**SOCIOECONOMIC AND BEHAVIORAL RISK FACTORS OF DISABILITIES   
AMONG THE INDIGENOUS POPULATION IN THE FAR NORTH**

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Purpose: to study the socioeconomic and behavioral risk factors of disabilities among indigenous population of Far North and make proposals for their prevention.

Methods: The study tested the level of income, employment, education and alcohol consumption on the basis of the survey and analyzed the data of the official statistics. We used Statistica v.12 and IBM SPSS Statistics v.22 for calculating the chi­square, Wilcoxon signed­ rank test criteria, T­test for paired samples and made regression and correlation analysis.

Results: We did not discover significant differences in income levels, unemployment and alcohol consumption in the cohort study (2001­2010) of indigenous population in Chukotka Autonomous Region. In addition, the income of the natives is still low, unemployment and alcohol consumption are high. There is a correlation between the socioeconomic and behavioral factors and health indicators. We also propose a mathematical model which allows to suggest that the level of income above the subsistence level in 6­7 times is sufficient to minimize the impact of socioeconomic factors on population health.

Conclusion: In order to prevent irreversible process of indigenous population health deterioration and society degradation it is necessary to create the accessible vocational education, increase employment and number of leisure centers. These measures will lead to income growth, increase in life expectancy and infant mortality decrease.

**Keywords:** risk factors, lifestyle, indigenous population, Far North of the Russian Federation, alcoholism, unemployment, low income

**BIOELEMENTAL MARKERS OF THE ANTIOXIDANT STATUS IN DRIVERS   
AND WORKERS OF PETROL­FILLING STATIONS IN THE NORTHERN REGION**

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Hair ultimate composition was studied in 123 residents of the northern region (Khanty­Mansiysk Autonomus Gegion­Yugra). 45 drivers and workers of petrol­filling stations (AZS) made up the 1st group (average age 40.8 ± 14.2 years) and 78 employees ­ 2nd group (average age 38.7 ± 15.8 years). Content of Ca, Cd, Cu, Fe, Pb, Se and Zn was identified in the hair of northerners by AES­ISP, MS­ISP methods. In surveyed persons of the 1st group significantly lower concentrations of toxic chemicals (Ca ­ p = 0,019) and antioxidant (Se p < 0,001, Cu ­ p = 0,010, Zn ­ p = 0,046) and higher content of toxic chemicals (Cd, Pb ­ p < 0,001) were revealed in comparison with the surveyed persons of the 2nd group. Lead intoxication indicators (Ca/Pb ­ 100) are 6.2 times and cadmium (Zn/Cd ­ 500) 2.6 times and indicators deviance of antioxidant protection system (Fe/Cu > 0,9) occurred 2,2 times oftener in the hair of surveyed persons of the 1st group. Arranging of indicators characterizing functioning of antioxidant protection system is important for recommendations development on prevention of specific processes formation caused by peroxidation activation that in spite of peroxidation syndrome development gives rise to environmental pathology, complication of general and work­related diseases state in risk group contingents.

**Keywords:** North, drivers, employees of petrol­filling stations, toxic chemical elements, bioelements, antioxidants

**CORRELATIONS OF CARBOHYDRATE METABOLISM INDEXES, PROVISION   
OF BIOELEMENTS, B1, B2 VITAMINS IN CHILDREN AND ADOLESCENTS IN THE NORTH**

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Children and adolescents aged 8 to 21 years old, living in the European and Asian North of Russia in the Subarctic (SR) and Arctic (AR) regions were surveyed. By means of spectrophotometric and fluorometric methods blood levels of carbohydrate metabolism (glucose, pyruvate, lactate), the body provision with calcium, phosphorus, magnesium, copper and water­soluble B vitamins: thiamine and riboflavin were defined. Regardless of the living region reduction of pyruvate, calcium, phosphorus, B1 and B2 vitamins concentration and increase in lactate were detected. Imbalance in the magnesium content was determined, but still lower values were registered 2.2 and 2.8 times oftener in the SR and AR, respectively, and decrease in copper was detected only in SR individuals. Comparison of the two regions showed that the representatives of the Arctic region had reduced glucose and lactate levels, but higher concentrations of bioelements and thiamine. The results of the correlation analysis revealed a significant influence of phosphorus on anaerobic glycolysis, and riboflavin on the aerobic processes. The calcium, phosphorous had an influence on the glucose level in subarctic region. At the same time magnesium, phosphorus had a positive effect on the anaerobic processes of carbohydrate metabolism, and calcium had negative effect.

