal obstacles to access to family planning services for minors.

In the field of STI/HIV/AIDS control, the Strategy suggests raising awareness of risky sexual behaviour, adapting young people's safer sexuality education to the needs of boys and girls, and implementing peer education in STI/HIV prevention.

There are not any national programs in our country for family planning and preservation of reproductive health in youth population. Information about family planning was brought in 1998 and it was supposed to partly solve this problem, but it never came to realization. National program for family planning does not exist, so only single programs could partly improve existing situation. Except youth counseling, which exist in some health centers, recently were opened web sites where youth can get basic information about reproductive health (36).

In proposal of Youth Law (clause 20/ 5, 6.) is defined: "comprehensive informing youth about important questions for youth, and promoting and incitement for active and quality spending their free time, tendance of healthy and safe ways of living" (37).

In national strategy for youth clause 4.10. read: „Protect and promote health of youth, reduce risks and leading health disorders and develop health protection adjusted to youth“. Within that, one of specific aims is to preserve youth reproductive health, given through clause 4.10.2. „Protect and promote youth reproductive health“. Measures for realization of this aim are following:

4.10.2.1. Promote knowledge, attitudes and behaviour of youth in field of reproductive health, with acceptance and respect of gender diversity;

4.10.2.2. Develop programs of peer educators in work with you in terms of reproductive health;

4.10.2.3. Including contents important for protection of youth reproductive health into curriculums of primary and high schools;

4.10.2.4. Mobilize parents, media, citizens' Associations and local communities to affect on public opinion and politics in relation to reproductive health (38).

With the strategy of developing youth health in Republic of Serbia, different ways of youth education in field of health promotion are given, including promotion of reproductive health through following tasks:

8.2.4 Including health education in school curriculums and their full implementation.

8.2.2.1 Preparation and production of peer programs for youth health promotion (39).

6. Conclusion

Reproductive health is a key element of a healthy life. In order of ensure that adolescents have the ability to achieve good health, we needs to ensure that the required tools are provided:

- We must provide information and education in a timely, recognizing the importance of peer education.
- We must educate on both the positive and negative sides of sexual and reproductive health.
- We need to provide life skills and choices.
- We need to provide and ensure access to youth-friendly services.
- We need to provide a safe supportive environment, working towards the elimination of gender inequality, coercion and violence, and ensuring that basic needs are met.

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**USMENA PREDAVANJA
ORAL PRESENTATIONS****KONTROLA PUŠENJA MLADIH U CRNOJ GORI
TOBACCO USE AMONG YOUTH IN MONTENEGRO**

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Introduction: Smoking is a global problem that affects health of entire population, and it has particularly bad effect on the health of young people.

Goal: Main goal of the survey was to determine the difference between results of two surveys done among students from 13-15 years of age.

Method: Survey was done by GYTS methodology during the period of 2004-2008. Both surveys were taken using questionnaire of 88 questions and obtained results were compared. Results were analyzed in Atlanta using unique methodology. Writing of reports was organized with coordinators of surveys, by WHO in Copenhagen.

Results: Comparison of survey results in 2004 and 2008 showed that there was decline in number of children who: smoke, experiment with smoking, are constantly exposed to effects of tobacco smoke, are exposed to tobacco promotion. The difference in results between genders was evident. At the same time, there was increase in the number of children who advocate restrictive tobacco laws, who want to stop smoking and those who said that they discussed negative effects of smoking in school.

Conclusion: GYTS study shows that the smoking problem exists among Montenegrin youth, and that all the segments of the society should be engaged in solving this problem. Children are exposed to smoking which affects their acceptance of smoking as behavioral pattern and increases their exposure to secondhand smoke.

**SOCIJALNO-MEDICINSKI ASPEKTI PUŠENJA KOD MLADIH U
R.MAKEDONIJI
THE SOCIAL AND MEDICAL ASPECTS OF YOUNG PEOPLE'S SMOKING
IN THE REPUBLIC OF MACEDONIA**

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Introduction: The health is the most important investment in the social and economic development of the society.

Goal: The smoking epidemic represents an increasing threat for the young people's health in the world and also in the Republic of Macedonia.

Material and operation method: Prospective survey research was conducted with survey questionnaire.

Random sample: Target groups: young people at the age from 15 to 22 years.

The subjects from both samples were divided into 2 groups: smoking and non smoking subjects.

Results: Boys smoke significantly more than girls ($X^2 = 13.3$ $df=1$ $p<0.0003$). Young people try their first cigarette at the age of 14-16 ($r = .12744$). Young people smoke everywhere ($D_{max} = 0.11$ $p>0.05$). Young people think that selling tobacco products to underage children should be prohibited ($X^2 = 10.13$ $df = 1$ $p<0.0014$). The education of the mother has significant influence on their children, so that they would not start smoking cigarettes ($D_{max} = 0.18$ $p<0.05$).

The families of the young smokers rarely discuss the bad influence of the cigarettes.

In general, more than half of the interviewed young people in Macedonia think that their living society is a good place for living. Reasons for smoking are the following: habits, family problems, love problems, school, peer pressure, etc.

Conclusion: The young people in the Republic of Macedonia are well informed about smoking as a social and pathological phenomenon, and also that smoking is a risk factor for certain diseases.

Regarding the young people's views on the smoking in the family, they consider mother to be the pillar of the family and that she can considerably influence them to quit smoking.

In general, young people in Macedonia think that their smoking peers are not well accepted by the society.

Keywords: smoking, young people, legislation, family, education.

UTICAJ RODITELJSKE KONTROLE I STAVOVA NA UPOTREBU KANABISA MEĐU ADOLESCENTIMA

INFLUENCE OF PARENTAL CONTROL AND ATTITUDES ON CANNABIS USE AMONG ADOLESCENTS

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Introduction: The use of psychoactive substances is associated with many factors such as personality, environment or the actual substance that causes addiction. The influence of the primary family, especially parents` attitude, is important in the attitude formation process of young people toward psychoactive substances use. The aim of this study was to assess the impact of parental control and attitudes to the cannabis abuse among young people.

Method: We used data from the European school survey of alcohol and other drug use among young people aged 16 years (ESPAD), conducted by the Ministry of Health of Serbia and Institute of Public Health of Serbia. The survey was conducted on 6133 students from 273 secondary schools in Serbia (46.5% boys and 53.5% girls). Mantel-Haenszel X^2 square test was used to test the statistical significance of differences in the obtained responses.

Results: Marijuana or hashis, in the last 30 days before the survey, were used by 2.3% of young people (3.3% of boys and 1.5% girls). At least once in their life 6.7% of young people (8.8% of boys and 4.9% girls) tried using marijuana. According to the responses of young people in this study, five of six parents would not allow their children to use cannabis. Cannabis use, at least once in their lifetime, ranges from 6.0% among the young whose mothers would not agree to let them use it, to 38.0% among young people who thought that their mothers would have nothing against it. ($X^2 = 933.6$, $p < 0.000$). Among young people who believed that their fathers would not agree to their cannabis use, 5.8% at least once in their lifetime used cannabis, and 44.2% among youth whose fathers did not have anything against the using of this substance ($X^2 = 1260.4$, $p < 0.000$). Data relating to the control of youth leisure time by their parents, indicate that 63.1% of parents always know where their children spend their leisure time, while 23.0% know very often. With decreasing levels of parental control, increases the percentage of young people who tried cannabis in their lifetime. Youth whose parents know where they spend their leisure time tried the substance in 4.1%, and those whose parents mostly do not know, in 18.5% of all cases.

Conclusion: There is a connection between parental attitudes and parental controls with the consumption of cannabis among young people. The percentage of cannabis use correlated with approval or disapproval of parents that these substances are used. Increased levels of parental control and prohibition of cannabis consumption resulted with the lower percentage of young people who have ever tasted marijuana and hashish in their lifetime.

Keywords: parenting styles, parental control, the use of cannabis, youth

ZNAČAJ DPST INTERVENCIJE ZA PREVENCIJU RIZIČNOG SEKSUALNOG
PONAŠANJA STUDENATA
**IMPORTANCE OF VCCT INTERVENTION AIMED AT PREVENTING
RISKY SEXUAL BEHAVIOR AMONG STUDENTS**

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Introduction: Several models of HIV prevention counseling in conjunction with HIV testing have been developed. Since 1993, CDC has recommended one interactive counseling model, called "client-centered HIV prevention counseling", which involves two, face-to-face sessions with a provider or counselor (pretest and posttest counseling). HIV prevention counseling should focus on the client's own unique circumstances and risk and should help the client set and reach an explicit behavior-change goal to reduce the chance of acquiring or transmitting HIV. Students and young people, are very vulnerable to HIV. Voluntary counseling and HIV testing (VCCT) services, which meet the needs of young people, offer number of opportunities for changing HIV-related risk behaviour, including unprotected sex.

Aim: To assess importance of VCCT intervention aimed at preventing risky sexual behavior among students.

Material and Methods: The Register and anonymous questionnaires of the clients who attended VCCT Center on HIV, in IPH Niš, during the period 2006-2010 were used as the study material. Descriptive method was applied.

Results: Within the observed period, among 1144 clients, 43% were students (58% male and 42% female), with mean age at the first sexual intercourse of 18.3 years for girls and 17.1 for boys. The majority of students who may be at risk of HIV infection are those who practice unprotected sex (84.6% hetero and 0.6% homo-bi). Most of students were unmarried (94.9%), didn't use condom during the last sexual intercourse (60%), had more than two sexual partners during the past year and changed the place of residence due to studying (59%). The majority of students (58%) didn't perceive risk of acquiring HIV infection during their life.

Conclusion: VCCT has been accepted in developed and in majority of developing countries, and became part of a standard package of prevention strategies. Students and young people, who are offered personalized VCCT intervention are likely to reduce their practice of risky sexual and other HIV-related behaviours, and prevent HIV infection. Students and young people in general, have a broad range of HIV/AIDS-related needs. Services must be developed to respond to these needs including a stimulation to attend VCCT center and a motivation for testing.

Keywords: students, risky sexual behaviour, voluntary confidentially counseling and HIV testing

"SPEAK EUROPEAN" ABOUT HEALTHY EATING PROMOTION AMONG YOUTH
"GOVORIMO EVROPSKI" O PROMOCIJI PRAVILNE ISHRANE MEDJU MLADIMA

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The training programme "Speak European" was aimed to civil and public servants at all levels of Government, and at professionals, whose work is connected to the preparation for accession of the Republic of Serbia to the European Union. The training aims to strengthen the broad understanding of the values, standards and practices of the European Union. As one of the project participant from the training at the College of Europe (based in Bruges, Belgium), the author presents guide about healthy eating among young people in Europe. The guide intends to encourage the further development of nutrition education among European youth. It was demonstrated that nutrition activities are effective and actually improve health among children and young people. It was presented examples of projects in European countries aims to provide useful suggestions to be adapted to each context. Evaluation of nutrition education activities are discussed also.

Keywords: healthy eating, health promotion, European Union, youth

EPIDEMIOLOGICAL STUDIES OF PSYCHO-PATHOLOGICAL MANIFESTATION OF ROMANY POPULATION IN ADOLESCENTS

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It is shown the importance of certain specific cultural factors in the development and shaping of mental disorders. Cultural factors may have pathogenic, pathoselective, pathoplastic, pathoelaborating, pathofacilitating and pathoreactive effect in the development and shaping of mental disorder, which means that the mental disorders associated with the culture may be specific to particular circumstances and ethnocultural different traditions in which they occur. The literature describes some of the psychopathological syndromes associated with a particular cultural group. Illness divination (stregoneria) and witchcraft (Maleficium), the disease spirits (ghost sickness), devil's eye (mal de ojo), the demon spirits (right), the demon spirits of the ancestors (Byung-shin), sickness of soul loss (susto), the Arctic or polar hysteria (pibloktoq), Amok, Windigo psychosis. There is not much data on the psychopathological syndromes among different ethnic groups living in our area.

Our goal was to analyze the expression of adolescent psychopathology in Romany population from the territory of the region, who were treated at a hospital outpatient department or in the period from 2008 to 2010 year. The age of adolescents was from 10 to 18 years. Besides psychopathological contents also were analyzed socioeconomic and cultural status of the family, value systems and interpersonal relationships in the family.

Psychopathological manifestations of the Romany population of patients with patients of other ethnic groups were compared.

ODNOS INTENZITETA SIMPTOMA NESANICE I SOCIODEMOGRAFSKIH
KARAKTERISTIKA STUDENATA MEDICINE
**RELATIONSHIP BETWEEN INTENSITY OF SYMPTOMS OF INSOMNIA
AND SOCIO-DEMOGRAPHIC CHARACTERISTICS OF STUDENTS OF
MEDICINE**

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Aim: The objective of study was to assess relationship between intensity of symptoms of insomnia and socio-demographic characteristics of medical students.

Method: The survey was designed as cross-sectional study. The study included 392 students of Medical Faculty in Prishtina-Kosovska Mitrovica. The intensity of symptoms of insomnia was assessed by the Athens Insomnia Scale with 5 items (AIS-5). For data analysis were used descriptive statistical methods, statistical methods for testing hypotheses (Mann-Whitney test, Kruskal-Wallis test) and methods for testing dependency (Spearman's coefficient of linear correlation).

Results: Median score of all respondents in the survey on AIS-5 was 3 (range 0-12). Score of the AIS-5 were significantly higher for dental students (Med=3, range 0-11) than medical students (Med=2, range 0-12) ($p=0.03$). Scores on the AIS-5 were significantly higher among female students ($p=0.009$). There is a statistically significant weak negative correlation between AIS-5 scores and years of study (Spearman $r=-0.12$, $p=0.015$), as well as with age of students (Spearman $r=-0.10$; $p=0.039$). Students studying at the Bologna system have significantly higher scores on the AIS-5 ($p=0.01$).

Conclusions: Based on the presented results it can be concluded that dental students and female students have more pronounced symptoms of insomnia than medical students or male students. Symptoms of insomnia were more pronounced among younger students in lower years of study, studying at the Bologna system. The results represent a starting point for planning and implementing health-promotion activities aimed at improving students' sleep problems.

Keywords: insomnia, medical students, Athens insomnia scale with 5 items

**POKAZATELJI MORBIDITETA MLADIH U RAŠKOM OKRUGU U PRVOJ
DECENIJI XXI VEKA –SMERNICE ZA PROMOCIJU ZDRAVLJA
MORBIDITY INDICATORS OF YOUTH IN RASKA DISTRICT IN THE
FIRST DECADE OF XXI CENTURY -GUIDELINES FOR HEALTH
PROMOTION**

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The aim is to follow some indicators of morbidity of young Raska district in the first decade of the twenty-first century, to assess the existence of risky behavior by shares their health and set priorities in the promotion of youth health.

Method: used a descriptive-analytical method with a socio-medical approach with data from routine health statistics.

Results: We observed movement of three diagnostic groups of diseases: 1.F00-F99 Mental and behavioral disorders 2.N00-N99 Diseases of the urinary tract and 3.S00-T98 injuries poisonings and consequences of external causes, which we can indirectly indicate the presence of risky behavior in this population and provide guidance on priority areas in health promotion with youth.

We got a ten-year growth trend observed in all groups and to a maximum of approximately 395 cases per year in group S00-T98, followed by an average of 153 cases per year in the group of N00-N99, and an average of 34 cases in group F00-F99. This confirmed our assumption about the correlation with multiple risk factors present in the behavior of young people in particular: exposure to trauma, early entry into sexual relationships without the use of contraceptive protection, the abuse of tobacco, alcohol, drugs, whose distribution unfortunately, we do not have precise data, and whose prevention a priority in promoting youth health.

Conclusion: We will have future activities to strengthen the motivation of young people for cooperation in the field of health promotion, where we priority develop life skills in all phases of growing up with the ultimate targets building healthy lifestyles and reduce the spread of these risk behaviors with consequences for the health of young people.

Keywords: young, morbidity, risky behaviors, health promotion

**NIVO SEKSUALNE EDUKACIJE MLADIH NA PODRUČJU OPŠTINE
BITOLJ,R.MAKEDONIJA 2010GOD
THE LEVEL OF SEXUAL EDUCATION OF THE YOUNG PEOPLE ON THE
AREA OF THE DISTRICT BITOLA, REPUBLIC OF MACEDONIA 2010**

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Aim: The aim of this research is to discuss some aspects of the sexual education of the young people in terms of respect and protection of the sexual rights, as well as capacities of young individual to make decisions which will have positive impact on his sexual/reproductive health.

Material and methodology of the work: In our Centre for sexual and reproductive health we have done a questionnaire which we have titled “Sexuality of the young people”. The questionnaire consists of nine short questions with the possibility of choosing one of the several offered answers. We gave them only ten minutes to complete the questionnaire. The research was conducted among 520 students: in 7 elementary schools, 4 secondary schools and one faculty in Bitola, in the period of one school year, in the framework of Health education activity.

Results: Asked who is the most important in making the decisions about the sexual relations: 65% of primary students; 78% of high school students and 80% of all students included in the questionnaire answered that it's them. In terms of expectancy of the sexual relations, 65% of all students expect mutual pleasure; 20% of all students think that it will make the relationship stronger and 10% of all students think that they will satisfy their partner with it. The mass media have a very important role in making the decision about their personality and their sexuality for 24% of all students included in the research, the role of the media is small for 28% of all students, and the media have no role for 48% of all students. Sexually active have been 25% of primary students; 20% of high school students and 35% of university students. From the sexually active 20% of all students don't use condoms during their sexual intercourse. When asked whether there is a need of a counseling centre for sexual and reproductive health, 85% of all students confirmed that there is a need for functioning of counselling services for sexual/reproductive health.

Conclusion: Information on sexuality and sexual health based on scientific research is more than necessary. The right of education about the sexuality as a process, includes both, the educational and health institutions. The message emphasized in many international documents and agreements is very clear: Sexual education is no longer an opportunity that we need to consider, it is a necessary investment which society has to promote and invest in the sexual health of the young people. Deliver the message: “Safe sex is based on mutual knowledge and understanding.”

Keywords: sexual education; health; promotion; investment

POSTER PREZENTACIJE
POSTER VIEWING

PROMOCIJA REPRODUKTIVNOG ZDRAVLJA MLADIH ŽENA
PROMOTION OF REPRODUCTIVE HEALTH IN YOUNG WOMEN

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Dom zdravlja Niš

Aim: protection and improvement of reproductive health in adolescent and young women on the territory of the City of Niš.

With conducted anonymous interview between women younger than 30 years risk factors were investigated; information, basic knowledge and reproductive health behavior were perceived. Adolescents and young women were covered because of increased number of reproductive health risk factors i.e. sexually transmitted diseases and unwanted pregnancy.

Results: interviewees had the first sexual intercourse at the age of 17, 38% doesn't use any form of contraception, for 48% of those that use contraception the choice is a condom, and only 4,35% use contraceptive pills, almost half of interviewees knows to indicate only 1-3 sexually transmitted infections, 12,3% interviewees had more than 5 partners and 16% had abortions.

Discussion and conclusions: Analyzing gathered results it is observed that adolescents and young women are insufficiently informed and had no adopted healthy lifestyle regarding reproductive health. It is necessary to employ and unite all existing resources in struggle against sexually transmitted infections, unwanted pregnancy, and correct recognition of sexuality in young. Promotion of reproductive health of young women has to be simultaneously supported by education system, health care system, media, including education of family.

Keywords: sexually transmitted diseases, unwanted pregnancy, adolescent and young women

ANKETNO ISTRAŽIVANJE UPOTREBE HITNE KONTRACENCIJE MEĐU
TINEJDŽERIMA
**QUESTIONNAIRE STUDY OF USE OF EMERGENCY CONTRACEPTION
AMONG TEENAGERS**

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Aim of the study is to get the information and frequency of emergency contraception use, as well as sexual activity, among teenagers in ages 15 to 18 in Skopje.

Material and Methods: Study design included questioning 638 teenagers, females, at the ages between 15 and 18 years, in four secondary schools in the area of Skopje in 2010. The authors used the anonyme questioning for real responses obtaining. The results were analysed with descriptive and analytical epidemiological method.

Results: The paper presents the results for girls in secondary schools from the cohort 1995 (mean age of 15,8 yrs., range 15,3-16,2) and 1994 (mean age of 16,6 and range 16,3-17,4), as well as for girls in upper secondary schools from the cohort 1993 (mean age 17,9 with range 17,5-18,8 yrs.). Only 33% of the 15-16 years olds and 27,5% of the 17-18 years olds didn't know what emergency contraception is. The proportion of girls who had used emergency contraception increased with age from 2,1% to 15,1%. Two thirds of all girls who had used emergency contraception had used it only once. In secondary schools 7,3% of 15 year olds (cohort 1995) and 16,8% of 16 year olds (cohort 1994) had sexual intercourse, while among 17 – 18 year olds (cohort 1993) this percent was 41,5%. Information about the usage of contraception and consultations with gynecologist about that have had only 57 (8,9%) from the girls that were included in the survey and most of them searched for the information on the internet.

Conclusions: Emergency contraception is a part of primary health care in local health centers and family planning clinics in many European countries (Finland, Denmark, Sweden, Norway). Sexual education in schools includes adequate informationing and consulting of teenagers about the sexual problems including emergency contraception. In our country the sexual education is not imposed in the schools and consultations with gynecologist about using contraceptive methods confirmed only low percentage of the girls in age from 15 to 18 years.

Keywords: teenagers, education, emergency contraception, sexual intercourse.

DETE SA SMETNJAMA U RAZVOJU I RODITELJSTVO CHILD WITH DISABILITIES AND PARENTING

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Magical emotional attachment to the child begins before conception in dreams and desires of prospective parents.

Objective: The aim of this study was the highlight features of early binding, the interaction between child with disabilities and its parents, the maladaptive forms of interaction and to propose measures for overcoming them.

Methods: 63 parents of children with disabilities aged 3-12 years who were treated at the Department of Child Neurology filled out self-assessment questionnaire about stress. Diagnostic categories of children were: mental retardation, cerebral palsy, pervasive disorder, hyperkinetic disorder, conduct disorder, problems in speech, multiple development disabilities.

Results: 23.8% of the parents assess the degree of stress as very stressful, 57.1% of parents as moderate stress, 19% of parents as a little stressful.

The idealization of the child is a normal process of parenting, and if it does not exist, the parent-child relation is threatened. The loss of the expected perfect child is a serious narcissistic injury that leads to feeling of guilt, anxiety, sadness or anger.

Conclusion: Parents of children with disabilities experience their parental role as stress. The meaning of the psychotherapeutic concept in work with these parents is to develop a strategy for living with the problem.

Keywords: child with disabilities, parenting

UPOTREBA ALKOHOLA KOD MLADIH USAGE OF ALCOHOL BY YOUTH

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Aim of study: Assessment of behaviour by youth connected with usage of alcohol in regard to age, sex, financial situation and place of living.

Study method: observational cohort study. The sample includes 1340 examinees, 680 girls (50,7%) and 660 boys (49,3%) from Niš and its surroundings: from city 778 (58,1%), from villages 319 (23,8%) and from suburbs 243 (18,1%). Examinees are classified in 4 categories: under 14 years (279 examinees (20,8%)), from 15 to 17 years (308 examinees (23%)), from 18 to 20 years (324 examinees (24,2%)), and over 21 years old (429 examinees (32%)).

Results: 90,2% examinees have tasted alcohol, mostly aged between 18 and 20 years (96,9%), while there are least examinees who have tasted under age of 14 (71,3%). There is statistically significant difference between examinees of different age in relation to, whether they tasted alcohol drinks or not. ($\chi^2=145.832$; $p<0.001$). More boys (94,7%) than girls (85,8%) have tasted alcohol, so there is statistically significant difference in regard to sex ($\chi^2 =29.702$; $p<0.001$). The most examinees who have tasted alcohol come from medium economic status (92,4%), 88,1% are in good, while 85,6% are in bad financial situation. There is statistical significance between them ($\chi^2 =9.433$; $p<0.01$). The highest number of them live in city (91,6%) and in suburbs (90,9%), while 86,2% of examinees live in villages. Depending on place of living there is statistically significant difference between examinees ($\chi^2=7.809$; $p<0.05$). Examinees taste alcohol most frequently at the age of 14. Older than 21 years taste alcohol later (with nearly 15), while youth under 14 years taste it earlier (already with 12). There is statistically significant difference in relation to age by first alcohol consuming ($F=70.702$; $p<0.001$). Boys taste alcohol much earlier (already with 13) than girls (who taste it with 15), so there is statistically significant difference in relation to sex ($F=70.702$; $p<0.001$). More than half examinees from medium economic status have tasted alcohol with 14 years, while one-third examinees in good and 10 % in bad financial situation tasted alcohol with less than 14 years. There is statistically significant difference in relation to financial situation ($F=5.387$ $p<0.01$). Large quantities of alcohol were in few hours consumed by 61,6% of examinees. Older than 21 years (76,1%), are the most numerous consumers of 5 or more alcoholic drinks in short period of time, while examinees under 14 years (25,4%) are the rarest consumers of large quantity of alcohol. There is statistically significant difference between examinees of different age in relation to, whether they consumed 5 or more alcoholic drinks in short period of time ($\chi^2 =126.409$; $p<0.001$). Boys consume larger quantity of alcohol more often (72,9%) than girls (48,8%), so there is statistically significant difference in relation to sex ($\chi^2=65.231$; $p<0.001$). The highest number of examinees who have consumed larger quantity of alcohol are in bad financial situation (78,3%), 63,6% are in good financial situation, while 57,7% are from medium economic status. There is statistically significance in relation to financial status ($\chi^2=16.906$; $p<0.001$). Nearly

two thirds of youth who drink more drinks in short period of time come from cities or villages (po 62%), while 59,5% come from suburbs.

Conclusion: More than 9/10-ths of examinees have tasted alcohol, little more boys than girls. The most numerous are the examinees in the age from 18 to 21, who come from medium economic status. Youth taste alcohol average with nearly age of 14. Older than 21 have tasted alcohol later (with almost 15), while in the age under 14 have tasted alcohol with already age of 12 . Boys taste alcohol earlier (already with 13) than girls (who have tasted with nearly 15). Large quantities of alcohol in few hours were consumed by almost 2/3-rds od eaxaminees (the most were consumed by the eldest, a little more were consumed by exeminees with bad financial situation, more often boys than girls).

Keywords: alcohol, youth

UKLJUČIVANJE STUDENATA UNIVERZITETA U NIŠU U PLANIRANJE,
KREIRANJE I REALIZACIJU ZDRAVSTVENO-VASPITNIH PROGRAMA
NAMENJENIH DRUGIM STUDENTIMA
**INVOLVEMENT OF STUDENTS IN THE PLANNING, DESIGN AND
IMPLEMENTATION OF HEALTH EDUCATION PROGRAMS AIMED AT
OTHER STUDENTS**

Čedomir Šagrić, Radulović O, Bogdanović M, Marković R, Jović S, Milosavljević D, Stefanović A

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The success of health promotion programs for students and youth in general are based on the use of modern methods and tools. That implies use of electronic media and various techniques that can motivate young people to take action to preserve and improve their own health.

Quality of health promotion programs certainly contributes to the inclusion of young people in work teams at all levels from planning to implementation of health promotion programs.

Aim: The aim of the research is to establish students' attitudes about health-educational programs designed for them.

Method: Survey included 519 students of the University of Nis. We used the original questionnaire. The data were analyzed in the statistical program Epiinfo. The study had been used absolute and relative numbers of the tests - χ^2 square test.

Results: Student participation in the development and implementation of health and educational programs aimed at other students, supports 82% of respondents, while 47% personally interested in such activities.

More students of biomedical faculties (53.8%) than students of other faculties (40.1%), who are interested to participate in the development and implementation of these programs.

For 47.2% of the surveyed students is highly desirable that health promotion programs intended for other students realize doctors.

Conclusion: Students have a need to engage in all phases of health promotion programs. The additional motivation of young people could help in recruiting a greater number of interested students to participate in such programs. Students do not sufficiently recognize the contemporary approaches in health promotion and in the same time they do not have a need for them.

Keywords: students, health promotion programs

SESIJA MIKROBIOLOGIJA – MICROBIOLOGY SESSION

TEMA: MIKROBIOLOGIJA DANAS
TOPIC: MICROBIOLOGY TODAY

UVODNA PREDAVANJA
INVITED LECTURES

NETWORKING FOR LABORATORY PREPAREDNESS AND RESPONSE TO EMERGING PATHOGENS

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Although the use of antibiotics and public health interventions have reduced infectious diseases burden in the last few decades, we remain vulnerable to epidemics and pandemics caused by pathogens. We have witnessed the emergency and pandemic spread of HIV and SARS. More recently, avian influenza and the H1N1 pandemic have resulted in animal and human health burden, economic loss and societal disturbances. The emergency and global spread of multi-drug resistant pathogens threatens our ability to treat bacterial infections in hospitals and in the community. Laboratories play a critical role in timely recognition (risk identification) and response to public health emergencies of international concern (PHEIC). At the same time, clinical and public health communities continually face challenges when responding to emerging diseases as well as managing public and political expectations.

From lessons learned from past experiences and the SARS epidemic, the International Health Regulations (IHR) 2005 calls for strengthening core capacities of the 194 World Health Organization (WHO) member countries.

One of the mandates of the National Microbiology Laboratory (NML) is to prepare and respond to emerging diseases. In recent years, we have enhanced our capacity through recruitment of scientists, through enhancement of infrastructure such as biological containment laboratories, implementation of high throughput platforms to detect, monitor and conduct research of viruses and bacteria and communication platforms.

But the scientific community (including NML) recognizes that no single country has the resources to control spread of infectious diseases; cross border collaborations and information sharing are important for early mitigation of a PHEIC. Therefore, it is important that laboratories also tap into the vibrant communities of laboratory networks while strengthening their own capacity at the same time. In Canada, we have established different networks to serve different purposes. These include

disease specific networks, public health networks, hospital networks, and networks of networks. There are many successful networks nationally and globally.

The World Health Organization, the National Microbiology Laboratory, Canada and Centers for Disease Control and Prevention, USA have collaborated to develop the Global Laboratory Directory (GLaD) to map, connect and support the laboratory networks and their members. GLaD (www.gladmap.org) is conceived as a support system to encourage laboratory networks to be part of a global community of peers. Its purpose is to connect laboratory networks so that they are able to leverage capabilities and capacities in support of effective preparedness in compliance with the IHR. GLaD comprises of three components: *GLaDMap*, *GLaDResource*, and *GLaDSupport*.

To connect members within and among networks in GLaD, electronic gateways are becoming more important for access to even those laboratories which have been regarded as the most remote or isolated. Scientists, laboratories, and networks have embraced these developments, but we need to overcome the challenges seen in capturing and sharing this ever-expanding, vibrant, science-based connectivity, and to find ways to support the viability of laboratory networks that serve as irreplaceable repositories of experience and knowledge.

HEPATITIS B VACCINATION COVERAGE AMONG BULGARIAN HEALTHCARE PERSONNEL: PARALLEL EPIDEMIOLOGICAL AND SEROLOGICAL SURVEYS

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Background. Hepatitis B vaccination is the most effective measure to prevent HBV infection and its consequences[1,2,3]. In Bulgaria, the protection of medical staff through immunization is arranged based on the Ministry of Health Regulation №4/2002. According to the regulation: “The employer should make available the hepatitis B vaccine and vaccination series to all employees who have occupational exposure at no cost to the employee.”

Aim. In 2008-2010 three surveys were carried out to assess the level of staff protection through hepatitis B vaccination. We present an overview of the results of these studies which are discussed in parallel.

Methods. Studies design was as follows: 1) A questionnaire survey to estimate

the immunization coverage and hepatitis B vaccination acceptance in HCP was carried out in 2008 [4]; 2) A seroprevalence study to assess the protection of HCP based on the serologic markers of HBV was performed in 2007 [5]; 3) A prevalence survey to assess the hepatitis B vaccination coverage in HCP and a parallel retrospective review of vaccination and serology data to determine the duration of protection in previously immunized medical staff was started in 2010 [6].

Results. Hepatitis B vaccination coverage levels among healthcare personnel (HCP) in Bulgaria vary substantially between different hospitals (23% to 85%) according to the prevalence study in 2010 and between different services/units (63% to 91%) based on the self-report questionnaire survey in 2008. In parallel, significant differences between hospitals exist in post-hepatitis B vaccination seroprotection rate (28% to 60%) as it has been shown in seroprevalence study, 2007. As a potential impact of vaccination, a substantial reduction of newly acquired HBV infections in HCP was found with up to 3-fold lower anti-HBc prevalence when compared with the general population of the same age groups tested in the 1980s [7]. A high antibody response rate ($\geq 95\%$) in the first months after the primary course of hepatitis B vaccination and a decline of protective antibody to undetectable level in one-third of the staff tested 10-15 years post vaccination was demonstrated, in line with the other similar studies. Our results showed that among hospital-based medical staff an average of 47% had not received hepatitis B vaccination and 36% were still susceptible to HBV, corresponding to an estimated number of 36 500 unvaccinated and 30 000 non-immune HCP working in the healthcare system in Bulgaria.

Conclusion. In conclusion, further efforts should be focused on ongoing education of HCP to improve their knowledge of and to overcome their concerns about the vaccine. The approach of aggressive communication of information on national, regional and local level regarding the “champions” and their successful methods for achievement of better vaccination rates, as well as

the incorporating of a yearly work plan in the hospital's Infection Control Programme to promote hepatitis B vaccination of HCP and to ensure the appropriate financial and operational resources could be helpful. Implementation of nationally approved requirements for HCP to provide documented evidence of their hepatitis B immunization/immune status and of an universal protocol [8] for post-vaccination screening and revaccination of non-responders is urgently needed.

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HOSPITALNE INFEKCIJE. PROBLEMI! DILEME? REŠENJA! **HOSPITAL INFECTIONS. PROBLEMS! DILEMMAS! SOLUTIONS!**

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INTRODUCTION

Hospital Infection (HI) are infections that occur in the hospital during treatment in the health center or even in a medical institution. Another name for the term nosocomial infection. It is also an infection that was manifested on admission to the hospital, and the patient was not in the incubation stage for most pruzrokovala considered period of 48 hours or longer after admission. HI infection is one that was manifested on admission but may be explained by recent hospitalization. This refers to the operation of which is up to 30 days elapsed from the operation of moments, if not remodeled into an implant, or a year if the implant was installed. It is one infection that is manifested after discharge from the hospital, and the incubation period is consistent with being in the hospital. Although the passage of the newborn through the birth mother thinks inevitability paths, each Intrapartal wound infection in neonatal ward is considered NI. HI are those that occur after completion of the procedure outpatient treatment or diagnostic testing (puncture, catheterization, incision, TRUS and biopsy, pace maker implantation, the stent graft ...)

When it comes to the mode of transmission, of course, that man is the center of our interest either as a direct or indirect source or emitter contact Flugeovih drops.

Airborne route is also in circulation and viral infections are often spread this way, a more difficult and therefore control. Finally, items of general use as a diagnostic and therapeutic instruments (endoskopi. ...) may be a way of transferring.

In order to successfully fight to the detection, monitoring and prevention of HI, as recommended by the CDC in Atlanta, it is necessary to establish technical and operational, multi-disciplinary team to perform their tasks according to the principle of cooperation in the shared task and for the general good, and in the interest of the patient. The classic proposal is to be a microbiologist for the etiologic diagnosis and determination of treatment with antibiotics, an epidemiologist for epidemiological studies and follow-up necessary parameters for infectious disease clinical observation and treatment, and ordering the representative of those specialized branches where the patient is a resident of The Center. Mandatory member and Director of the institution because of legal obligations and responsibilities, as well as the head nurse to be working with departmental staff.

When it comes to eco-system HI should be noted that the epicenter of attention our patients as well as staff and visits and hands are particularly emphasized. On the other hand, there are micro-organisms, and the third is the environment in which the patient resides.

OBJECTIVE

In approaching the development of this work was guided by the desire to point out the problems related to the emergence, importance, monitoring, reporting and prevention of HI.

SIGNIFICANCE

When it comes to the importance of hospital infection more severe underlying disease is understood as the possibility of developing complications. It is also of importance and length of hospital stay as a direct link with the increasing cost of health care provider and the use of expensive drugs and their long use. Fear of smrtog frequent outcome is justified, the real increase in the number and type of resistant bacteria in some units such as intensive care, surgical wards, hematology departments, and as hemodialysis Multiresistence prozrokovala. All this has resulted in prescribing expensive antibiotics and their use, rather than as a replacement of antibiotics as first-line drug of choice. This raises a new problem in achieving commandments rational use of antibiotics. The destruction of the reputation and credibility of the institution and autiriteta doctor thought postponed, only when it is realized.

CONCERNS

To resolve the dilemma over declaration of HI or epidemic, our experience dictates that adhere strictly to the recommendations of the CDC definitions and principles for defining HI. These are:

detailed clinical examination of the patient, review the medical history and the results of biochemical, microbiological analysis results, the resistance pattern of the bacteria, and causal therapy, if required to do X-ray, ultrasound, CT, MR, PH, endoscopy or other diagnostic pregled. Ukoliko all this is not enough, Direct observation is useful during surgery or endoscopy, or the fact that appropriate antibiotic therapy. Also important is the fact that the presence of central or peripheral vascular catheter, endotracheal tube, tracheostomy existence, intravesical catheter, drain, probe ... In these cases must take into account the development of biofilms.

Finally, the rule is that any infection should be individually evaluated.

Objectively, a major problem in the work is irregular REGISTRATION infection. I personally think that the negligence of the rarest and the reason why we should openly make it clear to all participants in the work that the registration function in resolving problems, legal obligations, monitoring of infection, prevention of future infections, monitoring the cause of the infection and its sensitivity to antibiotics, searching and finding the locus minoris in each department or protocol that is tied for the diagnosis, treatment, or go to the department.

When it comes to clinical manifestations HI then undoubtedly dominate, in all considered complexes, urinary tract infections associated with urinary catheter presence and in the percentage of 40-45%. Surgical wound infections occur in 25-30%. Pneumonia are usually related to long-term happiness and lying in 15-25% of cases, sepsis and bacteremia develop in 5-10% of cases.

HI inducers are different when taking into account the relation between now and then. Sometimes these were Salmonella, Shigella, Escherichia coli, Staphylococcus, Streptococcus, Corynebacterium ... and now they are ESBL positive strains of Gram-negative bacilli, MRSA, MRCONS, VRE, Clostridium difficile toxin with her, Pseudomonas aeruginosa metalobetalaktamaza positive Acinetobacter sp. resistant to all available antibiotics. We should not glorify the former causal as harmless, rather, only those of today have greater specific gravity because of its resistance to the drugs.

Although well known to all principles and procedures to be followed in order to prevent HI think it is useful to emphasize the Obligated procedures:

Usually, hygienic and surgical hand washing, lege artis preparing patients for catheterization, skin and mucous membrane preparation for surgery, puncture biopsy or other intervention during which undermines the integrity of the body, the use of antibiotic prophylaxis in accordance with the recommendations, indications and guidelines of good practice. It is useful to patients, and carriers moving away from the operating rooms to healing or obeskličenja, restrict the movement of personnel to a minimum during the intervention. It is necessary to follow all the procedures related to sterilization, disinfection, pest, pest control, ventilation, shorter preoperative patient stays at a minimum, comply with the modes in previjalištima, perform proper disposal of infectious material, remove the catheter as soon as possible, place the patient in the orthogonal position and encourage movement. Use gloves when operating, regular exercise final disinfection. Nothing less weight there is no establishment of the Commission for the Prevention of HI, implement a program that has been adopted to control the implementation of the Prevention of HI regularly report suspicion of HI and to make all this work, though one of the tasks, type of continuing education for all employees.

POSSIBLE SOLUTIONS

Conferences, symposia and seminars devoted to this topic are always valuable and distinct experiences that are reported at the time. Good effect with periodic lectures on level of the institution, and even better, targeted lectures on classroom because it is typical of the work

work in small groups with good communication interpersonalnom.

Intentioned proposals should certainly be communicated in writing to the taste and obligations and legal responsibilities.

Directors, executive staff and head nurses should be put into the elite echelon responsible as they certainly are.

If there are those who simply do not want to implement a given program should respect the legal sanctions which are provided.

Of importance is to develop awareness among employees that they are in trouble because they are during working hours exposed to hospital flora and fauna that can be their improper actions transferred to the home, domestic conditions.

You must take all available actions to reduce the risk of developing

PROFESSIONAL bolesti.U the staff to carry out vaccinations against diseases

so that they can prevent, keep an exact record of the "incident stitches" and injury

During operation, applied post-exposure prophylaxis, develop guidelines on first aid and self-help and instructions on repairing biological hazards, develop manuals and guides

All procedures in the work and mark hot spots, to require compliance with all safety measures at

Work with emphasizing personal responsibility in the implementation and protection.

And at the end of the 12 prominent place stress action to prevent HI:

12 Insulate the patient

11 Prevent the spread of the pathogen transmission prevention

AB

10 not apply any longer than is necessary

9 Know when to say "NO" Vancomycin

8 Treat infection, colonization, NE

7 Treat infection, the judicious use of NO contamination AB

6 Consult a microbiologist and infectious disease specialist

5 Monitor the development of resistance in their own institution

4 Making and Control antibiograms

3 The correct choice of antibiotics diagnosis and effective treatment

2 Early removal of the catheter

1 Vaccination Infection Prevention

CONCLUSION

HI has been, there are and will be. They require constant and continuous engagement team. They represent the daily work load and the threat from appearing. Compromise and the most constructive surgery, diagnostic procedure or therapy. Contribute to the uncertainty and fear of failure and possible death. Require high professionalism, responsibility in work and lifelong learning. If there is one and the same actors, and emphasize labeled abusive and unprofessional. Attacking the self-confidence and determination exhilarating uncertainty.

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APPLICATION OF MLVA FOR TYPING OF PSEUDOMONAS AERUGINOSA FROM HAI CLINICAL CASES

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Objectives: *Pseudomonas aeruginosa* is one of the most important opportunistic pathogens involved in nosocomial infections worldwide. This organism has high rates of multidrug resistance , either intrinsically or following acquisition of resistance genes, over-expression of efflux pumps, decreased expression of porins, or mutations in quinolone targets (2, 3). Typing of nosocomial pathogens is necessary to determine the source of an outbreak, probably chains of transmission and to take effective control measures to prevent the spread of pathogens. Multiple-Locus Variable number tandem repeat Analysis (MLVA) is a method used to perform molecular typing of particular microorganisms (4, 7). It utilizes the naturally occurring variation in the number of tandem repeated DNA sequences found in many different loci in the genome of a variety of organisms. All bacterial genomes contain multiple loci of repetitive DNA. Repeat unit sizes and repeat sequences may vary when multiple loci are considered for different isolates of one species. Moreover, the number of repeat units per locus is a strain-defining parameter (5). Consequently, there is isolate-specificity in the number of repeats per locus when different strains of a bacterial species are compared.

The aim of this study is to apply MLVA6 for analysis of *Pseudomonas aeruginosa* clinical isolates from different Bulgarian hospitals to identify the genotype diversity in comparison to the “gold standard” *SpeI* PFGE macrorestriction analysis in terms of typability, reproducibility and discriminatory power (6). To evaluate the performance: discriminatory power, typeability and reproducibility of MLVA6 for molecular typing of nosocomial *P. aeruginosa* isolates. Assessment of the prevalence of dominant clones *Pseudomonas aeruginosa* in Bulgarian hospitals.

Methods: A total of 83 non-repeat clinical *P. aeruginosa* isolates were included in the study collected at six university and two regional hospitals during 2004-2008. All isolates were identified and antimicrobial susceptibility was investigated by conventional as well as automated VITEK 2 (Bio Merieux, France) systems. For the DNA isolation Prep Man Ultra Sample Preparation Reagent (Applied Bio System, USA) was used. *SpeI* PFGE macrorestriction molecular typing was performed according to the standard protocol of the Health Protection Agency (UK). Six previously described VNTR loci were combined in the MLVA assay (4). PCR were performed in a “QB-96” thermal cycler (Quanta, Biotech Ltd.). PCR products were separated on “QiAxcel” capillary electrophoresis system . All electrophoregrams for cluster analysis were exported and processed in Bionumerics v.4.5 (Applied Maths, Belgium). For estimation of the performance criteria : typeability , discriminatory power etc., the genotype data were input in the EpiCompare v1.0 software (Ridom, GmbH). The discriminatory power was evaluated via Hunter-Gaston Index (1).

Results: According to a MLVA6 analysis all 83 tested *P. aeruginosa* from six hospitals are grouped in 19 main genotypes and 8 subtypes. Loci ms010 and ms061 containing 6-base repeat are the most variable, including the highest number of alleles and thus provided a highest discriminatory power. Automated capillary electrophoresis provides the necessary accuracy and reproducibility in the

separation of the PCR products and allows unambiguous interpretation of profiles and determination of genotype of MLVA6. The predominant types in investigated hospitals are as follow: GT4/4A (13 isolates from hospitals A,C,D); GT12/12A (11 isolates of hospitals A,B,C,D,H); GT2/2A (9 isolates of hospital A,C and D) and GT23/23A (9 isolates from hospital B and F). The genotype distribution appeared to be non-hospital dependent. Most of the genotypes were associated with different wards but several types were located in all hospitals. MLVA6 is characterized by 100% typing ability and 100% reproducibility studies to isolate set. In general the two methods MLVA6 and PFGE performed similarly although MLVA was more discriminative.

Conclusions: By selected conditions it is possible amplification of the six VNTR loci in a single reaction which reduces analysis time and cost of test. Although PFGE is technically demanding and costly it is still the referent and most often applied method for typing of clinical isolates. With this study we demonstrate that a simplified MLVA alternative could be as equally effective as PFGE but far more rapid and cost-effective for typing *P. aeruginosa*. Considering their high level of concordance we could conclude that MLVA is the method of choice for typing hospital *P. aeruginosa* isolates as well as characterization of outbreaks.

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COMPARATIVE STUDY OF THE VIRULENCE AND ANTIGENIC PROFILE OF DIFFERENT *HELICOBACTER PYLORI* STRAINS USING A PROTEOMICS APPROACH.

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Helicobacter pylori is a pathogenic spiral-shaped, microaerophilic, gram-negative bacterium, that inhabits the human stomach (1). Infection is usually acquired during childhood and always elicits an acute immune response that is, however, inefficient in bacteria clearance. Therefore, in the absence of effective treatment, infection persists throughout the patient's life, resulting in chronic gastritis, many times asymptomatic (2). Some patients suffer, however, from dyspeptic symptoms, *i.e.*, the so-called non-ulcer dyspepsia (NUD). In about 15 to 20 % of infected population, this silent destruction of the gastric mucosa will further progress to severe gastric diseases, namely peptic ulcer disease (PUD) (gastric and duodenal ulcers) and gastric cancer (GC) (gastric adenocarcinoma and gastric mucosa-associated lymphoid tissue lymphoma) (3;4). For this reason, *H. pylori* was classified in 1994, by the World Health Organization, as a group 1 carcinogen (5). Depending on the socioeconomic status of the country, the prevalence of infection varies from 40 to over 80% of the population, with higher rates for developing countries (4). These numbers, associated to the worldwide growing rate of antibiotic resistant strains makes the study of *H. pylori* a priority for PUD and GC prevention. These are considered clinically divergent diseases and the risk of development of one of them upon infection by this bacterium is dependent on the severity and pattern of chronic gastritis. These, in turn, reflect differences in a variety of bacterial, host and environmental factors (1).

Aiming the identification of disease-specific bacterial biomarkers and of targets for vaccines and serological diagnosis tests, we have been dedicated to the study of the proteome variability among *H. pylori* clinical isolates, throughout two dimensional electrophoresis (2DE) analysis, followed by mass spectrometry (MS) proteins' identification (6;7). By using this powerful proteomics approach, we concluded that the enhanced virulence of pediatric ulcerogenic strains results from a synergy between their natural ability to better adapt to the hostile human stomach and the expression of the established virulence factors (7). Furthermore, by studying the immunoproteome of a group of Portuguese clinical isolates, we showed evidence of the variability of antigenic pattern among *H. pylori* strains, fact that has certainly contributed to the successive failures of the several tested anti-*H. pylori* vaccines and to the low accuracy of current serological tests (6). Dictating these differences is the unusual extent of genetic heterogeneity that characterizes *H. pylori*, due to the unusual high rates of mutation and recombination events that occur *in vivo* (8).

Our most recent study clearly show that differences in the genome of *H. pylori* strains discriminated by genotyping methods based on genome methylation status (9), are not reflected in the functional genome of the strains. Indeed, once this method is applied to a group of strains isolated from patients from the same geographic region, the generated clusters do not reflect strains' proteome proximity. Corroborating our previous findings, differences in proteome seem to be more closely related to the *cagA* genotype (an important well known virulence factor) of the strains, or of their

association to different infection outcomes. This justifies that within the same geographic region we may find strains varying greatly in their virulence.

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HELICOBACTER PYLORI TYPING METHODS: INPUT INTO HUMAN MIGRATIONS AND ASSOCIATED DISEASES

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The isolation and cultivation of *Helicobacter pylori* from a human gastric biopsy, achieved by Barry Marshall and Robin Warren in 1982, lead the scientific community to finally accept that there are bacteria living in human stomach (1). Marshall and Warren find out that several human gastric diseases were induced by *H. pylori*, like gastritis or ulcers, either in the duodenum or in the stomach, and that the bacterium was associated with inflammation of the stomach mucous membrane. Later it was found in several epidemiological studies, a strong correlation between gastric cancer and *H. pylori*, and since 1994 the World Health Organization classified *H. pylori* as a group 1 carcinogen (2). Bacterial typing methods are useful to understand the natural history, epidemiology, mode of transmission, reservoir, and clinical implication of bacteria infection (3). However, the typing methods used so far for *H. pylori* have been not very successful because of its genomic and allelic diversity (4).

The genomic methylation typing method, developed by us, is useful to type bacteria that have a high number of expressed Type II methyltransferases (MTase) (5). Most of the bacterial MTases are members of Restriction and Modification (R-M) systems. A Type II R-M system is defined by the association of at least two genes: one codes for a restriction endonuclease (REase) that recognizes a specific DNA sequence and cuts both strands; the other gene codes for a cognate MTase that methylates the same DNA sequence, thus protecting it from being cleaved by the companion REase (6). The linkage of these genes allows for simultaneous loss of R and M genes, while physical separation of their gene products allows for hydrolysis of the genomic DNA by residual REase present in daughter cells, and leads to postsegregational killing (7). We developed a new clustering algorithm that takes into account the pressure of REases on MTases, and that is based on the hypothesis that each strain evolves by acquiring new RM systems without losing acquired RM systems (8). The Minimum Common Restriction Modification (MCRM) algorithm aims at constructing a dendrogram that reflects the selfish behavior of R-M systems (8), i.e., the loss of Type II R-M gene complexes inhibits the propagation of a cell population and causes chromosome breakage (9). The visual analysis of the dendrogram produced by MCRM when strains from different origins is considered suggests that there are several clusters and sub-clusters, clearly associated with different geographic regions. *H. pylori* infection is present in about 50% of the human population (10). This large percentage of infection has permitted to compare the human genetic diversity described by Cavalli-Sforza (11) with the bacteria genetic diversity. The pattern of geographic distribution of *H. pylori* and man is surprisingly similar, which allowed speculating for simultaneous coevolution of human and *H. pylori* (12). Recently a simulation predicted that *H. pylori* has spread from East Africa over the same time scale (58,000 years ago) as anatomically modern humans (13). Our data is in agreement with the old association between bacteria and man before the out of Africa modern human migration previously described (12, 13), since clusters of strains with African and Asian origin are clearly present with MCRM algorithm (8). A larger study with 122 strains from different geographic origins confirmed these observations and permitted the association of specific MTases with strain origin. For instance, all *H. pylori* strains express the

MTases M.HhaI and M.NaeI, suggesting that they have been present in the genome since the beginning of human dispersion from the Africa continent (14), which is in agreement with the assumption that modern humans appeared first in Africa, then in Asia, and from this continent they settled in three neighbouring regions: Oceania, Europe and America (11). The genomic methylation typing applied to 70 strains from a single geographic origin (Portugal), but from patients with different diseases (gastritis, peptic ulcer and gastric cancer) showed a tendency for clustering of isolates from gastric cancer patients. All other groups appear in a disperse manner, which is typically observed in *H. pylori* dendrograms (unpublished data). Some of these Portuguese strains proteome was analysed and the variability in the dendrogram is not reflected in the highly similar proteomes. In fact, strain clusters do not reflect strains' proteome proximity, but rather their genetic diversity (unpublished data). These results can not rule out the hypothesis that R-M genes may be associated with disease. However, their association with geographic distribution is much clearer.