**Keywords:** carbohydrate metabolism, elements, thiamin, riboflavin, children and adolescents, North, Arctic

**FREE RADICAL ACTIVITY AND MORPHOLOGY OF THE SALIVARY FLUID IN STUDENTS FROM DIFFERENT ETHNIC GROUPS IN EMOTIONAL STRESS CONDITIONS**

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It is known that the psycho­emotional and mental stress can lead to the disruption of adaptation process, which is accompanied by severe metabolic changes in the body. In this regard, the aim of this work was to study the effect of mental and emotional stressor (exam) on free radical processes and morphological picture of the salivary fluid in students from different ethnic groups. The study involved 129 students of the 1 course of which 70 healthy volunteers were included in the final study group on the basis of personal data. After attrition students were divided into 3 groups according to their ethnicity ­ Russians, Africans and Indians. Salivary fluid collection was done before and after the exam, then collected biomaterial was analyzed by induced chemiluminescence and wedge dehydration methods. For volunteers observed within each ethnic group have been installed 3 categories for free radical oxidation (FRO) level: low (0­0,35), medium (0.35­0.5) and the high (0,5≤). Students with initially low and middle FRO level of salivary fluid stress caused an increase in the intensity of the chemiluminescence (CL) emission. For students with high luminescence was established ethnic relationship: Russian demonstrated increase in FRO level, Africans and Indians showed its decline. The ratio of occurrence of salivary fluid facies was dependent on the ethnic group ­ in Russians has not changed under the influence of a stressor, in Africans and Indians was reversed. Correlation between CL intensity and the crystal parameters of central zone of salivary fluid facies was also revealed. O the basis on these data we can assume a weak adaptive capacity to the conditions of emotional stress in Russian and Indian students and stimulation of adaptive capacity in African students.

**Keywords:** salivary fluid, free­radical activity, crystallization, psycho­emotional stress, ethnic group

**BIORYTHMOLOGICAL PARTICULARS AND ELEMENTS OF THE DESYNCHRONOSIS   
OF THE CENTRAL HEMODYNAMICS PARAMETERS IN THE STUDENTS   
OF THE NORTHERN MEDICAL HIGHER EDUCATIONAL INSTITUTION**

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The parameters of central hemodynamics in young men and women, junior students of the medical faculty of the Khanty­Mansiysk State Medical Academy were analyzed in this study. Values of cardio hemodynamic indicators and vegetation index Kerdo are obtained by 24­hour monitoring. Arrhythmic type prevailed among boys and girls; the second largest type was evening type; the number of students with morning chronotype was limited. Significant differences in the average values of central hemodynamics parameters were found in groups of the young people of the same sex with different chronotype in the hours of morning rise, the diurnal activity and night’s repose. Differences between the representatives of different chronotypes were evident to a greater extent in the girls’ groups than in the boys’ groups. In the group of youths, joined all chronotypes representatives, desynchronosis of central hemodynamic parameters was evident as ultradian rhythms. We observed more intercalated rhythms in young men with arrhythmic chronotype than in boys with evening chronotype where pulse pressure circadian rhythm also disappeared. In the group of girls, we observed disappearance of pulse pressure circadian rhythm. Girls with arrhythmic and evening chronotypes had disorders in rhythms coherence of systolic and diastolic blood pressure and heart rate that led to the absence of circadian rhythm of pulse pressure.

**Keywords:** students, biorhythms, desynchronosis, blood pressure, heart rate, vegetation index Kerdo

**DYNAMICS OF PSYCHOPHYSIOLOGICAL PARAMETERS OF ATHLETES AND SKIERS DURING THE YEAR SEASONS IN THE EUROPEAN NORTH OF RUSSIA**

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This work presents the results of a multiply structural and dynamic investigation of seasonal changes in psychophysiological indices of the athletes and skiers in the European North of Russia. The study of the central nervous system functional status and regulation of the autonomic nervous system during the annual training cycle was made to reveal psychophysiological characteristics of young athletes. On the basis of obtained data, the influence on the level of activation of the nervous system characteristic features of activity in which the athlete was engaged in was stated. Special aspects of seasonal dynamics indicators of the operator’s working capacity in the studied groups were defined. On the basis of data analysis of variation cardiointervalography relationship of an organism regulatory systems tension with peculiarities of athletic training was defined. As a result, it was found that the skier’s organism undergoing aerobic activities during training was less affected by negative environmental factors, compared to the athlete’s organism, performing a physical activity with a predominance of anaerobic activity that requires total efficiency of the organism and greater involvement of regulatory systems. So, the athletes are more exposed to risk of exhaustion of physiological reserves, and use of psychophysiological testing for them can serve as means of preventive control of overpressure and overtraining syndrome.