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**USMENA PREZENTACIJA
ORAL PRESENTATION****MONITORING BIOLOŠKOG KVALITETA VAZDUHA U ZDRAVSTVENIM
USTANOVAMA U RM: METODE I STANDARDI
MONITORING OF BIOLOGICAL QUALITY OF THE AIR IN
HEALTHCARE FACILITIES IN R. MACEDONIA: METHODS AND
STANDARDS**

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Airborne bacterial and fungal cells and spores may be present in droplets as bioaerosols, as very small individual particles that stay suspended for long periods, or as larger clumps and aggregates that settle rapidly onto surfaces. International standards have been published for biocontamination control in clean rooms -ISO 14698-1/2.

Aim of the survey is to find out some arguments that will point on needs of establishing unofficial standards and updated principles for microbiological monitoring of the air in healthcare facilities in R. of Macedonia.

There has been done an comparative, retrospective survey between the results of air monitoring in 2/3 year period from two official institutions. Passive monitoring was done using 'settle plates' – standard Petri dishes containing appropriate (blood agar) culture media that are opened and exposed for a given time (2 hours) and then incubated to allow visible colonies to develop and be counted and identified. Semiquantitative findings of number of cfu have been analyzed by local standards in each institution. The difference in principle of monitoring the microbiological population is clearly visible from the following data:

statistically significant discrepancy ($p=0,00001$) in the choice of samples for monitoring – 43% from 1197 total samples of the Institute for microbiology are originated from operating theatres, while only 16,3% from 1541 total samples from Centre for Public health have this origin, and most (33%) are originated from working rooms.

significant discrepancy ($p=0,00001$) in air sampling between internal and external control, which are under budget cover of expenses. (only 23% from the total number of samples from operating theatres, and 91,4% from the total number of samples from category "other space"),

significantly different analysis ($p=0,0088$) of the results of bio-quality of the air originated from the operating theatres because of the different local standards - low percentage (8,5%) of bad bio-quality among 514 samples from the Institute for microbiology compared with almost double percentage (14,7%) of bad quality of the air from the almost half of the total samples (251) analyzed in the Centre for Public health.

Keywords: air, monitoring, standards

POSTER PREZENTACIJE

POSTER VIEWING

**ZASTUPLJENOST INFEKCIJE TOXOPLASMOM GONDII KOD TRUDNICA I DECE JUŽNOBAČKOG OKRUGA
PREVALENCE OF TOXOPLASMA GONDII INFECTION IN PREGNANT WOMEN AND CHILDREN IN THE SOUTH BACKA DISTRICT**

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Introduction: Primary infection with *T.gondii* during pregnancy is associated with a higher rate of spontaneous abortions and a risk of congenital defects. The unclear clinical picture of acute toxoplasmosis necessitates laboratory testing for *T. gondii* at the beginning of pregnancy.

Goal: The aim of this study was to determine the prevalence of seropositivity to *Toxoplasma gondii* in pregnant women and women of generative age, as to determine the rate of toxoplasmosis in children.

Methods: The retrospective study covered the period from January 2010 to May 2011. The data were of the Center for Virology in the Institute of Public Health of Vojvodina. The study included 1208 women of generative age and 399 children of various ages. Detection of specific IgM and IgG class antibodies was done by the ELISA test.

Results: Out of 1208 women of generative age there were 404 (33.5%) pregnant women. Seroprevalence in pregnant women was 15.1%, while the acute infection was diagnosed in 2.9% of pregnant women. Seroprevalence to *T.gondii* in the population of children was 9.7%. The highest seroprevalence of 19% was detected in the group of school children, while the highest percentage of 5.8% of acute toxoplasmosis was observed in the group of preschool children. It was noted that the seroprevalence increased with age.

Conclusion: The low rate of seroprevalence to *T. gondii* in pregnant women in the South Backa District indicates an increased risk of congenital toxoplasmosis. Acute toxoplasmosis is the most common in preschool children. In unclear cases, it is necessary to test the avidity of IgG antibodies.

This presentation is a part of the research project TR3 1084 under the auspices of the Ministry of Education and Science of the Republic of Serbia.

ZASTUPLJENOST INFEKCIJE TOXOPLASMOM GONDII KOD STANOVNIKA
JUŽNOBAČKOG OKRUGA
**PREVALENCE OF TOXOPLASMA GONDII INFECTION IN THE
POPULATION OF SOUTH BACKA DISTRICT**

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Introduction: The improvement of socioeconomic condition in developed countries resulted in a decline in seroprevalence of *Toxoplasma gondii*. Because toxoplasmosis is usually presented as an asymptomatic or mild disease, laboratory diagnostics plays an important role in the diagnosis of this infection.

Aim: The aim of this study was to determine the prevalence of *T. gondii* infection in a representative sample of the South Backa District population.

Material and methods: The results of anti-toxoplasma antibodies serological enzyme-immunoassays, performed during 2008-2010, were examined retrospectively. The data were collected for 2690 persons: 107 men, 1958 women, (767 were pregnant women), and 625 children. The IgG avidity test was performed for 11 pregnant women.

Results: The overall *T. gondii* IgG antibodies seroprevalence in studied population was 17,6%. Anti-toxoplasma IgG antibodies were found in 29 (27,1%) males, 355 (18,1%) females, and 81 (12,9%) children. Seroprevalence increased with age, being highest among patients aged >40. The highest incidence of acute infection was among persons aged 26-30 years. Of the 767 pregnant women, 94 (12,2%) and 15 (2,0%) tested positive for *T. gondii* IgG and IgM antibodies, respectively. Acute infection was confirmed for one pregnant woman by avidity test.

Conclusion: A high rate of *T. gondii* seronegativity in population of South Backa District suggests an increased risk of acute and congenital infection.

Keywords: *Toxoplasma gondii*, Seroprevalence, Antibodies

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BAKTERIJSKE ZOONOZE U VOJVODINI U PERIODU 2005. – 2009.
BACTERIAL ZOONOSES IN VOJVODINA IN THE PERIOD FROM 2005 TO 2009

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The presented work is part of the research done in the project TR31084 granted by the Serbian Ministry of Science and Technological Development

Objective: The objective of this paper is to emphasize the significance of bacterial zoonoses in Vojvodina in the period from 2005 to 2009.

Methods: The study is based on data from Health Statistical Yearbook of Republic of Serbia published by Institute of Public Health of Serbia “Dr Milan Jovanovic Batut”.

Results: Bacterial zoonoses were represented with 0.99% (4816/482596) among the total number of registered bacterial zoonoses in Vojvodina from 2005 to 2009. Among them the most frequent were salmoneloses with 73,19% (3525/4816). The most salmonella infections (935 cases) were registered in 2005. and the least in 2009 (451 cases). According to frequency Lyme disease was at second place with 22,36%(1077/4816) among the total number of registered bacterial zoonoses. Lyme disease in Vojvodina in the period 2005 -2009 had an increasing trend: the number of reported cases increased from 164 in 2005 to 294 in 2009. Other Zoonoses in Vojvodina were represented with less than 2% of the total number of registered bacterial zoonoses: Q fever 1,91% (92/4816), leptospirosis 1,29%(62/4816), brucellosis 0,56%(27/4816), tetanus 0,31%(15/4816), listeriosis 0,27%(13/4816), ornithosis 0,08% (4/4816), tularemia 0,02%(1/4816). There were no registered case of anthrax in the period 2005 -2009 in Vojvodina.

Conclusion: Causative agents of bacterial zoonoses were important pathogens in Vojvodina in the period 2005-2009. Among them the most common were salmonella and Lyme disease.

Keywords: zoonoses, salmoneloses, Lyme disease, leptospirosis

INFEKCIJA LISTERIA MONOCYTOGENES U TRUDNOĆI - PRIKAZ SLUČAJA LISTERIA MONOCYTOGENES INFECTION IN PREGNANCY- CASE STUDY

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Introduction: Listeriosis is a name for a group of illnesses provoked by consuming *Listeria monocytogenes*- contaminated food. Such pathogens, Gram-positive bacilli, inhabit wide-spectrum habitats. Researches show that the probability to catch listeriosis is 20 times enhanced at pregnant women compared to other healthy adults. Approximately one third of listeriosis is linked to pregnancy. In such cases, mother usually survives, but the result is spontaneous miscarriage or stillbirth due to fetal listeria infection; also preterm delivery or newborn child's infection occurs. In *L. monocytogenes* meningitis, death rate can be up to 70%; with septicemia, death rate is usually 50%, and with perinatal/neonatal infections- even over 80%.

Methods: *Listeria monocytogenes* is isolated by standard methods of microbiology techniques, isolation on blood agar. Identification: Gram-stain, esculine-hydrolysis positive test, catalase-positive test, CAMP-positive test ("block" type hemolysis), mobility at room temperature. Identification is confirmed by BBL Crystal GP method (2650713622) as well as by Vitec system identification.

Case Study: Patient K.J., 34, from Bela Crkva, presents at 34th GW with diagnosed Oligoamnion, NZR, Status post FMU. At the regular check-up smaller amount of amniotic fluid is noticed accompanied with fetal growth retardation. At the entrance, no contractions registered, heartbeats regular. Declares small amount of amniotic flow discharge. On examination the cervix 1 cm long, insertive for a fingertip. Damp mark on the glove. Litmus test is positive, pH 7; Laboratory tests: Le 15:1; CRP 85.3. Introduced antibiotic therapy: ampicillin 2g IM x 2. Regarding a fact that this was a 34th GW, with the IUGR (intra-uterine growth retardation) of an unclear etiology, pelvic presentation, suspected PTVR (pre-term velamenta rupture), delivery was made through a Caesarean section. In the vaginal smear *Listeria monocytogenes* was isolated in very small numbers, after prolonged incubation from the liquid surface. Delivered was a female infant, weight 1750 g, length 43cm, AS 9/9. On reception: immature, with a hypotrophic aspect, reduced muscle tone, requiring oxygen therapy.

Received at the ICU of the Neonatology department, where gastric aspirate was taken, as well as skin, nose and throat swabs. In the nose and the skin swabs *Listeria monocytogenes* was isolated in small numbers. Introduced was the antibiotic therapy: ampicillin and gentamicin.

The mother states that in the previous year she had a pregnancy that ended in fetal death in the seventh ML. A month earlier she had gastrointestinal problems accompanied by muscle aches and subfebrile temperature, after consuming young cheese purchased at the local market from a farmer.

Discussion And Conclusion: The ideal solution for listeriosis prevention is at the food processing level. Pregnant women and persons with impaired immune system should follow such rules:

avoiding to consume not pasteurized milk and dairy products, as well as all processed food not thermally processed. All meat products should be heated prior to consuming, especially hot dogs and sausages. Raw vegetables should be well rinsed before use. If listeriosis at pregnant women is diagnosed and timely treated, pregnancy can be finalized by healthy newborn delivery.

Keywords: pregnancy, listeriosis, prevention

HUMORALNI IMUNITET I INFEKCIJA BAKTERIJOM CAMPYLOBACTER JEJUNI

HUMORAL IMMUNITY AND CAMPYLOBACTER JEJUNI INFECTION

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Introduction: Campylobacter jejuni (*C. jejuni*), most significant cause of diarrheal disease induce humoral immunity in patients with enterocolitis.

Aim: Monitoring of serum levels of antibodies in patients with enterocolitis and the healthy controls.

Materials and methods: The examined group consisted of 30 patients with enterocolitis, as well as control group. Samples were collected 10th, 21st and 30th days of diarrhea. The level of IgA, IgM and IgG ELISA was determined.

Results: In the first sample positive values for IgA, IgM and IgG were found in 11 (36.7%), five (16.7%) and in 14 (46.7%) patients, respectively. On the day 21st, antibodies were found in 59.24%, and on day 30th, antibodies were found in 55.55% patients. The IgA optical density (OD) was the highest after 10 days (30.71 ± 36.46), and significant difference was recorded between first and third sample. Analysis showed significant difference in the values IgM OD as well as between first and second serum sample. The value of IgG OD decreased over period of time. In healthy controls, IgA, IgM and IgG OD were below cut-off values.

Conclusion: This study gives preliminary results for interpretation of humoral immune response and its protective role in patients with enterocolitis in Serbia.

Keywords: Campylobacter jejuni, enterocolitis, humoral immunity, ELISA

UČESTALOST INFEKCIJE IZAZVANE ROTAVIRUSIMA KOD
PEDIJATRIJSKIH PACIJENATA RAZLIČITOG UZRASTA SA SIMPTOMIMA
GASTROENTERITISA
**INCIDENCE OF ROTAVIRUS INFECTION IN DIFFERENT AGE GROUPS
OF PEDIATRIC PATIENTS WITH GASTROENTERITIS**

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Aims: The aim of the present study was to determine the incidence of rotavirus infection in infants and children up to 7 years of age in the town Niš and its surrounding area. Seasonal prevalence of rotavirus-associated acute gastroenteritis was also evaluated.

Materials and methods: An enzyme immunoassay (RIDASCREEN® Rotavirus; R-Biopharm AG, Darmstadt, Germany) was used to detect rotavirus in the stools specimens of 731 pediatric patients presenting with gastroenteritis during 2009.

Results: The overall incidence of rotavirus in children presented with acute gastroenteritis (newborns through 7 years of age) was 4.79%. In hospitalized children (n=85; 11.63 %) with severe disease symptoms, rotaviral infection was diagnosed in 12 (14.12%). Out of 646 (88.37%) ambulatory treated pediatric patients, 23 (3.56 %) had rotavirus in their stools. Rotaviral infection was diagnosed in 41.66 % (5/12) hospitalized infants (0-1 year) with gastroenteritis. The highest incidence of rotavirus infection was among patients less than one year of age (6.45%). Regarding the occurrence of rotavirus infection in relation to season, the highest prevalence of rotavirus-related acute gastroenteritis was recorded in the period October-December (48.57%), and the lowest during July-August (8.57%).

Conclusion: Our data of rotaviral infection in children during this 12-month research period indicate that rotaviruses are an important factor in the etiology of the acute diarrheal diseases in our population.

Keywords: Rotavirus, incidence, acute diarrheal diseases

**BAKTERIJSKI UZROČNICI ENTEROKOLITISA NA TERITORIJI BEOGRADA
OD 2001. DO 2010. GODINE
BACTERIAL AGENTS AS THE CAUSE OF ENTEROCOLITIS IN
BELGRADE: 2001- 2010**

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Introduction: Regardless of numerous preventive efforts, communicable diseases of the digestive system caused by bacteria still rate as most prominent.

Aim: We wanted to show the frequency of occurrence of certain bacteria, causative agents of Enterocolitis, their number and interrelatedness in Belgrade, in a ten- year period.

Materials and Methods: We used the stools of patients referred to our facility by their general practitioners in primary health care. All patients were from Belgrade and had been diagnosed with acute diarrheal syndrome. In isolation and identification of the bacterial agent(s), we used standard laboratory methods.

Results: Between 2001 and 2010, we analyzed 177, 569 stool cultures in our Laboratory for Microbiology. Bacteria, causative agents of the diarrheal syndrome, have been isolated from 8.7 % of the stool samples. In descending order, most frequently isolated species were *Campylobacter* spp. (8, 835 strains, or 5,0%), *Salmonella* spp. (6, 145 strains, or 3.5%), *Y. enterocolitica* (252 strains or 0.1%), and *Shigella* spp. (144 strains, or 0.08%). In the structure of isolates, *Campylobacter* spp. was present in 57,5%, *Salmonella* spp. in 40,0%, *Y. enterocolitica* in 1,6% and *Shigella* spp. in 0,9%.

Conclusions: In the previous periods, *Salmonella* spp. was most frequent causative agent of acute bacterial diarrhea in Belgrade. Since 2004, *Campylobacter* spp. has been predominant and more frequently present in the total number of isolates. *Shigella* spp. has been seen less frequently, primarily due to preventive health care activities. The number of *Y. enterocolitica* isolates has been rather uniform in the ten- year period, with the complete dominance of the O: 3 serologic group, typical for Europe.

Keywords: Diarrheal syndrome- Bacterial diseases-*Salmonella* spp.- *Campylobacter* spp.- *Shigella* spp.- *Y. enterocolitica*

**ASIMPTOMATSKO INTESTINALNO NOSILAŠTVO CLOSTRIDIUM
DIFFICILE KOD OSOBA STARIJIH OD DESET GODINA
ASYMPTOMATIC INTESTINAL CARRIERS OF CLOSTRIDIUM
DIFFICILE IN PEOPLE OLDER THAN TEN YEARS**

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The aim of the research is to determine the intestinal carriers of *Clostridium difficile* in people older than ten years.

The research included 679 persons with formed stools: healthy individuals aged 10 and over (516), group D; hospitalized patients in the hospital spent at least 48 hours (100), group E and staff of Clinical Center in Nis (doctors, medical staff with higher and secondary level of education, paramedical staff) (63), group F.

The stool sample was seeded in the laboratory of selective CCF [cykloserin (500µg/mL), cefoxitin (16µg/mL), fructose] agar (Biomedics, Parg qe tehnicologico, Madrid, Spain). Identification of *C. difficile* isolates performed was using API system for anaerobic bacteria (API 20A BioMerieux, France) and agglutination Culture CDT Rapid Latex Test Kit (BectonDickinson, USA). The toxins A and B of *C. difficile* detected by ELISA-ridascreen *Clostridium difficile* Toxin A/B (R - Biopharm AG, Germany). *C. difficile* toxin A detected by ColorPAC Toxin A test (BectonDickinson, USA).

From the sample of the 24 (3.53%) persons cultivated *C. difficile*. Of the total number of persons (679), carriers of certain types of toxin-producing strains of *C. difficile* was 2.50 % (A-/B-), 0.88% (A+/B+) and 0.15% (A-/B+). Representation of persons with *C. difficile* by followed groups ranged from 1.75 – 12.70%. In most of the groups (2 / 3) established the dominance of non-toxigenic (A-/B-) isolates with the rate of carriers 1.75 – 5.00% depending on the groups. Toxigenic isolates only prevalent in the group F in relation to non - toxigenic (7.94% versus 4.76% of persons). In the group D is not found carriers of toxigenic strains.

The presence of asymptomatic intestinal carriers of *C. difficile* in the human population, indicates the possible reservoirs and sources of infections caused by this bacterial species in and outside of the hospitals setting. Future studies, using more modern microbiological methods, and comparison with isolates obtained from patients with CDAD will be established for transmission of *C. difficile* and the possibility of cross infection in our geographical area.

**NOSNO-ŽDRELNO KLICONOŠTVO BETA HEMOLITIČKIM
STREPTOKOKOM GRUPE A KOD DECE U PREDŠKOLSKIM USTANOVAMA
NA TERITORIJI BEOGRADA
NASO-PHARINGEAL GROUP A BETA HEMOLITIC STREPTOCOCCUS
CARRIERING IN BELGRADE PRESCHOOL FACILITIES**

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Goal: Investigation of naso-pharyngeal streptococcal children carrying in Belgrade kindergardens.

Materials and methods: From 24.084 children from Belgrade kindergardens age 1 to 7 years old we took 48.168 nasopharyngeal swabs in period from 01.06.2010. to 28.02.2011. For isolation and identification of group A BHS we used standard laboratory methods. We examined susceptibility of this strains to erythromycin.

Results: Streptococcal carrying has been proven in 6,9% of swabed children of which 2,94% from the nurseries and 8,25% from older groups. From 16 city parts, percentual representation of streptococcal carrying is from 0,77% to 9,79%. 44 (2,64%) of all 1664 isolated strains group A BHS were not susceptible to Erythromycin.

Conclusion: Percentual representation of streptococcal carrying is almost three times larger in older groups than nurseries and significantly larger in central city parts than suburbs. Our tests show low prevalence of nonsusceptibility towards Erythromycin.

Keywords: group A beta haemolytic streptococcus, carrying, Erythromycin.

REKURENTNA INTESTINALNA KANDIDOZA RECURRENT INTESTINAL CANDIDOSIS

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Introduction: The prevalence of recurrent intestinal candidosis (RIC) has been increasing in the recent years.

Aim: The aim was to investigate the the antimycotic and syptomathic effect of medical nutrition therapy in patients with RIC, based on data acquired from the Department of Parasitology and Mycology at the Institute of Public Health Niš.

Material and methods: The survey included 60 patients with RIC. The criteria was that, 30 days after prescribed therapy, they had two control microbiological examinations of stool samples. Investigation group consisted of three subgroups of patients. Subgroup 1 consisted of patients that were on nutrition therapy specially created for patients with intestinal candidosis. Subgroup 2 included patients that were on nystatin therapy (500 000 i.j. of nystatin three times a day in 10 days period if time), while in subgroup 3 were patients who were on ketoconazole therapy (200mg of ketokonazole twice a day in 10 days duration). *Candida* spp. were isolated with standard micological procedure. *Candida albicans* (*C. albicans*) was differentiated from other species using germ-tube test and chromogenic medium - Cromogen albicans, (Parquetecnologico de Madrid, Spain). Semiquantitative method was done for determination of *Candida* spp.colony forming units (CFU) number on solid media.

Results: The results showed that medical nutrition therapy in case of intestinal candidosis had an excellent antifungal and syptomathic effect, in 80% of patients, detected in both control stool sample examinations. 90% of patients in subgroup three who were treated with ketoconazole showed recovery, but in second control examination 7 (35%) of them restore symptoms of intestinal candidosis with positive finding of *Candida* spp. in the stool sample. Seventy-five percent of patients in subgroup two that were on Nystatin therapy resulted vaNišing the symptoms and reduction in the CFU number of *Candida* spp., unfortunately 5 (25%) patients in the second control had recurrent intestinal yeast infection.

Conclusion: Medical nutrition therapy has a satisfactory antimycotic and syptomathic effects in patients with RIC in the long period of time.

Keywords: Recurrent intestinal candidosis, *Candida* spp., medical nutrition therapy

PREVALENCIJA GEOTRICHUM SPP. INFEKCIJE/KOLONIZACIJE
INTESTINALNE MUKOZE
**THE PREVALENCE OF GEOTRICHUM SPP. INFECTION /
COLONIZATION OF THE INTESTINAL MUCOSA**

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Introduction: Geotrichum spp. can colonize the mucosis of respiratory and digestive system in humans. Even they are not aggressive opportunists, in patients with immunodeficiency, they can cause a very serious infections with the mortality to a 75%.

Aim: The aim of this paper was to examine the prevalence of Geotrichum spp. infection/colonisation of intestinal mucosis in patients with the symptoms of fungal infection of the digestive tract.

Materials and methods: The research included 21418 patients that were sent to a mycological examination of faeces in a period of time from 2007 until the end of 2010. The mycological analysis was performed using the standard procedure. Geotrichum spp. were identified based on their morphometric characteristics. Morphometric characteristics were obtained by Laboratory Universal Computer Image Analysis system (Lucia M, 1996). The results were elaborated with the statistical method of descriptive and quantitative analysis (SPSS 14.0 for Windows 2003).

Results: Geotrichum spp. was isolated from the material of 299 (1.40%) patients. Using the statistical analysis we confirmed the significant difference in prevalence of geotrichosis according to the year of research {2007-1.1%; 2008-0.7%; 2009-1.2%; 2010-2,5%; (p=0.001)}. Statistical significant difference was also discovered in prevalence of this mycosis according to a gender because Geotrichum spp. was more frequently present in the intestinal tract of women (p=0.001)

Conclusion: In this study we not determined a high prevalence of Geotrichum spp. infection/colonisation of intestinal mucosa in investigated patients. However, the study demonstrated a positive trend of intestinal Geotrichum spp. infection / colonization.

Keywords: Geotrichum spp., infection of digestive tract.

HROMATOGENI MEDIJUM U DIFERENCIRANJU GLJIVA RODA CANDIDA CHROMOGENIC MEDIUM IN A DIFFERENTIATION OF CANDIDA SPECIES

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Introduction: The most common cause of opportunistic mycoses are *Candida* species. Chromogenic medium is being applied for isolation of *Candida* spp. in recent years. This commercial media enables differentiation of *Candida* species in primary cultures, because different *Candida* species colonies have unique colours on these media.

Aim: The aim was to evaluate the percentage of identified species of *Candida* genus, isolated from the stool samples of patients with intestinal candidosis, using chromogenic medium.

Material and methods: Research included 7148 examinees sent to the Institut of Public Health Niš to a micological examination of feces, in a period from January 2010 until March 2011. *Candida* spp. were isolated using standard micological procedures. The differentiation of species in *Candida* genus was done applying chromogenic medium (Chromotogenic *Candida*, Liofichem/Bacteriology products, Italy). This medium enabled the identification of *Candida albicans* (*C. albicans*), *C. tropicalis* and *C. krusei*. Only 20 species of *Candida* were identified using sugar assimilation tests (Auxacolor TMBioRad, France). *C. albicans* was identified using germ tube test too.

Results: *Candida* colonisation/infection of intestinal mucosis was determined in 61.2% of cases. In 69.2% of cases the identification of species in *Candida* genus was possible using only chromogenic medium. The most prevalent was *C. albicans* (54.5%) as a cause of intestinal candidosis. *C. krusei* and *C. tropicalis* were detected in significantly lower number of patients (12,8%-*C. krusei*; 1,8% *C. tropicalis*). Applying the chromogenic medium we found that 5,8% of detected intestinal candidosis was caused by two or more different species of *Candida*. Commercial assimilation test proved that *C. glabrata* and *C. parapsilosis* caused intestinal candidosis too.

Conclusion: Chromogenic medium (Chromotogenic *Candida*) enables the determination of *Candida* species in a significantly high percentage of isolates.

Keywords: Chromogenic medium, *Candida* spp., the prevalence of intestinal candidosis.

IN VITRO ANTIBACTERIAL ACTIVITIES OF SOME LAMIACEAE ESSENTIAL OILS AGAINST HUMAN PATHOGENS

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In wide regions of the Balkan Peninsula, plant species belonging to Lamiaceae family are traditionally used as natural antimicrobial agents in phytotherapy of human diseases. The present study describes the antimicrobial activity of essential oils derived from *Thymus vulgaris*, *Lavandula officinalis* and *Calaminta nepeta* against laboratory control strains obtained from the American Type Culture Collection: *Pseudomonas aeruginosa* ATCC 27853, *Bacillus cereus* ATCC 10876, *Staphylococcus aureus* ATCC 29213, *Escherichia coli* ATCC 13706, *Salmonella enteritidis* ATCC 13076, and same strains isolated from human clinical cases. The aerial parts of wild growing plant material were collected in full flowering stage. After drying, essential oils were produced by hydrodistillation in a Clavenger-type apparatus. The antimicrobial activities of the essential oils were evaluated using broth micro-well dilution method. Minimal inhibitory/bactericidal concentrations of the oils were in the range from 0.025– 1.56 $\mu\text{L mL}^{-1}$. The *C. nepeta* essential oil exhibited slightly lower activity than the other two tested essential oils. Beside this, the results showed higher resistance of the isolated strains in comparison to the referent ATCC strains. Although the oils had inhibitory effects at low concentrations, much higher concentrations were necessary for bactericidal activity.

Keywords: *Thymus vulgaris*, *Lavandula officinalis*, *Calaminta nepeta*, essential oil, antibacterial activity, human pathogens

NEKE KARAKTERISTIKE SEPTIKEMIJA NA TERITORIJI NIŠAVSKOG I
TOPLIČKOG OKRUGA
**SOME CHARACTERISTICS OF SEPTICAEMIA IN NISAVA AND
TOPLICA DISTRICT**

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The aim of this paper is to determine the epidemiological characteristics of septicemia in patients on the territory of Nisava and Toplica District. Material and methods: The material used were illness-death records of infectious diseases, epidemic out-report and annual reports of the Center for Disease Control and Prevention IPH Niš. The period from 2006 to 2010 was observed. The method of descriptive statistics showed that in the observed period 275 cases of septicemia were registered of which 53 with fatal outcome (69,81% in those older than 60). The average annual rate of illness was 10,95 per 100,000 inhabitants, and the mean annual mortality rate 2,11. In 2010 for 44% of all cases were recorded and 32,08% of all deaths due to septicemia. The highest percentage of patients in the municipality of Nis (60,73%), and the highest rate of disease has the Municipalities Doljevac – 86,91. In two outbreaks of the Clinic for Gynecology and Obstetrics, in 2009 22 babies were affected in a children's block. Klebsiella ESBL + was isolated. Children aged 0-4 have the highest number of cases - 117 and the highest rate of disease – 537,49 per 100,000 inhabitants. 58% of patients were male. The largest number of cases – 15,27% was recorded in August. In relation to the occupation children make up 43,27% followed by 33,45% of the retired. Most patients were hospitalized at the Clinic for Gynecology and Obstetrics – 28,73% and the Clinic for Infectious Diseases – 22,18%. In 203 blood cultures done in 54,5% staphylococcus was isolated - Staph.epidermidis in 30,33% (4,27% Staph. Aureus MRSA) in 19,9% klebsiela (3,79% Klebsiella ESBL +), ESBL + E. Colli at 0,47%. Conclusion: In the territory of Nisava and Toplica District the most affected with septicemia were children while people over 60 years old were dying. The emergence of an epidemic in a children's block points to the need for more regular application of general and specific preventive measures within the competence of health workers. All clinically established sepsis need to be verified in the laboratory and treated according to the antibiogram.

Keywords: septicemia, epidemic, prevention

BOLNIČKE INFEKCIJE MOKRAĆNOG SISTEMA U OPŠTOJ BOLNICI NOSOCOMIAL URINARY TRACT INFECTIONS IN A GENERAL HOSPITAL

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Objectives: Urinary tract infections (UTIs) is one of the most frequent type of nosocomial infections in Serbia as in other countries. The objective of this study was to identifier the risk factors for developing nosocomial UTIs.

Materials and methods: We conducted a case control study, nested whitin a prospective surveillane study from January 1, to December 31, 2007 at the General hospital Uzice. For each case patients with nosocomial UTI, the next three control patients were identify.

Results: During the study period, there were 125 patients with nosocomial UTIs and 375 control patients. According to the univariate logistic regression analysis, emergency admission, mean lenth of stay, ASA score >2 (for operated patients), cistoscopy, received radiotherapy, urinary catheter, increased length of urinary catheterization, received sedatives, renal failure and neoplasms were identified as singificant risk factors for UTI. Only three factors, duration of catheterization (OR=1.75 95%CI=1.49-2.05), emergency admission (OR=3.51 95%CI=1.11-11.04), and the ASA score (OR=8.66 95%CI=1.19-62.84), were independent predictors of nosocomial UTIs.

Conclusion: Our results support the finding from other studies that the most important modifiable fisk factors for UTIs is duration of catheterization.

Key words: urinary tract infections, risk factors

SESIJA EPIDEMIOLOGIJA EPIDEMIOLOGY SESSION

**TEMA: HRONIČNE MASOVNE NEZARAZNE BOLESTI
TOPIC: MASS CHRONICAL DISEASES**

**UVODNA PREDAVANJA
INVITED LECTURES**

**EPIDEMIOLOGIJA MASOVNIH HRONIČNIH NEZARAZNIH BOLESTI
EPIDEMIOLOGY OF MASS CHRONICAL DISEASES**

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Mass of chronic non-communicable diseases are on the top of the scale of deaths from all diseases worldwide. They killed more than 36 million people 2008th year. Cardiovascular diseases are responsible for 48% of all deaths, 21% of cancers for 21%, chronic respiratory disease for 12% and diabetes 3% (1).

Non-infectious diseases including myocardial infarction and stroke, cancer, diabetes and chronic respiratory diseases make up over 63% of deaths in the world today. Each year, non-communicable diseases kill 9 million people younger than 60 years, 90% of early deaths were in low and middle income countries (2). One study showed that men and women in less developed countries, three times as many die before the 60th of the CNB age than in highly developed countries (1).

Of all health disorders, the population of Serbia is the most burdened by chronic noncommunicable diseases. The leading causes of death in our country are almost identical to the leading causes of death in developed parts of the world (3, 4).

Heart and blood vessels and malignant tumors accounted for more than three-quarters of all deaths in R. Serbia in 2006. year. The structure of heart disease mortality and vascular disease accounted for more than half of all deaths (57.3%), and nearly one in five persons died (19.7%) was the victim of malignant tumors. Of the total number of deaths by 3.8% the cause of death was injuries and poisoning, complications of diabetes 2.5%, 1.8% for chronic obstructive pulmonary disease or asthma (Table 1) (5).

Table 1 The leading causes of death by sex in Serbia, 2006. year

Rang	Groups of diseases (Codes according to ICD-10)	Man		Women		Total	
		Number	%	Number	%	Number	%
1	Heart and blood vessels (I00-I99)	27190	52,0	31735	62,8	58925	57,3
2	Malignant tumors (C00-C97)	11495	22,0	8722	17,3	20217	19,7
3	Injuries and poisoning (S00-T98)	2772	5,3	1097	2,2	3869	3,8
4	Diabetes (E10-E14)	1068	2,0	1473	2,9	2541	2,5
5	Obstr. pulmonary disease and asthma(J44- J45)	1232	2,3	646	1,3	1878	1,8
6	Other causes of death	8568	16,4	6886	13,5	15454	14,9
	All causes of death (A00-T98)	52325	100,0	50559	100,0	102884	100,0

Data source: unpublished data of the Statistical treated at the Institute of Public Health of Serbia

According to the survey "Load disease and injury in Serbia" ischemic heart disease, cerebrovascular disease, lung cancer, unipolar depression, and diabetes accounted for almost two thirds of the total work count for 18 health disorders in Serbia in 2000. year (3,6). Five leading causes of death for males were coronary heart disease, stroke, lung cancer, traffic accidents and unipolar depression, while for women it was a stroke, unipolar depression, ischemic heart disease, breast cancer and diabetes (Table 2).

Table 2 (DALY/1000) of the most common health disorders by gender in Serbia in 2000.

Health disorder	Man	Rang	Women	Rang
Ischemic heart disease	18,1	1	7,9	3
Cerebrovascular disease (stroke)	12,4	2	10,3	1
Lung cancer	8,8	3	2,2	7
Traffic accidents	6,7	4	1,8	12
Chronic obstructive pulmonary disease	5,7	5	5,8	8
Unipolar depression	5,3	7	8,8	2
Breast Cancer	-	-	4,3	4
Diabetes	3,2	8	3,0	5

* According to world standard population

DALY - age adjusted relative to the inability

1. The most massive of chronic non-communicable diseases

1.1 Cardiovascular diseases

Heart and blood vessels (CVD) are the leading cause of morbidity and mortality in the world. According to estimates by the World Health Organization (WHO) in 2006. year worldwide die from CVD 17.5 million people, representing 30% of all deaths (7). In the same year in Serbia than 58,925 people died of CVD (27,190 men and 31,735 women). Ischemic heart disease and cerebrovascular disease are leading causes of mortality in this group of diseases(8,9).

The study results "Load disease and injury in Serbia" have shown that the largest increase in life expectancy at birth in 2000. were created by elimination of mortality from ischemic heart disease in men (2.4 years) and the elimination of cerebrovascular disease in women (by 2.1 year) (3).

In the overall ranking of diseases according to the corrected age in relation to disability (DALYs) in 2000. year, ischemic heart disease was located on the first, and cerebrovascular diseases were the second place (3).

1.2 Malignant disease

It is estimated that over 22 million people worldwide living with cancer. Every year registered about ten million new cases, of which about 60% in developing countries (10,11). After cardiovascular disease, malignant tumors are the leading cause of death in our country.

Of all the cancers analyzed in the study "Load disease and injury in Serbia," the burden of lung cancer in the first place (59 088 DALYs-I), followed by colorectal cancer (26,007 DALYs-I), breast cancer (23,868 DALYs- I), stomach cancer (16,487 DALYs-I) and cervical cancer (DALY 8230-I), for a total of 133,689 DALYs-I (3, 11).

In the overall ranking of 18 selected diseases and injuries, based on the DALY-jima, in Serbia in 2000. year of lung cancer was on the third place, colon cancer and rectal cancer in 7, breast cancer in 8, and stomach cancer at the 10th place (3).

1.3 Chronic non-infectious respiratory disease

In a world of hundreds of millions of people suffering from chronic respiratory diseases, of which 300 million people with asthma and 80 million suffering from chronic obstructive pulmonary disease (COPD) (12).

In 2000. were respiratory diseases were responsible for over 200 million (14%) of all DALI-I in the world (4). In Serbia, chronic obstructive pulmonary disease was present with 30,200 DALY-I, and asthma with 12,989 DALY-I (3, 6, 13).

1.4 Diabetes

Diabetes is among the five leading causes of death in most countries of the world (4). In 2008. year, the standardized prevalence rates by age in adults with diabetes was 9.8% in men and 9.2% in women, which showed an increase compared to the 1980th year when it was 8.3% in men and 7.5% in women. Persons with diabetes has increased from 153 million 1980th 347 million at the 2008th year (1).

It is assumed that by 2025. year become ill from the disease over 380 million people (13).

With the standardized mortality rate of 23.4 per 100,000 in 2006. year, compared to other European countries, Serbia is situated among the countries with medium-high risk of dying from this disease (5).

1.5 Musculoskeletal Diseases (MKB10: M00-99)

Musculoskeletal disorders are a major cause of lost years of life due to illness and consequent disability (disability) in all countries. Their major impact on society comes from their high frequency, long duration and disability followed by deterioration in the quality of life, and high costs incurred as a result of disability or sickness and ill health resource use and social protection for their treatment and rehabilitation (5). In Europe, nearly a quarter of adults have long-lasting musculoskeletal problems and limited daily activities (15). In Serbia, according to health research in

2006. 16.8% of the adult population has a rheumatic disorders, over 40% have or have had joint pain, and more than 50% of backache (14). These health disorders occur at any age and are the most common cause of disability. Their incidence increases with age.

2. Multifactorial of chronic non-communicable diseases

Chronic non-communicable diseases have a multifactorial etiology and result from complex interactions between individuals and the environment in which they live. Individual characteristics (such as gender, ethnicity, genetic predisposition, etc.). Together with socio-economic determinants and environmental determinants (such as income, education, living conditions and working conditions) determine differences in exposure and sensitivity individuals for the emergence of CNB (5).

The leading risk factors for the CNB as smoking, hypertension, hypercholesterolemia, alcohol, obesity, poor diet and physical inactivity. These risk factors are common to a number of National Bank, whose formation, given the multifactorial etiology, associated with the presence of two or more of these risk factors (4).

Risk factors are the leading cause of mortality and disability from noncommunicable diseases in almost all countries, depending on the country's economic development. The leading risk factors are high blood pressure (responsible for 13% of global mortality), followed by tobacco (9%), elevated concentrations of glucose (6%), physical inactivity (6%) and obesity (5%) (1).

2.1. Smoking

Smoking is more common in middle-income countries than in low-or high-income countries, and all groups are represented more among men than among women (1).

In the "Study of disease burden and injury in Serbia," Smoking is listed as a risk factor associated with major health disorders, responsible for 13.7% of lost years of life (YLL) in Serbia in 2000. year (18% of the total YLL in men's and 7.9% of total YLL-and in females). Smoking is the largest single cause of premature deaths that can help prevent. Tobacco is the most well-known carcinogen in the human population (15), which has the greatest influence on the occurrence of lung cancer, ischemic heart disease, stroke and chronic obstructive pulmonary disease (3).

2.2. Alcohol

Disease burden in Serbia related to alcohol intake was higher in men than in women. Harmful effects of alcohol accounted for 8.5% of total DALY for breast cancer (3).

2.3. Improper nutrition

Proper nutrition is one of the main prerequisites for the preservation and improvement of human health. The basic principles of proper nutrition include regularity of meals during the day, the variety in the choice of foods, as well as their adequate representation and method of preparation of daily meals. Several studies demonstrate the association of malnutrition with an increased risk of various diseases (5).

2.4. Physical inactivity

Physical activity is an important criterion for evaluating health, physical inactivity and a significant risk factor for various diseases (5). The prevalence of insufficient physical activity is almost double that in highly developed countries compared to less developed countries in both sexes, 41% in men and 48% in women compared to 18% in men and 21% in women niskorazvijenim countries. 2008th year, almost every second woman in highly developed countries are physically inactive (1).

According to the "burden of disease studies and injury in Serbia", physical inactivity contributes to a significant percentage of the total DALY-jima, mostly for stroke (27.91%), and for colon and rectal cancer (25.96%), ischemic heart disease rate (24.19%), breast cancer (15.13%) and type 2 diabetes (8.34%). Physical inactivity is responsible for 8.2% of years of life lost due to premature mortality (YLL-a) in men and 11.8% YLL-and in females (3).

2.5. Hypertension

The prevalence of high blood pressure is consistently high in all countries regardless of development, with a rate of 40% in both sexes. On average, the global trend in the population shows that the systolic blood pressure in the last three decades of gradual decline, but the trend is different depending on region and country. Systolic blood pressure was greatest in low-and middle-income countries (1).

Arterial hypertension is attributed to 9.7% of total years of life lost due to premature death (YLL) for men and 13.3% of YLL's women (3). It is also a risk factor for vascular ateromatoze, which significantly contributes to the development of ischemic heart disease, stroke, kidney disease and peripheral atherosclerosis (16). The load associated with hypertension increases with age, primarily because of mortality.

2.6. Hypercholesterolemia

The load due to high blood cholesterol is associated with 1.3% of total YLL in men's and 1.5% of YLL's women. Burden of disease, associated with high cholesterol levels, derived almost entirely from increased risk of dying, not of developing disability (3).

2.7. Obesity

Obesity is the most common nutritional disorder in developed countries and growing problem in developing countries. In addition to the disease itself, obesity may influence the occurrence and course of many diseases (5). The prevalence of increased body-mass index, obesity, and therefore, generally increases with the underdevelopment of the country, so that more than two times higher in high-and middle-income countries. More than half of adults in high-income countries with overweight, while a fifth are obese. In low-income countries in women is overweight doubled from 9% 1980th 18% of the 2008th years, obesity has increased more than twice (2-5%) (1).

2.8. Socio-economic determinants of health

Besides the risk factors and biological characteristics of individuals and socio-economic determinants of health are responsible for much of the disease burden of society, both in Europe and in Serbia. There is a correlation between physical and mental health, and both aspects are linked to joint health determinants (determinants of health), such as income, education, living and working conditions, etc.. People from lower socio-economic strata have twice the risk of illness and premature death from CNB compared to people from higher socioeconomic strata (5).

3. Prevention and control of the mass of chronic non-communicable diseases

It is proven that there are effective interventions for prevention and control of noncommunicable diseases. It is possible to prevent or modify risk factors, start or stop the progression of disease, prevent disability, and premature death with the pain and suffering. The outcome of disease can improve its early detection, appropriate treatment and effective rehabilitation. Appropriate application of knowledge at all levels of health care has multiple benefits for all. An example of some countries that have made significant progress in the prevention and control of National Bank indicates a huge potential for promoting health (4). In Serbia, thanks to the comprehensive effort state tobacco control is set as a priority, the prevalence of smoking among adult population in the period 2000-2006. was reduced by 6.9%. In the same period reduced the incidence of smoking among youth aged 15 to 19 years from 22.9% to 15.5% (17).

Prevention has the greatest potential to reduce morbidity from the CNB. It is not necessary to wait decades to achieve the effects of prevention. Reducing risk factors can lead to surprisingly rapid health improvements, which can be seen by looking at national trends for specific health disorders. Excellent examples are Finland and Poland (4). In Finland in the period 1972-1992. year mortality from coronary heart disease decreased by 80% due to the significant reduction of major risk factors (7), while the incidence of type 2 diabetes reduced by 60% in Finland and the United States and over 30% in China (4).

Prevention in the general population is a viable strategy in the long term, and refers to the simultaneous action on common risk factors for noncommunicable diseases. In several countries observed the effects on reducing morbidity and mortality from certain CNB simultaneous action on smoking, nutrition and physical activity (4,7).

Strategies to reduce risk factors for noncommunicable diseases are to provide and encourage healthy choices for all. They include multi-sectoral action involving the creation of high-level plans and programs related to advocacy, community mobilization, environmental interventions, health system organization and delivery, legislation and regulation (2).

It is necessary to simultaneously implement prevention at the individual and population levels. If people with high risk of not treating the CNB, the short and medium term there will be a significant impact on morbidity and mortality from the CNB. In patients with impaired glucose tolerance, which are at high risk of developing diabetes, lifestyle modification program can reduce the risk of diabetes by about 58%, and pharmacological interventions (appropriate use of drugs) by 31% (4).

Application of screening, failure can be prevented, reduce mortality and improve quality of life, provided that it is effective, affordable and acceptable treatment available to all who need it. Screening with the consequent treatment of persons with increased risk of developing

cardiovascular disease by simultaneous action on several risk factors, cost-effective than focusing on individual risk factors. In countries with sufficient resources to ensure appropriate treatment, effective the introduction of mass screening programs for early detection of breast and cervical cancer. In Serbia, a program designed and created all the prerequisites for the introduction of screening for cervical cancer, and is also planning the introduction of mass screening to detect breast cancer in the near future. It is also planned for the screening and detection of colorectal cancer (5).

Although the reduction and control of risk factors and determinants of health a cornerstone in the prevention and control of National Bank, predicted to be in the next 5-10 years to develop tests for detecting disturbances in the level of genes, allowing the identification of people with a genetic predisposition to certain diseases and application of intervention before the onset of symptoms. Besides which will contribute to the improvement of health, these scientific advances will start a debate on ethics and equity of access (5,7).

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OBOLEVANJE I UMIRANJE OD ISHEMIJSKE BOLESTI SRCA MORBIDITY AND MORTALITY OF ISCHAEMIC HEART DISEASE

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Introduction

According to the World Health Organization (WHO) a population morbidity of noncommunicable disease (NCDs) in European countries is an important and so far insoluble medical problem. The noncommunicable disease epidemic affects all countries but the countries from the Europe are the most affected and the problem with NCDs is stil growing (1).

The impact of the major NCDs (cardiovascular diseases, cancer, diabetes mellitus, chronic respiratory diseases and mental disorders) is equally alarming (1). Taken together, these five diseases account for an estimated 86% of the deaths and 77% of the disease burden in the Europe (2).

Continuous increase of NCDs is linked by high prevalence of common risk factors, such as high blood pressure, high blood cholesterol, physical inactivity, overweight, unhealthy diets, tobacco use and harmful use of alcohol, hugely increased by lifestyle and demographic changes (3).

The NCD epidemic affects all countries, both low- and middle-income countries which carry an additional burden as their health systems usually have fewer resources for the prevention and early detection of disease, as well as to provide comprehensive health care to those with diseases (4).

Inequalities and the social determinants of health, including gender, play an important role too. People in the most disadvantaged groups are at greater risk not only because they have poorer access to health services, but also because they have fewer resources in terms of education, employment, housing, participation in civil society and control over their lives, to make healthy lifestyle choices (5).

Socioeconomic differences, and gender differences have an impact on the epidemiological situation of NCDs (1-5). Women are at higher risk than men, and elder people, people with special needs, persons in minority ethnic, and religious communities are at greater risk of developing or dieing of NCDs (6).

Epidemiological characteristics of noncommunicable diseases in Nishava District

Leading causes of morbidity and mortality in Nishava District are: ichaemic heart disease (IHD), malignant neoplasmas, diabetes mellitus and chronical obstructive disease.

Cardiovascular diseases

Cardiovascular diseases (CVD) made up 16.7 million, or 29.2% of total global deaths according to World Health Report 2003 (). CVD are no longer only diseases of the developed world: some 80% of all CVD deaths worldwide took place in developing, low and middle-income countries, while

these countries also accounted for 86% of the global CVD disease burden. It is estimated that CVD will be the leading cause of death in 21st century in developing countries (6-7).

Of the 16.7 million deaths from CVDs every year, 7.2 million are due to ischaemic heart disease, 5.5 million to cerebrovascular disease, and an additional 3.9 million to hypertensive and other heart conditions. As well, at least 20 million people survive heart attacks and strokes every year, a significant proportion of them requiring costly clinical care, which puts a huge burden on long-term care resources (7).

CVD affects people in their mid-life years, undermining the socioeconomic development, not only of affected individuals, but families and nations. Lower socioeconomic groups generally have a greater prevalence of risk factors, diseases and mortality in developed countries, and a similar pattern is emerging as the CVD epidemic matures in developing countries (7).

According to WHO estimates in 1999 year about 17 million people died from CVD and more than 4 million people were from the Europe, and about one third was in the middle age (8).

According to the assessment of WHO for 2020, about 25 millions of people will die of someone disease from the CVD. Dying of IHD will be higher in non-developed and developing countries about 137% in men and about 128% in women compared with developed countries. In 2008 died about 17,3 millions of people of CVD, and it's 30% of all number of dead. Nearly 7,3 millions of people died of IHD and 6,2 millions died because of stroke (8-9).

It is estimated that nearly 23,6 millions of people will die of CVD till 2030 mainly of myocardial infarction and stroke (9).

In Serbia about 55,2% of all causes of death are of the total number of deaths are dead of CVD (8). According to other authors, more than 52% of Serbian population dying of CVD (12). Dying of CVD in Serbia, in the period 1990-1999 about for males and for females increased about 50%. Acute coronary syndrome (ACS) is the first cause of mortality in men and women aged 55-64 years (9-10). In the structure of CVD deaths in Serbia in 2007. the proportion of deaths from ischemic heart disease (IHD) was 22.3% (10).

Mortality from IHD in developed countries began to decline between 1970 and 1992 while in countries of Eastern Europe trends of CVD still high and tend to rise (11-15).

According to the data of WHO Serbia is in the group of countries with high risk of dying of IHD especially for men and women at the age from 40 to 49 (10).

The main risk factors for the appearance of IHD are: tobacco smoking, high blood pressure, high total blood cholesterol, high Low Density Lipoprotein, low High Density Lipoprotein, diabetes mellitus, men older than 55 and women during and after menopause and in women who are older than 65.

Predisposing factors for IHD are: obesity, abdominal obesity, physical inactivity, positive family history of IHD before 55 years of age for men and in women before 65 and psychosocial factors.