**Keywords:** physiological indicators, European North, seasons, skiers, athletes

**INTEGRAL CRITERION of the influence of sociAL, economic   
and environmental factors ON the regional demographic processes**

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The aim of the article is to estimate factors which influence the main demographic indicators in the regions of Russia (life expectancy, mortality, migration, stability of family and marriage relations). The research was done by means of mathematical methods and models (regression analysis of panel data). Federal State Statistic Service data “Regions of Russia” and “Health care in Russia” were used as database. Indicators of 80 Russian subjects (without autonomous areas) in the period 2009­2013 were presented in the form of the database which included the following blocks: medico­demographic situation, level of economic development of the territory and wellbeing of the population, development of social infrastructure, ecological and climate conditions, scientific researches and innovations. We used about 70 indicators characterizing various aspects of regional development. It is found out that regressive model with fixed effects controlling for panel data allowed to receive relevant model that could be used for estimation of the main demographic indicators of the Russian regions depending on social and economic development and social stress factors. Results of an integral criterion allow to reveal the ways to preserve human potential and improve the population life quality on the regional level.

**Keywords:** health, demography, social and economic factors, mathematical methods, region

**CHRONIC ISCHEMIA OF GREAT GUT (LITERATURE REVIEW)**

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The article presents literature review on study history of ischemia of great gut. The study of this problem began in 1834 when Despre published the first message on bowel infarction with preceding chronic ischemia of intestines. In recent years interest to great gut ischemic defeats has increased. It is not surprising taking into account extreme prevalence of vascular diseases. There are known reliable pathomorphological data on colon mucosa change into acute ischemic colitis, nevertheless there is hardly any information in literature on morphofunktional change of a mucous membrane with early stage of chronic regional misperfusion. The research is necessary for timely diagnostics of a great gut chronic ischemia and prediction of colic anastamotic dehiscence and great gut gangrene in various clinical settings. Despite of various ways of great gut chronic ischemia diagnostics, complexity of this pathology definition with early stage is obvious and requires search for new methods of disease verification. There are a lot of facts describing pathogenesis of great gut vascular abnormalities with criteria of their recognition. It is necessary to know history of scientific research, mistakes, achievements, problems met by the previous generations of experts dealing with this problem to move on.

**Keywords:** great gut, ischemia, necrosis

**EPIDEMIOLOGY OF INJURIES IN SHYMKENT, SOUTHERN KAZAKHSTAN: JUSTIFICATION FOR THE NEED FOR ESTABLISHMENT OF MUNICIPAL INJURY REGISTRY**

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External causes are ranked as the third most common cause of death in Kazakhstan. At the same time, Kazakhstan has the highest mortality from traffic injuries in the world warranting development of preventive programs based on the main principles of evidence­based medicine. Given considerable heterogeneity between different regions of Kazakhstan, preventive programs should be based on the regional evidence. In this descriptive study we present a structure of injuries using the data on all injuries hospitalized to Shymkent Municipal Emergency Care Hospital from 1 January 2012 through 31 December 2014. Type of trauma, mechanism and circumstances as well as age, gender, time and place of when injury took place were registered. We present the main typical traumas that require hospitalizations, but also describe limitations of the existing medical documentation for development of preventive programs. We suggest establishment of a municipal injury registry which can have comparable with international registries data on circumstances of injuries, which can be used in other regions of Kazakhstan.

**Key words:** injuries, registry, distribution, Kazakhstan, epidemiology

**HELMINTHIASIS PREVALENCE AMONG POPULATION OF KARA­SUY REGION   
THE KYRGYZ REPUBLIC**

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Every year from 296 812 to 681 056 incidents of invasion diseases are registered in Kyrgyz Republic. It means that each 8th inhabitant has parasitic diseases and each 6th child aged up to 14 suffer from helminthes. In the years 2012­2014 the study on fauna determination of persons’ endoparasite among the population of Kara­Suy region was made together with parasitological laboratory of health inspection service. The work was devoted to echinococcus research. Echinococcus was found in 7,9 % unemployed people, 6,5 % housewives, 14,3 % in pensioners among Kara­Suy region population. Infection rate among surveyed was 0,6 %. During 2012­2014 decrease tendency of echinococcus disease was observed. However this tendency is not stable as the rate of infection is still high. It means that more and more healthy people will be involved in echinococcus epidemic process if the situation will not be changed fundamentally. Human echinococcus incidence rate is coherent with animals’ echinococcus infection rate. During 2012­2014 about 997 domestic animals, infected by echinococcus were resisted in the region. More than two tons of animal organs infected by echinococcus were taken out at the slaughter. There exists probability of feeding dogs with the infected organs which causes environment pollution with echinococcus in Kara­Suy region. According to the statistics of Osh Environmental Protection Department all the slaughter units belong to ecological risk group due to environmental contamination with tapeworm echinococcus eggs.

**Keywords:** helminthes, invasive diseases, endoparasites, echinococcosis, helminthological study, bridging host, final host