Conditional factors for IHD considered to be: increased triglycerides, increased small LDL particles, elevated homocysteine, elevated lipoprotein Lp(a), elevated fibrinogen, elevated inflammatory markers (C-reactive protein), (7-18).

Epidemiological characteristics of acute coronary syndrome in Serbia

ACS occurs as a result of acute ischemia and / or myocardial necrosis and the reason is most acute coronary lesions caused rupture of atherosclerotic plaque in coronary artery with accompanying inflammation, thrombosis, vasoconstriction and microembolism (7-12).

ACS can manifest as unstable angina pectoris (UNAP-I20.0), acute myocardial infarction without elevation of ST segment (NSTEMI) or with ST elevation (STEMI) (58). Today ACS is considered as the most serious form IHD. ACS is one of the most common causes of sudden cardiac death (11,12). In the structure of mortality of IHD in 200, ACS participated with 60.8% (10).

According to data from the population registry of ACS in Serbia it was registered 21821 new diagnosed persons (13350 men and 8471 women: 61.2% vs 38.8% aged from 0 to 75+ in 1997. There were 1,6 times more men than women (61.2% vs 38.8%). A total number of new diagnosed patients of UNAP in the age from 0 to 75+, in whole Serbia was 5016 (2974 men and 2042 women). Age-adjusted incidence rate was 53,4.

A total number of new diagnosed patients of AMI in the same age and territory was 16805 (10376 men and 6429 women: 62.0% vs 38%). Age-adjusted incidence rate was 168,7.

Age-adjusted mortality rate of ACS in Serbia was 70,9 (97,9 in men and 47,6 in women) and it was two times higher in men than in women. Age-adjusted rate for Unstable Angina Pectoris (UNAP) was 2,0 (2,6 vs 1,5), and for Acute Myocardial Infarction (AMI-I21) was 68,9 (95,3 vs 46,1).

Epidemiological characteristics of acute coronary syndrome in Nishava District

It was registered 1161 (698 men and 463 women) new diagnosed cases of ACS in 2007 in Nishava District. In coronary units (CU) in Niš and Niška Banja about 79.4% of total cases in the territory of the District.

The number of new cases increased suddenly after the age of 40 and reaches a maximum at the age of 75 both in men and in women. Younger than 65 accounted for 40%, and older of 65 years, participated with 60%. It was registered a significantly higher number of new AMI than UNAP (71% vs 29%).

Age-adjusted incidence rate of ACS in population aged 0-75+, was 216.5, (286.0 in men and 150.8 in women). Age-adjusted incidence rate was 1.9 times high in men compared with women. The average of sick people age was $66,73 \pm 9.35$ (SD).

Age-adjusted mortality rate for AMI in Nishava District was similar to the rate in Serbia, 165.9 vs 163.0.

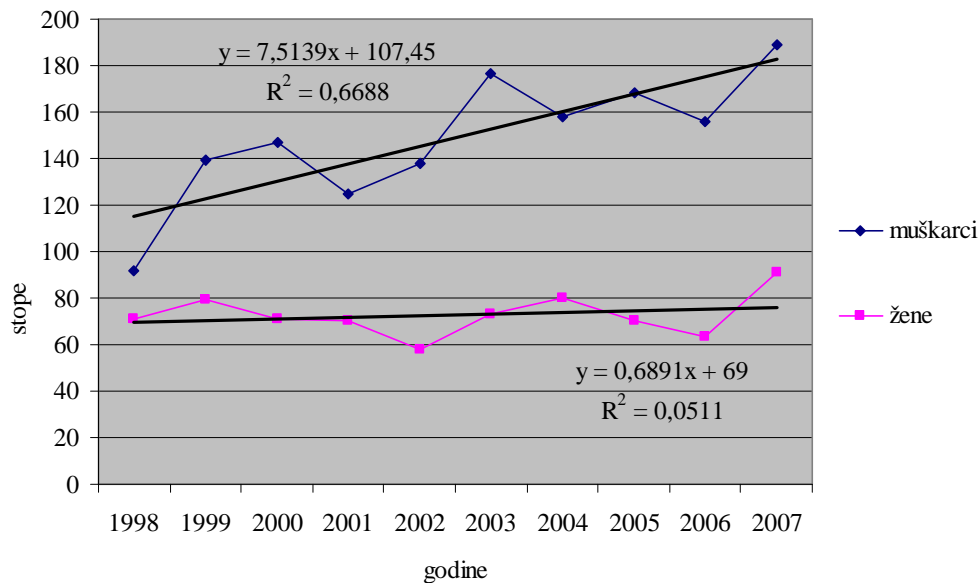
There were the great number of patients with STEMI(46.6%), NSTEMI(35.7%), UNAP(17.5%). The most frequent risk factors were high blood pressure (71,7%), genetics(52.0%), dyslipidemia (50.0%), tobacco smoking (43.4%) and physical inactivity (34.2%). The time from onset of chest pain to admission in Clinical Center (CC) in Niš was 464.80 min (7,7 hours), and in Niška Banja was 749,82 min (12.5 hours) (7,8).

Age-adjusted mortality rate was for ACS was 47,5 (in men 68,4 and 28,5 in women). This rate was 1,5 times higher in Nishava District compared with Serbia (7).

AMI is a significant disease in the territory of Nishava District, from which the majority of cases, and dying men and women from the age group 55 to 64 years.

In chart 1 age-adjusted incidence rate for AMI in men and in women are showed

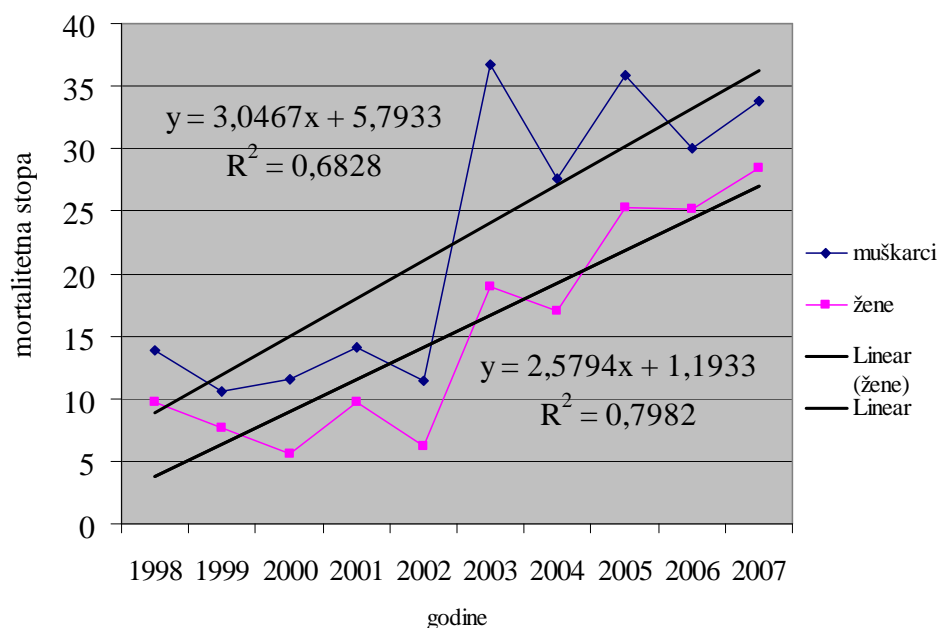
Grafikon 1: Standardizovane stope incidencije za AIM u gradu Nišu u periodu 1998-2007. godine



It was registered an increase of incidence trend both in men and in women. The increase was higher in men than in women.

In chart 2 mortality trend from AMI in men and in women is showed.

Chart 2. Trend of mortality of AMI in men and in women in Nishava District in the period 1998-2007



In the observed period there was an increase of mortality trend of AMI. Men died in average 1,4 times more compared with women. From 2003 age-adjusted mortality rates increased rapidly and show continued growth. In men the mortality rate was higher about 2 times than in women.

Conclusion. Cardiovascular diseases are the most important disease from NCDs. Ischaemic heart disease is the first cause of premature morbidity and premature mortality in men and in women aged 55-64 in Nishava District.

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**USMENE PREZENTACIJE
ORAL PRESENTATIONS****HRONIČNE MASOVNE NEZARAZNE BOLESTI MEĐU ODRASLIM
STANOVNICIMA SEVERNE KOSOVSKE MITROVICE
CHRONIC NONCOMMUNICABLE DISEASES AMONG ADULT
RESIDENTS OF NORTHERN KOSOVSKA MITROVICA**

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The objectives of this study was to determine the prevalence of chronic noncommunicable diseases and leading health problems among adult residents of northern Kosovska Mitrovica and to compare these results with results for Serbia without Kosovo and Metohija.

Methods: The research was done as a cross-section study on a representative sample of adult residents of northern Kosovska Mitrovica in 2006. year. As an instrument of research was used a questionnaire that was used in the National health survey in Serbia in 2006 year. Were surveyed the 318 adult respondents. Statistical analysis methods included descriptive statistics and chi-square test.

Results: Among respondents in northern Kosovska Mitrovica, 60.7% claimed to have one or more of notified chronic diseases. The leading health problems were: hypertension (26.1%), rheumatic disease (17.6%), ulcer of duodenum or stomach (16.0%), gall bladder disease (14.8%) and increased blood fats (12.6%),

Conclusion: A little more than two fifths of respondents in northern Kosovska Mitrovica said they suffered from some of notified chronic diseases, more than those in Serbia without data for Kosovo and Metohija (55.9%), but the difference was not statistically significant. However, what gives significance to this difference is that the population in northern Kosovska Mitrovica is significantly younger than in Serbia without data for Kosovo and Metohija.

Keywords: prevalence, chronic noncommunicable diseases

**KVALITET ŽIVOTA I BIHEVIORALNE NAVIKE PACIJENATA OBOLJELIH
OD HRONIČNIH, MASOVNIH, NEZARAZNIH BOLESTI
QUALITY OF LIFE, AND BEHAVIORAL HABITS OF PATIENTS WITH
CHRONIC, MASSIVE, NON-CONTAGIOUS DISEASES**

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Introduction: Chronic, massive, non contagious diseases, are the leading cause of mortality world's population. according to the World Health Organization (WHO). They directly affect the quality of life of patients. Diabetes and hypertension are diseases that increase the prevalence of current conditions assume epidemic character. Unfortunately, Republic of Srpska is no exception to these trends because of the increased prevalence of these diseases in its population.

Objective: To examine the correlation between quality of life and behavioral habits of patients with diabetes and hypertension.

Subjects and methods: The study was conducted at the Health care center Pale and Health care center East Sarajevo between May 2009 and October 2010. The study included 250 patients with diabetes and hypertension of both sexes, aged 65. Of this total of 150 surveyed patients with diabetes and 100 patients of hypertension. For research grants have been used specially designed questionnaire, and the part of the questionnaire WHO - Quality of Life - SF 36.

Results: The total sample was 174 or 69,60% of males and 76 or 30,40% of women. Subjective perception of their own quality of life as „good“ was rated by only 32 respondents or 20.80%. There were examined the smoking habits, physical exercise habit and diet possession from the behavioral habits. The number of smokers was 61 or 24,40%. Number of former smokers was 14 or 5,60%. Number of non-smokers was 175 or 70,00%. The number of respondents who perform certain physical exercises was 147 or 58,80%, while as many as 103 or 41,20% of respondents do not perform physical exercise. The number of patients who performed the diet was 173 or 69,20%, 77 or 30,80% are not holding the diet.

Conclusion: There is a significant correlation between quality of life and behavioral habits of patients with diabetes and hypertension.

Keywords: Diabetes, hypertension, quality of life, behavioral habits and chronic illness.

MALIGNNE BOLESTI U SRPSKIM ENKLAVAMA KOSOVA I METOHIJE MALIGNANT DISEASES IN SERBIAN ENCLAVES OF KOSOVO AND METOHIJA

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The objective of the study is to identify main epidemiological features of malignant diseases in Serbian enclaves of Kosovo and Metohija. A cross sectional study was chosen as appropriate to achieve the aims of the study.

Published data from the Register of chronic noninfectious diseases of the Public Health Institute of Pristina, situated in Kosovska Mitrovica, were used for study design, data analysis and conclusions drawn from the study. Due to the lack/unreliable data, the exact number of newly diagnosed or patients died from malignant diseases in Serbian enclaves of Kosovo and Metohija is not known.

More than 798 patients were diagnosed with malignant disease in the period 2004-2010 in Serbian enclaves of Kosovo and Metohija. Predominance of male patients, 479 (60%) in the whole of study population and throughout the time of the study was registered. Malignant diseases were diagnosed and registered in 14 different settlements of Serbian enclaves. In 2007. the highest number of newly diagnosed patients (133) and non-standardized incidence rate (84,93/100.000) were registered. Patients of the sixth decade predominated (83%).

75 patients died from malignant diseases in 2010.

No statistically significant linear trend of non-standardized incidence rate was registered throughout the time of the study.

In order to obtain relevant conclusions on vulnerability and risk exposure to factors contributing to development of malignant diseases among population of Kosovo and Metohija, it is necessary to gather relevant data for the entire region of Kosovo and Metohija.

Development of screening programmes for early detection of disease within a comprehensive medical surveillance programmes of the Public Health Institute can contribute significantly to the success of malignant diseases prevention programmes

Keywords: malignant diseases, Serbian enclaves, Kosovo and Metohija.

INCIDENCA MALIGNIH BOLESTI U JABLANIČKOM OKRUGU U PERIODU
OD 2005. DO 2009. GODINE
**THE INCIDENCE OF MALIGNANT DISEASE IN JABLANICA REGION IN
THE PERIOD SINCE 2005. BY 2009.**

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Objective: Analysis of trends in incidence of malignant disease Jablanica region in the period since 2005. by 2009.

Material: In this retrospective study were included all patients with histopathological verified diagnosis of a malignant disease who were treated in the Oncology department in Leskovac. We used data files of the Department of Oncology.

Methods: A retrospective study was used which included patients treated at the Oncology Department. We analyzed the relationship of patients by gender, localization of disease and the municipality of Jablanica region they belonged.

Results: in 2005. year there were 500 newly diagnosed patients, in 2006. year there were 503, in 2007. year there were 527, in 2008. year there were 460, in 2009. year there were 355 newly diagnosed patients.

Conclusion: From our analysis, it can be concluded that there was a slight increase in incidence of malignant disease in Jablanica region in the period since 2005. by 2007. year, to lead to a slight decrease in trend in 2008. and 2009. year. In all the years of the most frequent localization in both sexes were the lung, the second colon, while the women were by far the most common breast and prostate in men

Keywords: cancer, incidence, breast cancer, Jablanica region, prostate cancer.

KARCINOM PLUCA U SKOPSKOM REGIONU LUNG CANCER IN THE SKOPJE REGION

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Goal: Report of the five year analysis of patients treated in the hospital of the Skopje region with malignant neoplasms of the bronchus and lungs.

Material and operation method: Individual reports for hospital treated persons (Form No 3-21-61A) with clinical diagnosis (C34.0 - C34.9) according to MKB – 10 Revision.

With the statistical operation method of the data base, it has been processed 9140 reports of the hospital patients from 2004 to 2008.

Results: In the period from 2004 to 2008 in the hospital of the Skopje region, from the total number of the treated patients, 2,02% had clinical diagnosis lung cancer. In relation to the gender structure, 82.9% were men and 17.1% women. The most frequent age structure are the patients between 50 and 59 years with 39,5%. Treated patients at the age of 60-69 years are represented with 33,3%. The five-year analysis shows that 85,1% are patients with clinical diagnosis of lung cancer at the age of 50-79 years.

According to MKB 10 Revision the localization are according to code C34.9 represented with 73,9%, and with the code C34.1 or the malignant upper lobe lung is represented with 11,8%

Conclusion: In 2008, the number of patients with clinical diagnosis: malignant bronchus and lung were increased for three times compared to 2004. The male patients, almost 5 times more frequently get ill with malignant tumors of the bronchus and lungs compared to female patients. The most common localizations were diagnosed in patients with the following clinical diagnoses: malignant upper lobe lung, then the malignant main bronchus, malignant lower and middle lobe.

Keywords: cancer, main bronchus, lung, hospitalized patients

ODNOS ZNANJA O MALIGNIM BOLESTIMA KOŽE I AKTIVNOSTIMA KOJE
PACIJENT PREDUZIMA U ODNOSU NA OVU BOLEST
**RELATIONSHIP BETWEEN KNOWLEDGE ABOUT MALIGNANT
DISEASES OF SKIN AND ACTIVITIES THAT PATIENT HAVE BEEN
TAKEN TOWARDS THIS DISEASE**

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The objective of study was to examine patients' knowledge of malignant diseases of the skin and activities that patient have been taken towards this disease.

Method: The survey was designed as cross-sectional study. The respondents were patients from health center in Streliste, municipality Pancevo. The study included 215 patients, aged 21-80 years, from 01.Jun to 31 August 2010. Data were collected by questionnaire. For data analysis were used descriptive statistical methods and statistical methods for testing hypotheses (Chi-square test, Fisher's exact test).

Results: From 215 patients surveyed 122 (57%) said they were informed about the importance of malignant skin changes. Self-examination were performed more often patients who are informed (24%) (Chi-square=12.1, p=0.001). Suspicious changes of the doctors were identified in 11.4% of informed and 3% uninformed patients (Chi-square=5.4, p=0.02). Informed patients (42%) more often go to a medical examination than uninformed (0%), however, this difference was not statistically significant, probably because of small sample size (Fisher's exact test, p=0.51).

Conclusions: Patients who are informed about malignant diseases of the skin self-examination performe more frequently and in these patients are more often identified suspicious changes by the physician. Patients are not sufficiently informed about changes in the skin, so it is necessary to improve health education about this subject in primary health care.

Keywords: awareness, cancer of the skin.

**BENIGNA HIPERPLAZIA PROSTATE, UČESTALOST, RIZIK FAKTORE,
PREVENCIJA I TRETMAN**
**BENIGN HYPERPLASIA OF THE PROSTATE, FREQUENCY, RISK
FACTORS, PREVENTION AND TREATMENT**

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Objective: Investigation of cases Benign Prostatic Hyperplasia of the age groups from 50 to 90, effects of the influence of the risk factors, determination of effective prevention and treatment measures.

Material and work methodology: review of the medical records for the patients in a primary care health institution, questionnaire investigation and analytical and statistical processing. According to the principle of random choice 156 ambulatory male patients were subject to analysis and questionnaire investigation for the possible risk factors. Possible risk factors are: irregular diet, addictive habits and predisposition towards different number of diseases (polymorbidity), psychomotor tension (chronic stress).

Results: It was conducted an investigation and analysis of 156 ambulatory patients, 68 of which belong to the age group 50-65, 62 in the age group of 66-80 and 28 in the age group of 81-95. It is found that the frequency in the age group 50-65 is 15%, in the age group 66-80 is 65% and in the age group 81-95 is 74%. According to the results, Benign Prostatic Hyperplasia has increasing tendency proportional to the increase of the age.

Synopsis: Concerning the conservative medicine the diet rich in aminoacids such as alanine, glycine, and glutamic acid, as well as zinc, is considered as an important prevention measure for Benign Prostatic Hyperplasia. According to the critically-analytical theories, the maintainance of the condition of normal tone and functions in the organism is physiological measure for prevention against Benign Prostatic Hyperplasia. In the conservative medicine the combination of alpha 1 antagonists and inhibitors of 5 alpha reductase can lead to improvement of symptoms and can postpone the complications in men with great risk of development of the disease.

In critically-analytical theory, the relaxation of the organism to the condition of normal tone eliminates the central hyperstimulation and biomediatory aggression, which results in returning of the hyperplasia of the prostate to normoplasia.

Keywords: prostate, hyperplasia, normal tone, normal functions of the organism, central hyperstimulation, biomediatory aggression.

EPIDEMIOLOŠKE KARAKTERISTIKE ASTME U OPŠTINI BITOLA EPIDEMIOLOGICAL CHARACTERISTICS ON ASTHMA IN MUNICIPALITY OF BITOLA

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Introduction: Increasing the rates of asthma in the last decades throughout the world gets worryingly, and in some countries ratio is alarming. According to WHO, since January 2000, 100-150 million people worldwide suffer from asthma. Further, national and regional studies indicate to rise in the prevalence of the disease in recent decades. According to the UCB institute in Belgium, the prevalence of asthma was doubled in 10 years, in Western Europe. National and international coordinated actions, or consensus, are the most effective way for standardized diagnosis and treatment of disease and epidemiological studies with standardized methodology become necessary. The prevalence of asthma between the ages of 20-40 years for the Republic of Macedonia is 5.4%.

Objective: The aim of the paper is to present some epidemiological characteristics of asthma for period of seven years.

Material and methods: Reports from ambulatory treated was used in the period from 2004 to 2010. The data were processed with standard statistical methods and non-parameter's tests (χ^2 test).

Results: For the representative period, the asthma in Bitola municipality rates is 0.4% from the overall registered ambulatory treated uninfected diseases. In the examined period, the highest rate of ambulatory treated patients are 553 or 23.9% in 2005, and the smallest number of treated patients are 221 or 9.6% in 2010. The annual asthma sick rate ranges from 2.9/ 10 000 (in 2009 and 2010) to 7.3/ 10 000 (in 2005). Asthma in Bitola shows a downward trend in the number of patients. Towards the residence place, more patients are registered in village (Mb 228.8 / 10000) rather than in city (Mb 208.5/10 000). Compare to the age in city, the most registered patients are over 75 years (Mb 875.5 / 10 000), and in the village most common are 55 to 64 years old patients (Mb 504.3 / 10 000). The distribution by age is not significant ($\chi^2=1438,1$ $p>0.05$). There is a significant difference between patients by sex according to the place of residence ($\chi^2=16,89$ $p<0.05$).

Conclusion: Preventing the occurrence of asthma consists of measures of prenatal prophylaxis (smoking during pregnancy), as well as measures during breast-feeding and infancy (breast-feeding until 6 month), reduction of passive smoking, consuming food rich with antioxidants and in adult period ceasing the smoking and control over life and working environment.

ANKSIOZNO DEPRESIVNA STANJA KAO GLOBALNI PROBLEM ANXIOUSLY DEPRESSIVE CONDITIONS AS A GLOBAL PROBLEM

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Dom zdravlja Gadzin Han
Dom zdravlja Merosina

Introduction: Anxiety and depression are the common ways of a modern man's reaction today, "the illness of our time". So, anxiety and depression are civilization illnesses and as an invisible part of a modern man, they make "cultural atmosphere" of our time.

Aim: The aim is to indicate the more frequent anxious depressive symptomatology with patients who visit doctors (among 10 patients visiting GP doctor, one of them is either anxious or depressive).

Material and methods: We have been following 220 anxiously depressive patients, both sexes (90 men and 130 women) age between 20 and 70 in the period from 2005. to 2010. In relation to the total number of patients in that year. We used Hamilton's scales (HAMA i HAMD) to estimate anxiety and depression.

Results and discussion: The results, obtained from the questionnaire as well as the fact that, from the point of symptoms, anxiety and depression are similar but essentially different phenomena, were analysed in relation to : age of life, sex, equivalent of anxiety and depression (quantitative comparison of psychotic and somatic symptoms), intensity and frequency.

It used to be considered and believed that depression as well as anxiety were the illness of the so-called "mature age" which are circumscribed by psychic maturity and development. Our data indicate that the above mentioned anxiously depressive symptomatology is mostly obvious with 59% of people age of 20 to 55, then there is a tendency of slight falling of 18% with people of the age of 55 to 65 and raising of it with 23% with people of the age of 65 to 70. As far as sex is concerned women are more dominant than male population with 59%.

It is evident in practice that there is no anxiety without depression, nor depression without anxiety, which is mathematically defined that anxiety and depression have a factor with an index of correlation 1, making the psychic and somatic symptoms similar to each other. Intensity is considered in diagnosing and making a diagnosis from F 32 to F 33,9 and from F 40 to F 42,9.

Epidemiology of anxiety and depression (temporary recidives and regular controls of remissions) is followed in relation to the number of psychiatric checkups (2000 in a year) in the period of 5 years.

Conclusion: Anxiety and depression are our life followers which follow us with new and various manifestations from our birth till death because they are built in our bodies as specific experiences.

GLAVOBOLJE KOD DECE U KLINIČKOJ PRAKSI CHILDREN'S HEADACHES IN CLINICAL PRACTICE

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Aim: The aim of this study was to assess the frequency of headache in clinical populations of children treated at children's neurological department, distribution by sex and age, and to determine the causes and frequency of certain types of headaches.

Patients and methods: A prospective study included patients who were treated at the Department of Child Neurology, Clinic for children's internal diseases, under a diagnosis of headache, since 01.01.2008 until 31.12.2010. Headaches were classified according to 2nd Edition of The International Headache Classification (ICHD-2) from 2004.

Results: 204 children were treated under the diagnosis of headache, which were 16.22% of all neurological disorders treated at the department. Gender representation was almost equal. Patients were 3 -18 years old, mean age 11.2 years. The most frequent were primary headaches - 138 children (67.5%). In 97 (47.5%) children tension-type headache were diagnosed and in 41 (20%) migraine. Symptomatic headache was diagnosed in 50 (24.5%) children. The most common cause of symptomatic headache was respiratory infection, present in 29 (58%) children.

Conclusion: Every sixth child hospitalized on our department was investigated and treated for headache. Tension-type headache was the most frequent form, which shows the present of significant psychosocial stress factors.

Keywords: headache, children, tension-type headache

POSTER PREZENTACIJE

POSTER VIEWING

PREVALENCE OF CHRONIC KIDNEY DISEASE(CKD) DIFFERS BY GFR- ESTIMATING METHOD RELATED WITH SEX ,AGE AND PREVALENCE OF ANEMIA IN REPUBLIC OF MACEDONIA

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Introduction: Chronic kidney disease-CKD is a global health problem of increasing scope and depth. Epidemiological population studies in Europe, Australia, Japan and United States indicate that up to 16% of the general population have some degree of CDK. Chronic kidney disease is characterized by gradual and permanent loss of kidney function that worsens as it progresses from stages 1 to 5. At stage 5 patients require renal replacement therapy. Patients with CKD are grouped into five stages, based of kidney damage and decreasing glomerular filtrations rates-GFR. Early identification of chronic kidney disease (CKD) can help delay or prevent its progression.

Aim: To define the prevalence of CKD Stages 1–5 and related with sex and age; second to define the prevalence of anaemia in all stages of CKD and the relationship.

Design: cross-sectional screening study. Data on age, gender and laboratory data were collected at the time when the patients visited their family doctors, with special structural questionnaire.

Results: Data were obtained for the 2427 individuals. (mean age, 54,7±5,8 y; 25.6% male and 74,4% female). The prevalence of CKD (Stages 1–5) in this cross- sectional study was Stage 1-45,7%; Stage 2-35%; Stage 3-16,3%; Stage 4-2%; Stage 5-0.6%. Percentage prevalence of GFR category by sex was statistical significant for $p=0,0019$ at the stage 5 – 1,4% for male and 0,3 for female. There were statistical significant associations between gender and GFR- Pearson Chi-square: 10,6258, $df=4$, $p=0,031114$.The prevalence of GFR stage 1-2 in this study were greater in the person under 60y, and stage 3-5 were greater in the person equal and over 60y. Anaemia defined as haemoglobin less than 110 gr/L. Anaemia increased progressively with declining GFR with mean haemoglobin concentration of $114,7 \pm 19,9$ gr/l, $115,5 \pm 19,1$, $113,5 \pm 15,7$, $102,7 \pm 12,6$ и $102,1 \pm 17,3$ for CKD stages 1 to 5, respectively. The average of haemoglobin between stage 1,2 and 3 and on the other side 4,5 were statistical significant for $p<0,05$. Anaemia was seen at all stages of CKD and progressed from CKD stage 1 to 5.

Conclusion: CKD is now recognized as a growing worldwide health epidemic that brings with it considerable morbidity even before the patient reaches end stage renal failure, early diagnosis with epidemiological screening in the general population presents an opportunity to delay, if not prevent, know that staging the degree of a patient's renal impairment can influence management,treatment and help the doctors.

Keywords: screening, chronic kidney disease, GFR, prevalence, anemia, hemoglobin

EPIDEMIOLOGICAL CHARACTERISTICS OF PATIENTS WITH SCHIZOPHRENIA WHO ATTEMPTED SUICIDE

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Introduction: Suicide is main reason for morbidity and mortality in patients with schizophrenia. One of four people with schizophrenia made suicides, some of them during the hospitalization.

Objectives: The aim of this study was to determinate epidemiological characteristics of schizophrenia patients who attempted suicide in the Psychiatric hospital "Skopje"-Skopje, with respect to clinical, ethical and legal context.

Methods: The study included 114 patients with schizophrenia, 47,4% (n=54) of them attempted suicide. Psychiatric diagnosis of schizophrenia was based on ICD-10 criteria. Sociodemographic and clinical data are presented descriptively as percentage.

Results: More of them are male- 59,3% and 40,75 female with average age of $31,4 \pm 9,3y.$, minimum 15y and maximum 48y. 46,3% were from labourer family, born-72,2% and living-79,6% in urban area. 57,4% were not married and singled, 27,8% live alone. 79,6% of the patients who attempts suicide were unemployed. Clinical tips of schizophrenia were: 42,6% paranoid, 22,2% residual and ect.. 41,8% of them had previous attempts. They used a violent method- poisoning with medicaments and acid-59,2%, slashing their wrists-14,85, drawing and hanging 18,5% and ect. 55,5% of them made suicide between 3 and 12 weeks of hospital treatment.

Conclusions: Based on the epidemiological characteristics of patients with schizophrenia who attempted suicide, we obtained a typical profile as follows: middle-aged person, single - not married, live alone, unemployed, with history of suicide attempts, who have paranoid sch, attempting suicide using a violent method after more than tree weeks of hospital treatment and out of hospital. Some source for clinical types of schizophrenia, suggested that patients with paranoid schizophrenia are most vulnerable group. The success of psychiatric treatment is the perception of legal and medical aspects of suicide as well as their efficient balancing.

Keywords: suicide attempts, schizophrenia, epidemiological characteristics

EPIDEMIOLOGICAL AND CLINICAL CHARACTERISTICS OF PATIENTS WITH BASAL CELL CARCINOMA (BCC) IN THE EYELID

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Introduction: BCC is a malignant cutaneous neoplasm capable of extensive tissue destruction. BCC rarely metastasises. BCC is the most common skin cancer of the eyelid, accounting for 80-89% of cases

Aim: To describe the epidemiological and clinical characteristics of patients with eyelid BCC.

Methods: Epidemiological data of BCC in the eyelid has been collecting from Clinic of ophthalmology-Skopje. The data of all cases of Macedonian residents with eyelid BCC diagnosed from 2007 to 2009y. were retrieved for analysis. We analyzed sex and age distribution, localization, dimension and type of BCC in the eyelids

Results: BCC is slightly more common in males than in females with a male-to-female ratio of 2:1. more of them are male-67% and female-33%, differences was statistical significant- $p < 0,05$. There were not statistical significant association($p > 0,05$) between gender and BCC. The percents of BCC increase with advancing age and tend to occur in the seventh decade of life. The mean age is $68,03 \pm 10,8y$. Approximately 72% of cases of BCC occur in the patients aged over 60y. There were statistically significant differences between urban (32%) and rural (68%) populations. The most frequent histological subtype was nodular(52%), followed by superficial(17%) and 71% belongs to the squamous cell, followed by kerotic cells-13%. Localisation of BCC was mainly on the lower eyelid-49%, and the medial canthal region-27%, but involved the right and left sides with equal frequency.. In 59% of the cases, the diameter of the lesion was smaller than 11mm.

Conclusion: These expanded epidemiological characteristics may serve to provide a foundation to monitor future disease patterns and to promote further research into the a etiology of these cancers. All patients with lesions should be advised of the risk of recurrent or new BCC , a biopsy of all suspicious lesions followed by complete surgical excision with microscopic monitoring of the margins has the best chance for cure.

Keywords: epidemiological characteristics, clinical characteristics, BCC, eyelids

TREND MORTALITETA OD RAKA GRLIĆA MATERICE NA TERITORIJI
NIŠAVSKOG OKRUGA
CERVICAL CANCER MORTALITY TREND IN THE NIŠAVA DISTRICT

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Introduction: In central Serbia cervical cancer is on the fourth position as cause of death from all malignant diseases in women.

Aim: The objective of the paper was to evaluate mortality trend of cervical cancer in women in Nišava District. The observed period was 1999-2008.

Material and methods: The source of mortality data was the Population Based Cancer Registry of Serbia-CanReg 4. Crude mortality rates were calculated per 100 000 inhabitants (according to the estimated Census). Age-adjustment of mortality rates was performed by the direct method of standardization using the world population as a standard. Trend lines were estimated using linear regression. Descriptive epidemiological method was used.

Results: A total number of 242 dead women with diagnosis of cervical cancer was registered. The average annual standardized mortality rate was 6,6. Annual standardized mortality rates ranged from 5,2 to 9,2. Trend line was $y=0,08x + 6,74$, $R^2=0,03888$.

Conclusion: Cervical cancer is the fourth most common cause of death from all malignant disease among women in Nišava District. Mortality trend of cervical cancer shows stagnation. The downturn in cervical cancer mortality rates result mostly from increased screening allowing early detection and modest to large improvements in treatment, health promotion and cooperation with mass media. Continued and increased investment in cervical cancer prevention and control, access to high quality health care.

Keywords: cervical cancer, mortality, trend

CONGENITAL FACTOR AND ITS RELATIONSHIP WITH LUNG CANCER

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The aim of this study is to determine the existence of the eventual causal associations among the congenital factor and the development and distribution of lung cancer (LC). Material and methods: The research was conducted as a case-control study. It includes 185 microscopically confirmed cases with LC (investigated group-IG), and the same number of persons without malignant disease (control group-CG). Risk analyses were done using unconditional logistic regression, which provides results in the form of crude odds ratio. The odds ratios and their 95% confidence intervals (CI) were computed. Results: The information for the existence of malignant disease in family was given by almost identical examinees in both groups (IG-28,1%;CG-28,6%). Malignant disease in two family members has been found in 13,5% of the diseased persons, i.e. 9,4% of the members of the CG. A close relative diseased from LC had 11 (5,9%), from the diseased, i.e. 8 (4,3%), of the CG members. The carrier of malignant disease in both groups was, most probably, the father. The smokers with present congenital factor had almost four times (OR=3,95;95%CI, 1,78<OR<8,77) greater risk to become ill in relation to the non-smokers without congenital factor. The risk was still greater and significant when they were brought into correlation with the non-smokers with present congenital factor in the family (OR=8,76;95%CI, 1,80<OR<42,68). Conclusion: Every fourth person diseased from LC has a positive anamnesis for congenital factor. The habit of cigarette smoking together with the congenital factor have been shown as significant for the LC development.

Keywords: lung cancer, congenital factor, smoking habit.

EPIDEMIOLOGICAL PREDICTORS FOR VITAMIN AND MINERAL FOOD SUPPLEMENTS USE BY A GROUP OF FEMALE OUTPATIENTS IN SKOPJE

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Our study aimed to determine the prevalence and predictors for use of vitamin and/or mineral supplements in a group of female patients from Skopje. Material and methods: We collected the data with the survey method using a special questionnaire designed for this study. Inclusion criteria for the study were being a female patient from Skopje or the suburbs, and willingness and ability to participate in the research. Non-inclusion criteria were not being a male, not being from Skopje or suburbs, and unwillingness and inability to participate in the research. Results: In total, 120 female outpatients were surveyed in 10 general practitioner surgeries. The results from our survey showed that 79 (65,84%) of them used vitamin/mineral preparations as food supplements during the previous month, and 41 (34.16%) claimed not to have used. Mostly used vitamin/mineral products in our survey were multivitamin food supplements, followed by vitamin C and B-group of vitamins. From minerals, calcium and magnesium containing supplements were mostly used. Women that suffered from a chronic disease used these products more commonly. We did not find statistically significant difference between cigarette smokers and nonsmokers and use of these products. Conclusion: Data on predictors of use of VMS are of benefit when planning public health activities among women population, such as increase of use of folic acid in pregnant women and calcium supplementation in patients suffering from osteoporosis.

Keywords: vitamin, mineral, food supplements, female outpatients.

SESIJA SOCIJALNA MEDICINA SOCIAL MEDICINE SESSION

UVODNA PREDAVANJA INVITED LECTURES

ORGANIZACIJA ZDRAVSTVENE ZAŠTITE ORGANIZATION OF HEALTH CARE

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In its constitution from 1946, The World Health Organization defined health as "a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity". This understanding of health substantially equal terms "health" and "well-being". The term "healthy" people in this case involves both physical and mental health, and social adjustment and fulfillment. Previous definition is often supplemented in other WHO reports, such as the Ottawa Declaration on Health Promotion in 1986, which says that "health is the source of everyday life, not the object of living. Health is a positive concept emphasizing social and personal resources, as well as physical capacities."

Health care is the total activity of the government and health services to protect and improve the health of its residents. Health care, in terms of the Health Protection Law of Serbia, is an organized and comprehensive effort of the society with the aim to achieve the highest possible level of health protection of citizens and their families.

Health care includes the implementation of measures to preserve and improve the health of citizens, prevention, prevention and early detection of diseases, injuries and other health problems in the timely and effective treatment and rehabilitation of injured and sick. In addition to purely medical services, this term also includes management and funding in areas that are important for the social security and the protection of patients.

Primary health care is the foundation of the entire health care system, which means that in the framework of primary health care through cost-effective interventions such as health promotion, disease prevention, early detection and timely treatment rehabilitation, most of the health problems and health needs of the population are being solved with the active support of individuals, families and the community at large. Primary health care includes patient input into the health system, or the first "link" of the system.

A patient with symptoms or signs of illness first consults a doctor of medicine at the primary level. Health activities carried out at the primary level health center, pharmacy and institute ("zavod").

Health services in primary health care in Serbia today provide 157 health centers, their branches, health stations and clinics.

Health Center is a health care institution in which health related activities are performed at the primary level. The health centers owned by the state are established for the territory of one or more municipalities or city, in accordance with the network Plan. The state-owned health centers are established by the municipality or city.

Health Center is a health care institution that provides a minimum of preventive health care for all categories of people, emergency medical care, general practice, health care for women and children, visiting nurses, and laboratory and other diagnostics.

Primary care physician is realized by a chosen doctor:

- 1) A physician or physician specialist in the field of general medicine, and occupational medicine specialist;
- 2) a medical doctor specialist in pediatrics;
- 3) a doctor of medicine and gynecology
- 4) dentist.

Pharmacy is a health institution that carries out pharmaceutical activity at the primary health care level. State-owned pharmacy is established for the territory of one or more municipalities or a city, in accordance with the network Plan. State-owned pharmacy is established by the municipality or city. The founder of the state-owned pharmacy that was established in the territory of several municipalities is the municipality where the headquarters of the pharmacy is located.

The Institute is a health care facility that performs health activities at the primary level and implements health of certain groups of the population and health activities in certain areas of health care.

A "zavod" institute is established as:

- 1) "Zavod" institute for Student Health;
- 2) "Zavod" institute of Occupational Health;
- 3) "Zavod" institute for Emergency Health care;
- 4) "Zavod" institute of Gerontology;
- 5) "Zavod" institute of Dentistry;
- 6) "Zavod" institute for Lung Diseases and Tuberculosis;
- 7) "Zavod" institute for Skin and Venereal Diseases.

After providing health care at the primary level, if elected physician assesses it, the patient is sent to the next, secondary level of health care level.

The secondary level includes specialist-consultative and hospital health care.

Hospital health activities include diagnosis, treatment, rehabilitation, health care and accommodation in hospitals, pharmaceutical and health activities in the hospital pharmacy.

A hospital is a health facility that performs health activities at the secondary level.

Hospitals perform health activities as a continuation of diagnosis, treatment and rehabilitation in a health center, or when because of the complexity and severity of the disease special requirements in terms of personnel, equipment, lodging and medicine are needed.

The hospital is obliged to cooperate with the health center and provide it with technical assistance in the implementation of primary health care.

Hospitals organize their work so that the greatest number of patients are examined and treated in the polyclinics, and inpatient treatment is provided to ill and injured persons only when necessary.

The hospital may have, or arrange a separate organizational unit for extended inpatient care (geriatrics), palliative care patients in the terminal stage of disease, as well as for the treatment of patients during working hours (day hospital).

Hospitals can be general or special.

A general hospital must have organized services for at least:

- 1) admission and emergency cases;
- 2) performance specialist consulting and inpatient medical services in internal medicine, pediatrics, obstetrics and gynecology, and general surgery;
- 3) laboratory, x-ray and other diagnostic in accordance with its activities;
- 4) Anesthesiology with resuscitation;
- 5) a clinic for rehabilitation;
- 6) pharmaceutical health activity through the hospital pharmacy.

A special hospital provides health care to persons of certain age groups, or patients with certain diseases.

A special hospital which, in the performance of health care, is using a natural healing factor (gas, mineral water, mud, etc..) is responsible for the monitoring of the healing properties in the use of natural factors, and at least once every three years, conduct a re-examination of its healing properties in a medical institution.

At the tertiary level of health care, a patient comes with an instruction from the chosen primary care physician or referred from the secondary level. Health practice at this level includes the provision of the most complex forms of health care and specialist consulting and hospital health services as well as scientific research and educational activities. Health activities at the tertiary level involves performing pharmaceutical and medical services in a hospital pharmacy.

A clinic is a medical facility that performs highly specialized consulting and patient health care from a particular branch of medicine or dentistry.

Clinics conduct educational and research activities, in accordance with the law. Clinics may be founded only in the University center including a faculty of health professions. State-owned clinics in places with no general hospital performs appropriate hospital activity within the territory it had been established in.

An Institute is a health care facility that performs highly specialized consulting and patient health care, or just highly specialized consulting health activities in one or more branches of medicine or dentistry.

State-owned institute in an area without a general hospital performs corresponding general hospital activity for the citizens of the territory.

Clinical Hospital Center is a medical facility that performs highly specialized consulting and patient health care at the tertiary level in one or more branches of medicine.

In addition to the conditions stipulated by the Law on Health Care for General Hospitals, Clinical Hospital Centre in the branches of medicine within it performs highly specialized health activities must meet the requirements set by law for the clinic.

Health Clinical Center is a facility that integrates the activity of three or more clinics, therefore making it a functional unit, organized and able to be successful and perform tasks related to:

- 1) highly specialized consulting and patient health care;
- 2) education and teaching activities;
- 3) scientific research.

To perform medical services at several levels of care the following health facilities are established: National Institute of Public Health, Institute of Blood Transfusion, Institute of Occupational Medicine, Institute of Forensic Medicine, Institute of Virology, Vaccines and Sera, Institute of Antirabic Protection, Bureau of Psychophysiological Disorders and Speech Pathology and Institute for Biocides and Medical Ecology.

The term public health implies the means of achieving public interest by creating conditions for the preservation of public health through organized comprehensive social activities aimed at preserving the physical and psychological health, and environmental protection, and prevention of risk factors for disease and injury, which is achieved by applying health technologies and measures aimed at promoting health, preventing disease and improving quality of life.

A "zavod" institute of Public Health is a health care institution conducting socio-medical, hygienic and ecological, epidemiological and microbiological health care.

A "zavod" institute of Public Health conducts bacteriological, serological, virological, chemical and toxicological examinations and tests related to manufacturing and trade of food, water, air and items of general use, as well as in connection with the diagnosis of infectious and non-infectious diseases. A "Zavod" institute of Public Health is coordinating, harmonizing and linking the work of professional health care institutions in the Network Plan for the territory for which it was established.

KVALITET ZDRAVSTVENE ZAŠTITE

QUALITY IN PROVISION OF HEALTH SERVICES

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Quality of products and quality in provision of different services, has become an imperative in all sectors. The pursuit of quality is present everywhere and in everything, and in the developed countries it is not enough to the quality is not enough, there is a need for excellence. In technology, engineering, construction, fashion, industry, quality is tangible and measurable. Quality tends to be aimed at greater competitiveness, higher wages, and greater customer satisfaction. Health systems and provision of health care should not differ related to this concept. Quality health care is considered as a priority in the context of the well-being of the patient as an individual, but also of the population as a potential of one country.

Monitoring and improving the quality of health care is not a new concept, but has its historical development, and its own tradition. Even Aristotle speaks of quality, "as a habit, and not just acting"; French doctors choose the best among them and granted them with the title of "master"; Florence Nightingale in 1859. indicates the importance of monitoring of hospital infections; Avedis Donabedian in 1966. explained the monitoring the quality of health care through the assessment of structure, process and outcome; JAMuir Gray in 1997. recognized the quality of the work performed in the "correct way"; Juran and Crosbi indicated "industrial" aspect of health care quality. ISO standards define quality as "doing the right things in the right way." Quality in health comprises three segments: a good health facility, good patient and good health worker. A prerequisite for the overall, good quality of health care is the achievement of adequate quality in all three mentioned segments.

Activities to ensure quality in health care are an indispensable part of health care reform, which aim to increase the effectiveness and efficiency while maintaining a certain level of fairness in the provision of health services. Various mechanisms have been developed for evaluating, monitoring and ensuring the quality of health care, but not all are as successful mechanisms: some diagnosis bad quality, but it does not improve, some are merely contributing to the development of a new administration and bureaucracy with great cost and poor results. However, by pointing out that the quality is measurable and that poor quality can be prevented, monitoring and evaluating the quality of health services have led to significant positive change in the attitude of health workers and health facilities management.

Program of quality improvement in health care in the Republic of Serbia is conducted since 2004. and has gone through various stages of development. Supported by legislation, methodological guidelines and rankings on annual basis, this Program is established and accepted in health facilities. Joint work on quality program in many areas of health and facilities on Nisava district, gave positive progress. A lot of equipment has been bought, a number of training for health workers were organized, new procedures were introduced, the necessary reorganizations were performed. In

institutions where the importance of improving the quality was recognized, and where the real teams worked on detecting failures and possible corrections, excellent results were achieved.

Many challenges and opportunities for improving the quality of health facilities have been recognized since 2004. Certification and accreditation of health institutions became more and more implemented and integrated approach was chosen as the only right approach in improving the performance of health facilities. An integrated approach encompasses everything all activities conducted at the facility in order to achieve better quality, all activities that have the same goal - better quality of health care facilities. This approach involves defining measurable goals, defining activities, time frames for their implementation, barriers and ways to overcome obstacles. In this process, the use of knowledge in the field of health management has immeasurably great importance. New leaders, educated in health management, recognized the importance of teamwork and tried to create the necessary conditions for the work of the teams in order to make positive changes. Employee satisfaction started to be of great importance since it is often related to customer satisfaction and quality of provision of health services. Customer satisfaction, good treatment are the ultimate goals of the program.

There are many obstacles we have faced in practice: frequent changes of commissions for improvement of the quality of work, the lack of an integrated approach, lack of funds, denial of existing problems, the absence of corrective measures, poor teamwork, and the impact of human relations. However, these are not unchangeable facts. It is important to recognize and accept these problems, recognize and find the enthusiasm to start something new. Because, remember, it is not enough just to achieve good quality, it is necessary to be great. Through achievement of quality in health care we fight for patients, but also for employees, for the market, and even for the survival of stable health care system.

EFFECTS OF BIOMEDICAL INFORMATICS APPLICATIONS ON ASTHMA HEALTH CARE QUALITY: A SYSTEMATIC REVIEW

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INTRODUCTION

Health information technology is “the application of information processing involving both computer hardware and software that deals with the storage, retrieval, sharing, and use of health care information, data, and knowledge for communication and decision making” (Brailer, & Thompson, 2004).^[1]

Broad and consistent utilization of Health information technology should: improve health care quality, prevent medical errors, reduce health care costs, increase administrative efficiencies, decrease paperwork, and expand access to affordable care.^[2]

Clinical decision support system - CDSS

CDSS is an interactive computer software designed to link items of patient data with health knowledge to influence health choices by clinicians for improved health care.^[3] CDSS does not make decisions for the clinician. The methodology of using CDSS utilizing both the clinician's knowledge and the CDSS to make a better analysis of the patients data than either human or CDSS could make on their own. Typically the CDSS would make suggestions for the clinician to look through and the clinician picks useful information and removes erroneous CDSS suggestions.^[4]

The first CDSSs used in clinical practice were developed in the 1970s. Informal list of potential benefits contains:

- Automatic provision of relevant, personalised expert advice, expertise and recommendations sourced from up-to-date, best practice knowledge
- Reduce variation in the quality of care
- Can support medical education and training
- Can help overcome problems of inefficient coding of data
- Can be cost-effective after initial capital costs and update and maintenance costs
- Can provide immediate feedback to patients
- If integrated with an Electronic Medical Records (EMRs), can help streamline workflow (history taking, diagnosis, treatment) and encourage more efficient data gathering
- Can provide an audit trail and support research
- Can maintain and improve consistency of care
- Can supply clinical information anytime, anywhere it's needed.^[5]

A 2005 systematic review by Garg *et al.* of 100 studies concluded that CDSS improved practitioner performance in 64%, and patient outcomes in 13% of the studies.^[6] Another 2005 systematic review (quantitative analysis) of 70 studies by Kawamoto *et al.* found that CDSS significantly improved clinical practice in 68% of trials.^[7]

Biomedical informatics applications for asthma health care quality

Asthma is the common chronic inflammatory disease of the airways characterized by variable and recurring symptoms, reversible airflow obstruction, and bronchospasm. It is thought to be caused by a combination of genetic and environmental factors. Treatment of acute symptoms is usually with an inhaled short-acting beta-2 agonist. Symptoms can be prevented by avoiding triggers, such as allergens and irritants, and by inhaling corticosteroids. The prevalence of asthma has increased significantly since the 1970s. As of 2010, 300 million people were affected worldwide. In 2009 asthma caused 250,000 deaths globally.^[8]

Although widely accepted evidence-based guidelines for asthma management exist, unnecessary variation in patient care remains. Application of biomedical informatics techniques is one potential way to improve health care quality for asthmatic patients.

In 2006 Sanders and Aronsky published systematic review of biomedical informatics applications for asthma care.^[9] Sixty-four papers were selected for review. Publications described asthma detection or diagnosis (18 papers), asthma monitoring or prevention (13 papers), patient education (13 papers), and asthma guidelines or therapy (20 papers). The majority of publications described projects in early stages of development or with non-prospective study designs. Most studies took place in the outpatient clinic environment, with minimal study of the emergency department or inpatient settings. Seven (54%) of the 13 prospective studies with a clinical outcome reported a positive effect of computerized applications.

Aim of the paper

We reviewed controlled trials and prospective studies published up to 2011 evaluating the effectiveness of biomedical informatics applications on practitioner performance and patient outcomes in asthma to provide a cumulative summary in this field of medicine and biomedical informatics.

METHODS

We included trials that compared patient care with a biomedical informatics applications to routine care without a biomedical informatics applications and evaluated clinical performance or a patient outcome. Studies were excluded if the application was used only for image or sound analysis. Based on these criteria, we examined citations from MEDLINE using the following sensitive terms⁶: computer-assisted decision making, computer-assisted diagnosis, computer-assisted therapy, decision support systems, reminder systems, hospital information systems, randomized controlled trial, cohort studies, prospective studies and asthma. Where data from a trial were distributed in more than 1 publication, we cited the principal publication.

RESULTS

MEDLINE search yielded 111 potentially relevant articles. From this set, a total of 28 publications met our inclusion criteria and were selected for review. Most of these studies (23; 82.1%) were published after year 2000. Of these 28 trials, most were conducted in the United States (15; 53.6%), followed by the United Kingdom and Netherlands (5; 17.9% each), Spain, Portugal and Sweden (1; 3.6% each). Of all trials, 8 (28.6%) were cohort or prospective, 19 (67.9%) were randomized trials, and 1 (3.6%) was retrospective. Of the randomized trials, 5 (17.9%) were cluster randomized.

Asthma detection or diagnosis (2 studies)

Poels et al found that computerized spirometry expert support had no detectable benefit on general practitioners' diagnostic achievements and the decision-making process when diagnosing chronic respiratory disease.^[10]

Sanders et al showed that Bayesian network system for the early detection of asthma exacerbations demonstrated high performance. It was able to make accurate predictions in real-time, immediately after patient triage using only routinely collected patient data available in electronic format, and without additional data entry.^[11]

Asthma management or therapy (14 studies)

Hoeksema et al found that CDSS designed to support assessment and management of pediatric asthma in a subspecialty clinic performed relatively accurately compared to clinicians for assessment of asthma control but was inaccurate for treatment.^[12]

Williams et al conducted a cluster-randomized trial and showed that providing adherence information to clinicians did not improve inhaled corticosteroid use among patients. However, patient use may improve when clinicians are sufficiently interested in adherence to view the details of this medication use.^[13]

Van der Meer et al undertook a randomized controlled trial and demonstrated that weekly self-monitoring and subsequent treatment adjustment leads to improved asthma control in patients with partly and uncontrolled asthma at baseline and tailors asthma medication to individual patients' needs.^[14]

Martens et al conducted a cluster-randomized controlled trial to assess the effect on drug-prescribing behavior of implementing prescribing guidelines by means of a reactive computer reminder system. They found that although there was a tendency towards clinically relevant results for prescription volumes that were supposed to drop, the difference in sum score between the groups was not significant. Nevertheless, computerized reminders sometimes have a favorable effect on restricting certain drugs that are not or no longer indicated in general practice.^[15]

Joseph et al conducted a randomized controlled trial to develop and evaluate a multimedia, web-based asthma management program to specifically target population, urban African-American students, aged 15-19 years. The program uses "tailoring," in conjunction with theory-based models, to alter behavior through individualized health messages based on the user's beliefs, attitudes, and personal barriers to change. They reported that a web-based, tailored approach to changing negative asthma management behaviors is economical, feasible, and effective in improving asthma outcomes in a traditionally hard-to-reach population.^[16]

Chisolm et al found that computerized order set patients (condition-specific order sets within computerized physician order entry systems, designed to decrease unnecessary practice variation and to promote evidence-based practice) were significantly more likely to receive systemic corticosteroid and pulse oximetry than controls. No significant differences were found in length of stay, total charges, and pharmacy charges.^[17]

McAlearney et al evaluated the use of three evidence-based computerized order sets (asthma, appendectomy, pneumonia), and examine patient and admission characteristics associated with order set utilization in pediatrics. Asthma order set use rate was the highest (88.1%). Only the asthma order set showed a trend of increasing use after implementation. Uses of the asthma order set was associated with admission unit and case complexity.^[18]

Tierney et al evaluated can computer-generated evidence-based care suggestions enhance evidence-based management of asthma and chronic obstructive pulmonary disease. Care suggestions shown

to physicians and pharmacists on computer workstations had no effect on the delivery or outcomes of care for patients with reactive airways disease.^[19]

Plaza et al found that the implementation of an asthma management program based on Global INitiative for Asthma recommendations improved the patient's health related quality of life and was cost-effective as compared to usual care.^[20]

Population-based cohort study conducted by 't Jong showed that 16.8% of prescriptions for 2502 patients 0-16 years of age were unlicensed for use in children, and 20.3% were prescribed off-label.^[21]

Eccles et al found no effect of computerized evidence based guidelines on the management of asthma or angina in adults in primary care. This was probably due to low levels of use of the software into clinical encounters where busy practitioners manage patients with complex, multiple conditions.^[22]

Hilliard et al evaluated 1,578 admissions in 10 hospitals, involving 1,352 children to determine children with acute asthma management in the UK using computer-based information management system for the input of admissions. This was the largest UK study followed by publication of national guidelines and showed that there is still room for improvement in the management of children admitted with acute asthma.^[23]

Casner et al performed a randomized trial to determine if a computerized pharmacokinetic program for adjusting theophylline infusion rates could attain a goal serum theophylline level more accurately than physician-derived adjustments and what clinical impact this would have. The experimental group was closer to the goal level but not significant. There were not significant differences in number of days that patients were receiving intravenous theophylline, in number of hospital days, in number of subtherapeutic or toxic levels, and in arterial blood gas measurements.^[24]

Szilagyi et al tested the effectiveness of a computerized reminder system in improving influenza vaccination rates in children with asthma and examined patient barriers to vaccination at one pediatric clinic in an urban teaching hospital. 30% study group patients received vaccination, and only 7% control patients ($P < .01$). Vaccination compliance positively correlated with parental worry about asthma, while negatively correlated with parental worry about vaccine side effects.^[25]

Patient education (7 studies)

Joshi et al described the prospective use of an interactive Patient Education and Motivation Tool (PEMT) placed within a pediatric emergency department. PEMT was effective in improving the asthma knowledge of young patients and those having lower baseline knowledge.^[26]

Sundberg et al evaluated the effectiveness of a computerized limited asthma education program, designed to suit young people, and program did not show an effect on asthma symptoms, asthma knowledge or quality of life parameters.^[27]

Chan et al found that an Internet-based store-and-forward video home telehealth system to manage asthma in children was effective and well accepted.^[28]

Krishna et al showed that interactive multimedia education can significantly improve asthma knowledge and reduce the burden of childhood asthma.^[29]

Shegog et al evaluated Watch, Discover, Think and Act (WDTA), a theory-based application of CD-ROM educational technology for pediatric asthma self-management education. They found that WDTA has the ability to effect determinants of asthma self-management behavior in children. This was coupled with its reported effectiveness in enhancing patient outcomes in clinical settings.^[30]

Homer et al evaluated Asthma Control, an interactive educational computer program for asthma management and showed that educational software program did not produce greater improvement than occurred with review of traditional written materials. Because both groups showed substantial improvement over baseline, computer-based education may be more cost-effective.^[31]

Osman et al found that an asthma education program based on computerized booklets can reduce hospital admissions and improve morbidity among hospital outpatients.^[32]

Asthma monitoring (5 studies)

Taylor et al found that use of electronic interface was associated with improvements in clinical and discharge documentation in a simulation scenario.^[33]

Cruz-Correia et al evaluated the use of P'ASMA - a web based asthma self-management support tool regarding the opinion of patients and their adherence to monitoring in comparison to standard paper-based tools. They found that with P'ASMA data quality improved as the integrity features increase the reliability of the data. Moreover, patients preferred the web-based application to monitor their asthma.^[34]

Bender et al tested the effect of reporting mode (1. audio computer-assisted self-interviewing; 2. face-to-face interview with study staff; 3. self-administered paper-and-pencil questionnaire) on accuracy of inhaled corticosteroid-adherence reporting in children with asthma and their parents. Accuracy of self-report was insufficient to provide a stand-alone measure of adherence. Verification of treatment adherence by objective measures remains necessary.^[35]

Kuilboer et al performed a randomized clinical trial to assess the effect of AsthmaCritic (a non-inquisitive critiquing system integrated with the general practitioners' electronic medical records, based on the guidelines for asthma and COPD as issued by the Dutch College of General Practitioners) on monitoring and treatment of asthma and COPD by general practitioners in daily practice. The number of contacts, FEV1, peak-flow measurements, and the ratio of coded measurements increased, whereas the number of cromoglycate prescriptions decreased in the age group of 12-39 years. In addition, the physicians changed their data-recording habits.^[36]

Burkhart et al examined the relationship between self-reported and electronically monitored adherence to a recommended asthma treatment and to assess the accuracy of the diary data reported by school-age children. Self-reported and electronically recorded daily peak expiratory flow rate - PEFr adherence were modestly correlated. Self-reported adherence was significantly higher than electronically monitored adherence during Week 5. Accuracy of the self-reported PEFr declined over time.^[37]

Table 1. Asthma detection or diagnosis

Year, Country, First author	Study design	Sample size	Description of the study	Conclusions
2008 Netherlands Poels PJ	Cluster-randomized controlled trial	78 general practitioners	To assess the impact of computerized spirometry interpretation expert support on the diagnostic achievements of general practitioners, and on their decision making in diagnosing chronic respiratory disease	Computerized spirometry expert support had no detectable benefit on general practitioners' diagnostic achievements and the decision-making process when diagnosing chronic respiratory disease
2006 USA Sanders DL	Prospective study 27 Jan to 24 Feb 2006	2006 patients aged 2-18 years	To develop and evaluate a real-time Bayesian network to predict the presence of acute asthma after patient triage using only routinely available electronic data	The system for the early detection of asthma exacerbations demonstrated high performance. It was able to make accurate predictions in real-time, immediately after patient triage using only routinely collected patient data available in electronic format, and without additional data entry

Table 2. Asthma management or therapy

Year, Country, First author	Study design	Sample size	Description of the study	Conclusions
2011 USA Hoeksema LJ	Cohort study Jan-Dec 2009	1032 return and 167 new patients	To evaluate the accuracy of a CDSS designed to support assessment and management of pediatric asthma in a subspecialty clinic	CDSS performed relatively accurately compared to clinicians for assessment of asthma control but was inaccurate for treatment
2010 USA Williams LK	Cluster-randomized trial	Providers (88 intervention; 105 control) and patients (1335 intervention; 1363 control)	To provide clinicians inhaled corticosteroid adherence information for their patients with asthma	Providing adherence information to clinicians did not improve inhaled corticosteroid use among patients. However, patient use may improve when clinicians are sufficiently interested in adherence to view the details of this medication use.
2010 Netherlands van der Meer V	Randomized controlled trial	200 adults	To evaluate the adherence with weekly monitoring and effect on asthma control and pharmacological treatment of a self-management algorithm based on the Internet Asthma Control Questionnaire	Weekly self-monitoring and subsequent treatment adjustment leads to improved asthma control in patients with partly and uncontrolled asthma at baseline and tailors asthma medication to individual patients' needs
2007 Netherlands Martens JD	Cluster-randomized controlled trial	25 general practitioners	To assess the effect on drug-prescribing behavior of implementing prescribing guidelines by means of a reactive computer reminder system (CRS)	Although there was a tendency towards clinically relevant results for prescription volumes that were supposed to drop, the difference in sum score between the groups was not significant. Nevertheless, computerized reminders sometimes have a favorable effect on restricting certain drugs that are not or no longer indicated in general practice
2007 USA Joseph CL	Randomized controlled trial	314 urban African-American students, aged 15-19 years	To develop and evaluate a multimedia, web-based asthma management program to specifically target population. The program uses "tailoring," in conjunction with theory-based models, to alter behavior through individualized health messages based on the user's beliefs, attitudes, and personal barriers to change	A web-based, tailored approach to changing negative asthma management behaviors is economical, feasible, and effective in improving asthma outcomes in a traditionally hard-to-reach population
2006 USA Chisolm DJ	Prospective study 1 Nov 2001 to 30 Nov 2003	790 patients	To assess the relationship between use of a computerized order set (condition-specific order sets within computerized physician order entry systems, designed to decrease unnecessary practice variation and to promote evidence-based practice) and processes of care in inpatient pediatric asthma treatment.	Order set patients were significantly more likely to receive systemic corticosteroid and pulse oximetry than controls. No significant differences were found in length of stay, total charges, and pharmacy charges.

Table 2. Asthma management or therapy – part 2

Year, Country, First author	Study design	Sample size	Description of the study	Conclusions
2006 USA McAlearney AS	Retrospective study 1 Nov 2001 to 30 Nov 2003	529 asthma, 277 appendectomy, 210 pneumonia patients	To evaluate the use of three evidence-based computerized order sets (asthma, appendectomy, pneumonia), and examine patient and admission characteristics associated with order set utilization in pediatrics	Asthma order set use rate was the highest (88.1%). Only the asthma order set showed a trend of increasing use after implementation. Uses of the asthma order set was associated with admission unit and case complexity.
2005 USA Tierney WM	Randomized, controlled trial	246 physicians, 20 pharmacists, 706 patients	To evaluate can computer-generated evidence-based care suggestions enhance evidence-based management of asthma and chronic obstructive pulmonary disease	Care suggestions shown to physicians and pharmacists on computer workstations had no effect on the delivery or outcomes of care for patients with reactive airways disease
2005 Spain Plaza V	Cluster-randomized trial	10 general practitioners, 198 patients	To assess the cost-effectiveness of an intervention based on the Global INitiative for Asthma (GINA) recommendations as compared to usual care.	The implementation of an asthma management program based in GINA recommendations improved the patient's health related quality of life and was cost-effective as compared to usual care
2004 Netherlands 't Jong GW	Population-based cohort study, Jan to Dec 1998	2,502 patients (0-16 years) 5,253 prescriptions	The unlicensed and off-label use of respiratory drugs in children were studied using the computerized medical records in the Integrated Primary Care Information project.	882 prescriptions (16.8%) were unlicensed for use in children, and 1,065 (20.3%) were prescribed off-label
2002 UK Eccles M	Cluster randomized controlled trial	60 GP and their patients aged 18 or over with angina or asthma	To evaluate the use of a computerized support system for decision making for implementing evidence based clinical guidelines for the management of asthma and angina in adults in primary care	No effect was found of computerized evidence based guidelines on the management of asthma or angina in adults in primary care. This was probably due to low levels of use of the software into clinical encounters where busy practitioners manage patients with complex, multiple conditions
2000 UK Hilliard TN	Prospective multicentre study Feb 1995 to Jan 1996	1,578 admissions in 10 hospitals involving 1,352 children	To determine children with acute asthma management in the UK using computer-based information management system for the input of admissions	This is the largest UK study following publication of national guidelines and shows that there is still room for improvement in the management of children admitted with acute asthma
1993 USA Casner PR	Randomized trial	35 patients	To determine if a computerized pharmacokinetic program for adjusting theophylline infusion rates could attain a goal serum theophylline level more accurately than physician-derived adjustments and what clinical impact this would have.	The experimental group was closer to the goal level but not significant. There were not significant differences in number of days that patients were receiving intravenous theophylline, in number of hospital days, in number of subtherapeutic or toxic levels, and in arterial blood gas measurements.
1992 UK Szilagyi PG	Randomized trial	124 children	This study tested the effectiveness of a computerized reminder system in improving influenza vaccination rates in children with asthma and examined patient barriers to vaccination at one pediatric clinic in an urban teaching hospital.	30% study group patients received vaccination, and only 7% control patients (P<.01). Vaccination compliance positively correlated with parental worry about asthma, while negatively correlated with parental worry about vaccine side effects.

Table 3. Patient education

Year, Country, First author	Study design	Sample size	Description of the study	Conclusions
2009 USA Joshi A	Prospective non-randomized pre-post study Nov 2006-Apr 2007	99 children	To describe the prospective use of an interactive Patient Education and Motivation Tool (PEMT) placed within a pediatric emergency department	PEMT was effective in improving the asthma knowledge of young patients and those having lower baseline knowledge
2005 Sweden Sundberg R	Randomized controlled study	97 young adults (18-25 years), 48 interventions and 49 controls	To assess the effectiveness of a computerized limited asthma education program, designed to suit young people.	An intervention with a limited asthma education program did not show an effect on asthma symptoms, asthma knowledge or quality of life parameters.
2003 USA Chan DS	Prospective study (180 days)	10 children	The adherence and disease-control outcomes associated with the use of an Internet-based store-and-forward video home telehealth system to manage asthma in children were studied.	The system appeared effective and well accepted.
2003 USA Krishna S	Randomized trial	228 children	To determine whether health outcomes of children who have asthma can be improved through the use of an Internet-enabled interactive multimedia asthma education program	Interactive multimedia education can significantly improve asthma knowledge and reduce the burden of childhood asthma
2001 USA Shegog R	Prospective pretest posttest randomized trial	76 children 9-13 years old	To evaluate Watch, Discover, Think and Act (WDTA), a theory-based application of CD-ROM educational technology for pediatric asthma self-management education.	The WDTA has the ability to effect determinants of asthma self-management behavior in children. This was coupled with its reported effectiveness in enhancing patient outcomes in clinical settings.
2000 USA Homer C	Randomized, controlled trial	137 families	To evaluate Asthma Control, an interactive educational computer program for asthma management	Educational software program did not produce greater improvement than occurred with review of traditional written materials. Because both groups showed substantial improvement over baseline, computer-based education may be more cost-effective.
1994 UK Osman LM	Randomized trial	801 adults	To evaluate a personalized computer supported education program for asthma patients	An asthma education program based on computerized booklets can reduce hospital admissions and improve morbidity among hospital outpatients

Table 4. Asthma monitoring

Year, Country, First author	Study design	Sample size	Description of the study	Conclusions
2008 UK Taylor B	Randomized trial	-	To compare clinician performance using electronic interface compared with paper documentation in a simulation scenario	Use of electronic interface was associated with improvements in clinical and discharge documentation
2007 Portugal Cruz-Correia R	Randomized crossover study	21 adults	To describe and evaluate the use of P'ASMA - a web based asthma self-management support tool regarding the opinion of patients and their adherence to monitoring in comparison to standard paper-based tools	With P'ASMA data quality improved as the integrity features increase the reliability of the data. Moreover, patients preferred the web-based application to monitor their asthma.
2007 USA Bender BG	Randomized clinical trial	104 children	To test the effect of reporting mode (1. audio computer-assisted self-interviewing; 2. face-to-face interview with study staff; 3. self-administered paper-and-pencil questionnaire) on accuracy of inhaled corticosteroid-adherence reporting in children with asthma and their parents	Accuracy of self-report was insufficient to provide a stand-alone measure of adherence. Verification of treatment adherence by objective measures remains necessary.
2006 Netherlands Kuilboer MM	Randomized clinical trial	40 general practitioners	To assess the effect of AsthmaCritic (a non-inquisitive critiquing system integrated with the general practitioners' electronic medical records, based on the guidelines for asthma and COPD as issued by the Dutch College of General Practitioners) on monitoring and treatment of asthma and COPD by general practitioners in daily practice	The number of contacts, FEV1, peak-flow measurements, and the ratio of coded measurements increased, whereas the number of cromoglycate prescriptions decreased in the age group of 12-39 years. In addition, the physicians changed their data-recording habits.
2001 USA Burkhart PV	Randomized, controlled clinical trial	42 children, ages 7-11 years with moderate to severe asthma	To examine the relationship between self-reported and electronically monitored adherence to a recommended asthma treatment and to assess the accuracy of the diary data reported by school-age children	Self-reported and electronically recorded daily peak expiratory flow rate - PEFr adherence were modestly correlated. Self-reported adherence was significantly higher than electronically monitored adherence during Week 5. Accuracy of the self-reported PEFr declined over time.

DISCUSSION

Among the 28 studies we identified 2 in the domain of asthma detection or diagnosis, 14 studies involved asthma management or therapy, 7 patient education, and the remaining 5 studies were in the asthma monitoring domain.

One of 2 studies that involved asthma detection or diagnosis reported high performance of Bayesian network system for the early detection of asthma exacerbations, while the second study confirmed no benefit of computerized spirometry expert support system. Biomedical informatics applications for asthma management or therapy were found beneficial in 7 (50.0%) studies, non-beneficial in 3 (21.4%) studies, and partly successful in 4 (28.6%) studies.

Applications for patient education were beneficial in 5 (71.4%) studies, non-beneficial in 1 (14.3%) and partly successful in 1 (14.3%) trial. Systems for asthma monitoring were beneficial in 3 (60.0%) studies, non-beneficial in 1 (20.0%) and partly successful in 1 (20.0%) trial. In summary, biomedical informatics applications for asthma health care quality were beneficial in 16 (57.1%) studies, 6 (21.4%) studies reported no improvement, and in 6 (21.4%) studies using of computerized systems was partly successful. No study reported benefits for major outcomes such as mortality.

Recent literature has called for a better understanding of factors that predict biomedical informatics applications success.^[38] Barriers to implementation include failure of practitioners to use the application, poor usability or integration into practitioner workflow, or practitioner nonacceptance of computer recommendations.^[39]

The decision to adopt a biomedical informatics applications for local patient care is complex and is influenced by many considerations: who is responsible for implementation,^[40] user acceptance, workflow integration, compatibility with legacy applications, system maturity, and cost-effectivity.^[41]

As with any health care innovation, biomedical informatics applications should be rigorously evaluated before widespread dissemination into clinical practice. Iterative qualitative and quantitative assessment begin early in the software development cycle. When preliminary testing suggests that application improves clinical care or patient outcomes, confirmatory controlled trials are warranted. This field is rapidly evolving because of technological advances, increasing access to computer systems in clinical practice, and growing concern about the process and quality of medical care.

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USMENE PREZENTACIJE ORAL PRESENTATIONS

KONCEPT NOVOG JAVNOG ZDRAVLJA I ULOGA CENTRA ZA JAVNO ZDRAVJE BITOLA U ORGANIZACIJI I KVALITETU ZDRAVSTVENE ZAŠTITE NA PODRUCJU OPSTINE BITOLA **NEW CONCEPT OF PUBLIC HEALTH AND THE ROLE OF THE CENTRE FOR PUBLIC HEALTH BITOLA IN THE ORGANIZATION AND QUALITY OF HEALTH CARE IN THE AREA OF BITOLA**

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Goal: To demonstrate the role of the center for public health and health of the organization and quality of health care in the region.

Material and methods: Multi-sectoral and multidisciplinary approach of Center for public health Bitola according to new concepts of public health in the period 2006-2010 in all areas of action, management systems, quality indicators, quality health care and local oriented healthcare as a result of community needs.

Results: Management system of CPH Bitola is network based with flexibility and inventiveness in terms of a complex and technological change and exchange of ideas which enables full utilization of intellectual capacity as refreshing and innovative response to the immense challenges facing health care providers. Development of information systems and access to information proved to be a key factor in measuring the quality and organization of health protection, as well as planning a medical network. Measuring quality indicators of immunization and control of epidemic risk, screening for diabetic and hypertension, ISO/IEC 17025 system, the registry of non-communicable diseases, development of new technology in lab activities, isolate and alerting infectious agents, all of this is the basis for the development of many local and national projects in order to health quality protection based on community needs.

Conclusion: Indicators of quality are crucial in the economics of health care. Exploiting this information, and overcoming the inertia of the system, the change in the mindset of all actors in society, will result in timely response of the health system in the prevention and treatment.

**ISTRAŽIVANJE ZADOVOLJSTVA PORODILJA NA TERITORIJI
JUŽNOBANATSKOG OKRUGA, U 2009. I 2010. GODINI
SURVEY ON SATISFACTION OF WOMEN AFTER GIVING BIRTH AT
THE TERRITORY OF SOUTH BANAT DISTRICT IN 2009 AND 2010**

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Introduction: The survey on satisfaction of women after giving birth has been conducted within the program “Healthcare Services in favour of Women Who Gave Birth”.

Objective: To determine the level of satisfaction of women after giving birth with healthcare services received in healthcare institutions, as well as to identify the factors that affect their satisfaction, and/or dissatisfaction.

Method: A survey questionnaire was used in the survey.

Results: During 2010 and compared to 2009, no significant changes were established with respect to average marks of accommodation conditions, services within labour department and services of paediatric nurses; however, the services of gynaecologists/obstetricians and midwives were better rated, and the services of paediatricians/neonatologists had lower marks. Accommodation conditions in Vršac were better rated, the marks for services within the labour department remained almost the same, the services of gynaecologists/obstetricians and the services of paediatricians/neonatologists were better rated, and midwives and paediatric nurses received the same marks.

Conclusion: Primary healthcare services should be more engaged in the sphere of healthcare of pregnant women and their introduction to healthcare and nutrition in pregnancy, labour, baby healthcare and nutrition, as well as their introduction to patient's rights and methods of filing a complaint, and/or objections, accommodation conditions should be improved in labour departments and women should be addressed with more kindness, understanding, advice and assistance.

Keywords: quality, satisfaction, women after giving birth, hospital, primary healthcare facility.

ZDRAVSTVENE POTREBE I KORIŠĆENJE USLUGA ZDRAVSTVENE
ZAŠTITE U VEZI SA REPRODUKTIVNIM ZDRAVLJEM ŽENA SMEŠTENIH U
KOLEKTIVNIM CENTRIMA NA SEVERU KOSOVA I METOHIJE
**THE HEALTH NEEDS AND USAGE OF MEDICAL CARE SERVICES
REGARDING REPRODUCTIVE HEALTH OF THE WOMEN HOUSED IN
REFUGEE CAMPS IN THE NORTHERN KOSOVO AND METOHIA**

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Introduction: Presently, considerable attention is put on women's medical care in all organizational systems of medical care due to exquisite sensitivity of this population group on the effect of socio-economic conditions and other environmental factors.

Aim: The aim of this research is to determine the proportion of women-refugees from refugee centers in the Northern Kosovo and Metohia who have used the services of medical care regarding reproductive health.

Method: The research was undertaken as a study of a standard representative sample of the refugees housed in the refugee camps on the territory of the Northern Kosovo and Metohija in 2008. The questionnaire of the Inhabitant Health Scrutinizing in the Republic of Serbia in 2006 was used as an instrument for the research. It involved 54 mature surveyed women. The statistic analysis implicated descriptive statistic methods and x2 test for assessing the importance of the difference.

Results: Only one fourth of all surveyed women (25.9%) have visited a gynecologist during the year preceding the research. The 11% of the surveyed have used the services of private gynecologist. More than four fifth (85.7%) of the surveyed women have visited a gynecologist only once during the preceding year. Among them there are no women who visit a gynecologist preventively, while only 11% of the surveyed went on checkups to a gynecologist once in two years and one in six of the surveyed (16.8%) has done Pap test during the preceding year.

Conclusion: The behavior regarding reproductive health of the women from refugee camps in the Northern Kosovo and Metohia is inadequate so we ought to consider the changes within the organization of medical service for medical care of the women in these places. Taking into consideration the fact that there is no gynecology service in the Health Centre in the Northern Kosovska Mitrovica where in addition to solving medical problems, medical-behavioral activity regarding reproductive health would be carried out, the one is ought to be established.

OD STRATEŠKOG PLANIRANJA DO UNAPREĐENJA KVALITETA FROM STRATEGIC PLANNING TO QUALITY IMPROVEMENT

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Health Center Subotica

Aim: To set a direction for activity development by creating the health centre's strategic plan. That will lead to an improvement of working process and quality of services and will also satisfy both the users and the employed.

Material and method: Analyzing former activities in health centres by reviewing the centre's plans and reports on execution and quality of work.

Results: Strategic planning begins with situational analysis which includes the condition of health centre and its environment. The analysis of environment is directed to political, economical, social and technical situation (PEST analysis). From the conclusion of these analyses we can define the health centre's strengths, weaknesses, opportunities and threats and create a SWOT analysis. SWOT represents a base and the first part of the plan. By matching the parameters from SWOT analysis we can set strategic plans and strategic programs, which are defined on the basis of SMART (specific, measurable, achievable, real and temporary). The health centre's mission and vision, its actual position and future projection, can also be obtained from SWOT analysis. The strategic plan of Dom zdravlja Subotica was adopted in November of 2009. First results in improving the quality of work were obtained in the fall of 2010. in the preventive health services and in the increase of users' satisfaction, which can be seen from realizing of planned services and from satisfaction polls.

Conclusion: The strategic plan of Dom zdravlja Subotica is based on the listed principles and it represents a base for future accreditation and further improvement of our institution's quality of work.

Keywords: strategic, planning, quality, analysis, accreditation

HUMAN RESOURCE MANAGEMENT AND QUALITY - THE WISN METHOD IN PLANNING

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Aim: To point at the disproportion between the structure of existing staff and their workload and also to try to realize a planning based on the workload; to point at a change of quality.

Material and method: Method -WISN (Workload Indicators of Staffing Needs) defining the condition of the health staff based on their workload. Material -WISN formulas, a plan for the staff and a service plan of Dom zdravlja Subotica for the year of 2009.

Results: The WISN method analyzes the workload, actual work day, standard activity and standard workload and the planned number of services. Putting these parameters into a correct proportion and comparing them with the actual condition of the staff, we can get a WISN ratio and a WISN difference. In the general practice of Dom zdravlja Subotica the WISN ratio for doctors is 0.77 and for nurses 0.99. The WISN difference for doctors is -19 (19 doctors are missing) and for nurses -5 (a deficit of 5 nurses). The workload of the staff is so big that neither the staff with secondary education nor the staff with university education can accomplish the indicators of the quality of work they are expected to achieve. The result of this is mainly a poor realization specially of preventive services, which is a required indicator of the quality of work.

Conclusion: Planning the structure of health staff based on their workload is much more practical than the planning based on population, because it is carried out on the basis of the health professionals' primary activities with regard to their available working day. Changes in the national staff policy which would allow the health professionals a more efficient a work and would also increase the quality of their work.

Keywords: WISN, planning, quality, workload, activity

**ANALIZA POKAZATELJA KVALITETA RADA U PRIMARNOJ ZZ NA
JUŽNOBANATSKOM OKRUGU U 2010. GODINI
ANALYSIS OF PERFORMANCE QUALITY INDICATORS IN PRIMARY
HEALTHCARE SERVICES IN SOUTH BANAT DISTRICT IN 2010**

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Introduction: Improvement of quality of healthcare institutions performance is the process aiming at the achievement of a higher level of efficiency, effectiveness and patient satisfaction.

Objective: To identify performance quality and differences among healthcare institutions.

Method: Pursuant to the methodological instructions of the National Public Health Institute, a healthcare institution submits the processed data to a regional public health institute on the annual basis. Early in 2011, primary healthcare facilities (PHC) from the territory of South Banat District submitted the data with calculated indicators for the previous year, based on which a comparative analysis was conducted.

Results: PHC Opovo has the highest number of prescriptions and laboratory orders per physician in 100 visits, while PHC Pančevo accounts for the lowest number. The highest number of orders for specialist-consultative examinations per physician was registered in Bela Crkva, and the lowest in Pančevo.

PHC Bela Crkva accounts for the highest number of X-ray orders, while PHC Pančevo accounts for the lowest number; PHC Plandište accounts for the highest number of ultra sound examination orders per a physician, while PHC Pančevo accounts for the lowest number. The average number of visits per a physician was highest in Alibunar and lowest in Plandište.

The highest percentage of preventive visits was registered in PHC Vršac, while the lowest percentage was registered in Alibunar; the greatest percentage of coverage of the population over 65 by vaccination against flu was achieved in Plandište.

Conclusion: There are significant differences among institutions with respect to performance quality indicators.

Keywords: quality, healthcare institutions, indicators

**SPECIFIČNOST DELATNOSTI HITNE MEDICINSKE POMOĆI I MERE ZA
UNAPREĐENJE KVALITETA RADA
UNIQUENESS OF ACTIVITIES OF EMERGENCY MEDICAL ASSISTANCE
(EMA) AND MEASURES FOR WORK QUALITY IMPROVEMENT**

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Mutual interaction between work and health often results in work related diseases, with multifactorial cause of the psychosomatic character as insufficiently defined challenge of the work environment for health damage of employees.

EMA doctors working hours per week are significantly longer; as well as the number of real working hours. Doctors from Institute for Public Health (IPH) have considerably greater number of hours for performing other services while EMA doctors have changeable working hours during the night work which leads to use of medication to treat insomnia.

In EMA doctors the influence of illness or injuries on work performance is considerably disadvantageous, 2.5% of the examined from this facility are capable to work short time, 7.5% often need to ease the pace of work or change the way of work, and 25.3% sometimes need to ease the pace of work or change the manner of work or they are capable of working but with certain symptoms.

Starting point that professional stress is a conflict of the work environment demands and individual abilities, defines corrective measures: adjustment of the environment to the needs of the employee, training of workers to cope with stress, and a combination of the aforementioned.

In order to deal with stress, you need a certain strategy. Prevention program activities should contain the series of the following key steps: stress recognition, stress evaluation, anti-stress intervention, supervision and evaluation.

Whether they refer to work environment, or to a group or an individual, the list of interventions according to the type contains: interventions in legislation and social support areas, interventions in technology and organization of work areas and interventions at workplace so as to improve work environment, interventions to improve individual response and behavior, and specific interventions on protection and health promotion.

It is necessary to stimulate team work, determination, initiative, creativity, self-control and responsibility in employees, canalize individual potential, most of which is latent, into organizational achievement, use knowledge, skills, ability and motivation of people for the achievement of organizational goals.

**ORGANIZACIONI ASPEKT UNAPREĐENJA RADNOG OKRUŽENJA U
HITNOJ MEDICINSKOJ POMOĆI
ORGANIZATIONAL ASPECT OF WORK ENVIRONMENT
IMPROVEMENT IN EMERGENCY MEDICAL ASSISTANCE (EMA)**

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It is necessary to adopt the Law on Emergency Medical Assistance which would precisely determine the activity, regional network plan of emergency medical assistance centers, services and stations, organization of work and jurisdiction of the subjects participating in this activity.

Qualitative changes of health management are required along with the enhancement of the managing capacity in order to develop functional management by effective teams.

Management of a health facility within a defined strategy in fighting against stress, is supposed to provide a professional, competent team for making the Program of continuous supervision over the execution of intervention in relation to healthy life style adoption, joining anti-stress management programs and handling different strategies to face stress, in order to improve health, professional skills, determination, and work ability preservation.

To provide active participation of the management in continuous execution of prevention programs, positive work environment promotion and management of critical stress disorders.

Legal boundaries of our legislation, expressed through the Law on Safety and Health at Work represent adjustment to EU regulations, but it is necessary to point out that this law does not encompass all the elements which are set by provisions and instructions of EU. Direction 89/391 of EEC regulates introduction of measures promoting safety and health at work, containing general principles regarding prevention of occupational risks, risk elimination, health safety practice, health consultation, employee training, management training and general guidelines for the application of these principles.

“REDOVAN PREGLED JE NAJBOLJA ZAŠTITA”
“REGULAR EXAMINATION IS THE BEST PROTECTION“

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The slogan "Regular examination of the best protection - Say it to everyone you love" the national campaign was marked by "Serbian cancer" launched by the Ministry of Health of Serbia and the Republic Institute for Health Insurance. Early 2010. The leadership of the Health Nis has made a decision on the implementation of mass screening population of Nis aged 50-70 years and more to the presence of occult blood in the fecal.

Aim: To describe the organization of screening programs for early detection of colon cancer at the Health Center of Nis and the impact of health and educational work on the efficiency of program implementation.

Method: The study included 2897 persons aged 50-70 years and over who made an epidemiological survey to assess the risk of developing colon cancer, and offered to test for the presence of occult blood in the fecal for a period of 01.02.2010.-31.01.2011. year.

Results: Of the 2897 respondents, only (0.17%) individuals refused to complete it. As for the age structure was the most common group of 60 to 69, of them 1236(43%). It should be noted that in relation to the total number of surveyed women were more numerous of them in 1951 (68%) and 941 men (32%). The results showed that since 2892 people have been issued and explained how the test execution, test done in 1739(60%) persons, 1153(40%) and one year after the test has been done. Of the total number of tests performed in 49(2.8%) of the result was positive and in 1690(97.2%) negative. Education level was not critical when the response for participation in the screening program in question. With lower education reported a 792(27%) persons, with the average in 1552 (54%) with a university degree 547(19%).

Conclusion: First results, in terms of percentage of people who have done the test (response, the percentage of tests performed) is very encouraging. It should be noted that there is a need for motivation and education of the population when it comes to population screening for occult bleeding in the fecal. The increased involvement of health professionals will impact primarily on the efficiency and validity of tests performed and to improve the quality of health services.

Keywords: prevention, colon cancer, screening

REZULTATI RADA SAVETOVALIŠTA ZA ODVIKAVANJE OD PUŠENJA
DOMA ZDRAVLJA NIŠ
**WORK RESULTS COUNSELING SERVICE FOR SMOKING CESSATION
OF THE HEALTH CENTER NIŠ**

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From 2007, the counseling service for smoking cessation of the Health Center Niš started the education of smokers according to the program of the Health Ministry of the Republic of Serbia named Stop Now “7 Steps to Freedom”. From May 2010, the multi-disciplined team (epidemiologist, physical education professor, psychologist, nutritionist, sanitary-ecological inspector, public-health nurse) was included in the work of the counseling service. The work of this team had greatly improved the working quality of the counseling service for smoking cessation and also influenced on quitting smoking and the removal of one of the important risk factors in appearance of large non-infectious diseases.

The presentation of the group method work and the result of work of the counseling service for smoking cessation has for its goal the motivation of greater number of smokers to quit smoking according to the program “7 Steps to Freedom”.

In the counseling service for smoking cessation 45 educative classes with 468 students, 322 (68,81%) women and 146 (31,19%) men, were organized until May 2011.

When the multi-disciplined team started its work and the Law on Protection of Citizens from

Tobacco Smoke Exposure entered into force, the interest was increased and also the level of motivation for quitting smoking (in 2009. year 68 students, and 2010. year 156); not only the health conditions of an individual and his / her family were improved, but also the conditions for creating a healthier environment. 291 (62,18%) of students ended the program, 190 (64,60%) quit smoking, and 14 (16,86%) do not smoke for more than a year.

The group method for smoking cessation, which was applied in the work of the counseling service, proved to be very efficient for raising the level of consciousness about the harmfulness of cigarette smoke on health condition of an individual and his / her family and the working environment, and, after introducing the multi-disciplined team, the motivation for smoking cessation was greatly increased, the detoxification was efficient, and the weight gaining after giving up smoking was prevented.

Keywords: counseling service, multi-disciplined team, cessation, smoking.

**RAD PREVENTIVNOG CENTRA DOMA ZDRAVLJA NIŠ NA PREVENCIJI
RAKA DOJKE
WORK OF NIŠ HEALTH HOME PREVENTIVE CENTRE ON BREAST
CANCER PREVENTION**

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Breast cancer is the most frequent malignant tumour with women in our country. It is also the leading cause of death of malignant diseases with women. It belongs to tumours whose unfavourable epidemiological situation can be improved by providing organized prevention.

Aim: The aim is to present the way and the work quantity of Niš Health Home Preventive Centre on breast cancer prevention. The period from January 2010 to June 2011 is overviwed.

Material and work methodology: The medical documentation of Preventive Centre was used. The work on prevention is organized through lectures and breast self-examination educations on the field. At that time, women are familiarized with the epidemiological situation, disease risk factors and possibilities of primary prevention, types of examinations for early diagnose, the importance of regular preventive examinations and early discovery of any changes on breasts. The film about breast self-examination is shown, self-examination is demonstrated on a model and educational material is delivered. Women are informed about the importance of the organized screening and they are strongly advised to accept an invitation. One of the main preconditions for a successful screening is a high range of goal population (at least 70%) ,which can be provided by educated population only.

Results: Durung the examined period, Preventive Centre employees held lectures and self-examination educations in 75 working organizations and institutions, 12 local communities, 25 villages in the region, 4 Health Bazaars. There were 56 interviews and participations in local medias.

Conclusion: It is possible to prevent breast cancer by: its prevention in the way of removing risk factors and taking healthy lifestyles , by having regular preventive examinations and discovering the disease in early phase, when the possibilities for the cure are much bigger. To do so, it is necessary to educate population constantly and to cooperate with mass media, which is one of Niš Health Home Preventive Centre tasks.

Keywords: breast cancer, prevention, education, self-examination, screening

EVALUACIJA KAMPANJE PROTIV PUŠENJA QIUT & WIN U SREMSKOM OKRUGU U PERIODU 2008 -2011 GODINE
EVALUATION OF ANTI-SMOKING CAMPAIGNS QIUT & WIN IN THE SREM DISTRICT IN THE 2008 -2011

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The need for tobacco today is a major factor contributing to mortality from chronic diseases. Cigarette smoking is the leading cause of mortality due to lung cancer, coronary heart disease, chronic obstructive pulmonary disease and stroke udara. Found that maternal smoking during pregnancy a risk factor for subsequent occurrence of nicotine dependence in offspring. According to the International Classification Agency for Research on Cancer (IARC-International Agency for Research on Cancer) tobacco smoke carcinogens belongs to one or carcinogenic substances with no proven reliability-carcinogenic effects. Apart from lung cancer, have made the link with cancer and other localizations (larynx, esophagus, bladder, kidney, pancreas).

Quit & win the international competition in smoking cessation, which aims to provide a positive stimulus to encourage people to quit smoking. So far, eight times organized at the international level, and every two years, from 1994-2002. National Institute of Public Health, KTL in Finland coordinates and evaluates the International Campaign "Quit & win" Objective: - view campaign performance in the period 2008-2011 - Assessment and one-year follow-up (monitoring)

Method: survey of all participants in the campaign in the territory of Srem. Questionnaire for follow-up is contained general questions about which agreed by all participating countries. Also, an integral part of the questionnaire were additional questions pertaining to the reasons for smoking cessation, family support, reasons for termination, etc.

The results and the conclusion of one of the most important aspects of a campaign to "Quit & win" is the ability to create and strengthen cooperation between various sectors and organizations involved in tobacco control. "Quit & win" is a great campaign which involves the whole community. 18% of participants were non-smokers after one year of competition and the number had increased to 36% in 2011.

All attempts to stop smoking require, as the therapist and the smokers, a serious approach, motivation, commitment, planning, effort and perseverance. The campaign "Quit and Win" - more and more people leaving tobacco.

ISPITIVANJE ZADOVOLJSTVA PACIJENATA SAVETODAVNIM RADOM
LEKARA U PRIMARNOJ ZDRAVSTVENOJ ZAŠTITI NA TERITORIJI
NIŠAVSKOG I TOPLIČKOG OKRUGA
**ANALYSIS OF PATIENT SATISFACTION CONCERNING THE ADVISORY
WORK OF PRIMARY HEALTH CARE PHYSICIANS IN THE TERRITORY
OF NIŠAVA AND TOPLICA DISTRICTS**

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Aim: To determine the level of patient satisfaction with advisory work of doctors in service of general medicine, paediatrics and gynaecology and in medical centres of primary level of medical protection in the territory of Nišava and Toplica districts in 2010.

Methodology: A daily anonymous poll including questionnaire defined by The Ministry of Health of The Republic of Serbia, which contains 19 questions with given answers where patient circles one of the given answers, has been conducted. Study results are displayed graphically. Data were entered and processed and the graphs constructed using the Microsoft Excel application from Microsoft Office package 2007 version. PASW Statistics 18.0 was used for frequency comparison of attributive variable categories performing Chi square test.

Results: The highest percentage of the polled in services of general medicine, paediatrics and gynaecology, in medical centres of both districts, get pieces of advice during their regular visits to physicians, but the lowest percentage during their visits to preventive centre. For practical reasons, only one of the results is shown here:

During a regular visit to primary health care physician, 80.6 percent of patients living in the territory of Nišava district were advised on diet and nutrition. Visiting preventive centre, 3.1 percent of patients were advised. In the territory of Toplica district, 82.3 percent of patients were advised on diet and nutrition during a regular visit to primary health care physician. Visiting preventive centre 3.6 percent of patients were advised.

Conclusion: Further activities considering promotion of the quality of advisory work concern with the promotion of communication between doctors and patients, but also the promotion of the work of preventive centres.

DOPUNA ZBORNIKA

ADDENDUM TO THE BOOK OF ABSTRACTS

OSETLJIVOST VRSTA IZ PORODICE *ENTEROBACTERIACEAE* KOJE PRODUKUJU BETA LAKTAMAZE PROŠIRENOG SPEKTRA DELOVANJA **SUSCEPTIBILITY PATTERN OF ESBL PRODUCING ENTEROBACTERIA**

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Gram negative bacilli produce enzymes which are responsible for their resistance to all beta-lactam antibiotics and are called extended spectrum beta lactamases – ESBL. Infections caused by ESBL producing enterobacteria therefore represent therapeutic problem. AIM To determine ESBL production rate among enterobacteria and their susceptibility pattern. METHOD We examined 862 clinical isolates of bacteria belonging to family Enterobacteriaceae that were isolated from wounds and skin swabs, aspirates and punctates. Susceptibility test and detection of ESBL producers was performed according CLSI standard using test discs Rosco (Denmark). RESULTS Out of 862 isolates 46,52% were ESBL positive, and of these the most common were *Klebsiella* spp. (42,89%) and *E.coli* (31,67%). All isolates were susceptible to carbapenems. The highest percentage of resistance of ESBL producing enterobacteria was to gentamicin 85,78% , resistance to ciprofloxacin was detected in 33,59% and to piperacillin/tazobactam in 12,91%. CONCLUSION We detected high percentage of ESBL producing enterobacteria among our isolates. Carbapenems are the drug of choice, but high percentage of our isolates were susceptible to piperacillin/tazobactam.

EFEKAT ALFA LIPOINSKE KISELINE U TERAPIJI DIJABETIČNE
POLINEUROPATIJE
**THE EFFECT OF ALPHA LIPOIC ACID IN TREATMENT OF DIABETIC
POLYEUROPATHY**

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Introduction: Polneuropathy diabetic (DP) is a late microvascular complications of diabetes. The main problems of these patients were paresthesia in the legs and disesthesia. There are data on the beneficial effect alpha lipoic acid in complications of diabetes. Alpha lipoic acid is antioxidant that normally produced in our body, and is required for important metabolic functions in the cell.

The aim of the work: Show the effect of α lipoic acid in diabetic patients with polyneuropathy problems, entering these substances through medicaments and nutritional means.

Method: This pilot study included 10 patients, Dphp, the Military Hospital in Nis, the average age of 61.5 ± 3.68 years, with diabetes mellitus, the treatment peroral antidiabetics Used descriptive methods, and techniques of research- survey .For assess the degree of pain neuropathyc pain, used the "Pain detect test" (CurrMedResOpin Vol22 ,2006,1911-1920, Neuropathic Pain Diagnostic Quaetionnaire). Testing was performed before treatment and 3 months after the use of α lipoic acid therapy.

Results: In the first test, the result is on the scale of assessments neuropathyc pain ranged between 22 and 30. Than, thay used α lipoic acid : 600 mg per day. Thay also advised that the diet included in the prescribed amount, foods that contain higher amounts of α lipoic acids: meat, potatoes, beets and carrots. After 3 months the result was between 20-27, less 10-12%. Test is only for a quick assessment of the presence of neuropathic pain, is applicable to everyday work, but not a substitute for medical diagnostics.

Conclusion: Using α lipoic acid is benefit in patients with DP, because α lipoic acid improves endothelial function and improves energy metabolism. Further research should increase the number of respondents for reliable statistical analysis

Key words: diabetes mellitus, polyneuropathy, α lipoic acids.

UPOREDNO PRAĆENJE POTROŠNJE ANTIMIKROBNIH LEKOVA I
BAKTERIJSKE REZISTENCIJE U KLINIČKOM CENTRU NIŠ U PERIODU
2005.- 2009.

**THE PARALLEL MONITORING OF THE USE OF ANTIMICROBIAL
DRUGS AND BACTERIAL RESISTENCE IN THE CLINICAL CENTER OF
NIŠ IN THE PERIOD FROM 2005 TO 2009**

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The aim of this study was to evaluate the antimicrobial susceptibility of Enterobacteriaceae to selected antibiotics from different clinical specimens taken from the Institute of Public Health in Niš, and to investigate the correlation between bacterial resistance and antibiotic use in the Clinical Center of Niš. In this survey bacterial susceptibility and antibiotic consumption were monitored in the period between 2005 and 2009.

Materials and methods: 6808 samples of *Enterobacteriaceae* were studied during the aforementioned period. Antimicrobial susceptibility was tested by means of the disc-diffusion method, in accordance with the CLSI guidelines. Bacterial resistance was given as the percentage of resistant isolates. The utilization of antibiotics at the Clinical Center of Niš during this period was obtained from the computerized database of the Department of Pharmacotherapy and expressed as DDD per 100 bed/days (DBD).

Results: During the study period, the overall consumption of antibiotics showed a decrease by 3,33% (29,32:25,99 DBD). The most frequently used antibiotics were cephalosporins, followed by penicillins, aminoglycosides and quinolones. Hospital aminoglycoside consumption was reduced in investigation period from 69% to 38% (6,42:4,68 DBD) while the resistance to gentamicin was reduced from 50% to 19,2%. However, utilization of ciprofloxacin had a significant increase in 2007 (4,68:7,04DBD). There was an alarming increase in the level of resistance to ciprofloxacin in our hospital (from 27 to 35%). The reduction of *E. coli* resistant to amoxicillin+clavulanic acid correlated significantly with their utilization (2,8:0,76 DBD), while the resistance of all the isolates decreased from 52% to 24%. Ceftriaxon consumption was increased in investigation period from 3,6 : 10,71DBD while the resistance to ceftriaxon was increase from 36% to 52%. For cefepime, the use went from 0,21 to 0,93 DBD (the overall resistance of all of the isolates increased from 17% to 34%).

Conclusion: These results confirm the existence of a connection between the use of antibiotics and the prevalence of resistance. This methodology could provide good quality indicators of rational drug use and could be used for the local monitoring of antibiotics use and resistance, as well as for external comparisons.

Keywords: bacterial resistance, use of antimicrobial drugs, correlation

**NALAZ *STREPTOCOCCUSA PYOGENESA* KOD DEVOJČICA SA
VULVOVAGINITISOM NA PODRUČJU GRADA NIŠA
THE FINDING OF *STREPTOCOCCUS PYOGENES* IN GIRLS WITH
VULVOVAGINITIS IN THE MUNICIPALITY OF NIŠ**

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Aim: The study aimed to establish the incidence of *Streptococcus pyogenes* in the vulvar swab specimens from the girls with vulvovaginitis.

Material and methods: In the five year period (September 2006 - August 2011) bacteriological examination of the vulvar swab specimens of 750 girls with the symptoms of vulvovaginitis was done in the laboratory for sexually transmitted diseases of the Center of Microbiology. Standard microbiological procedures were employed, and *S.pyogenes* was identified utilizing the bacitracin and latex agglutination tests.

Results: *S. pyogenes* was isolated in the swab specimens of 29 girls with vulvovaginitis (3,87%), out of which in pure culture in 25 examinees and associated with *Staphylococcus aureus* in 4 examinees. In direct microscopic smears from the girls with the bacteria, large numbers of PMN leukocytes were established. Of importance was the fact that the girls with streptococcal vulvovaginitis had had a history of recent upper respiratory tract infection. In one girl, *S. pyogenes* was isolated in the throat swab culture too. Out of 29 isolates in total, 18 (62,07%) came from the samples of girls aged 4-7 years. Most isolates of *S. pyogenes* were identified in 2007, in 12 girls, while in 2009 the bacteria were identified in the vulvar swab specimens from only two girls with vulvovaginitis. *S. pyogenes* was more commonly isolated in warmer seasons of the year. From April to September, streptococcal vulvovaginitis was diagnosed in 22 girls (75,86%).

Conclusion: In the municipality of Niš, probably, the strains of *S. pyogenes* with the tropism towards the perineal tissue circulate only occasionally, and vulvovaginitis caused by this bacterium is thus rarely diagnosed.

Key words: *Streptococcus pyogenes*, vulvovaginitis, girls