A COMPREHENSIVE APPROACH TO PSICHOPREVENTIVE EXAMINATION   
OF POLICE OFFICERS

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*The aim* of the study was to assess the effectiveness of the multiprofessional approach in conducting planned annual psychoprophylactic examinations of employees of remote Interdistrict police departments. *Methods*: А continuous analysis of 13 480 protocols of the center for psychophysiological diagnostics Of the medical and sanitary Department of the Ministry of internal Affairs of Russia in the Kirov region, containing information on the results of planned psychoprophylactic examinations of personnel, for the period from 2011 to 2016. Quantitative and qualitative indicators were studied, including the coverage of psychoprophylactic examinations and the structure of the revealed disadaptive states in 2011­2014 (before the participation of medical psychologists of the center for psychophysiological diagnostics in the annual medical examination of personnel) and 2014­2016 ­ after the introduction of a multiprofessional approach. The student's t­test for independent groups was used to statistically process the results of the study, differences at p < 0.001 were considered statistically significant. *Results*: diagnostic screening allowed to identify employees who had signs of mental illness in a short period of time and to conduct targeted psychopathological and pathopsychological examinations for detection and correction of maladaptive States. The structure of mental health disorders in police officers was polymorphic and presented by borderline mental disorders (PDD), psychosomatic diseases, pre­nosological States in the form of short­term affective­behavioral reactions, situational neurotic States, asthenic manifestations and symptoms of emotional burnout. *Conclusion*: the participation of medical psychologists in the annual medical examination of personnel improves the quality of diagnosis of pre­nosological States of mental distress of employees of internal Affairs. Proposed to consider amendments to the existing provisions on the centres of psycho­physiological diagnostics Medical divisions of the Ministry of internal Affairs of Russia on subjects of the Russian Federation and of the responsibilities of psychologists Centers on annual diagnostic surveys of the personnel of the police Department.

**Key words:** annual preventive health examinations, the personnel of internal Affairs bodies, medical psychologists, borderline mental disorders

COMPARATIVE ANALYSIS OF THE ASSESSMENT METHODS   
OF COMORBID PATHOLOGY OF THE POPULATION   
OF THE KHANTY­MANSIYSK AUTONOMOUS DISTRICT

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*The aim*: The purpose of this study is to conduct a comparative analysis between the methods most commonly used in clinical studies to assess comorbidity, such as CIRS, Kaplan Index, Charlson Index, and the Ecological comorbidity index (ECI) in patients living in a northern region. *Methods*: To assess the index of ecological comorbidity, a scale is proposed that takes into account the geoclimatic, ecological and social characteristics of the region of residence. *Results*. The computer program “Calculator of Ecological Comorbidity” was created, the components of the calculator include the following variables: climatic burden, length of service coefficient. A score is awarded for the presence of a socially significant disease, namely: tuberculosis, sexually transmitted infections, hepatitis B and C, AIDS, malignant neoplasms, diabetes, mental disorders and behavioral disorders, diseases characterized by an increase in blood pressure. The presence of regional pathology implies adding another point, as well as the presence of occupational pathology as a social factor of comorbidity. All the above factors can not affect the ability to work, therefore, we consider it necessary to include in the overall workload pathology the presence or absence of disability in the form of the coefficient of disability. A variant of the age­related load is proposed, which covers all periods, and not only involutive ones. The presence of disease groups is assessed differentially, according to the frequency of occurrence of a group of diseases in a given region. Mental and behavioral disorders, AIDS and alcoholic illness are estimated at 1 point, as socially significant diseases. The Blend­Altman method shows a sufficiently high consistency of the proposed method with other comorbidity scales. *Conclusion*. The use of the concept of ecological comorbidity is advisable when assessing this phenomenon across Russia, given the variety of climatic zones, migration processes and shift works during development of new territories.

**Key words:** comorbidity, environmental and social components

CEREBRAL ENERGYMETABOLISM REACTION TO COLD STRESS IN YOUNG PEOPLE LIVING IN THE ARCTIC REGION

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*The purpose* of the work is to determine the features of the reaction of brain energy processes to cold stress in young people – residents of the Arctic zone. *Methods*. The study of energy processes of the brain, using “Neuro­KM” hardware and software complex to record the distribution of the level of constant potential (SCP) in 97 people (49 boys and 48 girls) aged 18­19 years. Registration of the level of constant potential was carried out at rest and after the cold test. The analysis of the constant potential level was carried out by mapping the values of SCP obtained by monopolar measurement and calculating the deviations of SCP in each of the leads from the mean values recorded in all areas of the head, which makes it possible to estimate the local values of SCP in each of the areas with the exception of the effects coming from the reference electrode. Factor analysis with Varimax­rotation was used to study the relationship between the indicators of energy supply of the brain. *Results*. Cold stress caused in both groups an increase in the level of permanent potential for all leads: an average of 6,7 % in boys and 10,6 % in girls. Throughout the recovery period, the level of permanent capacity continued to increase across all leads. By the end of the tenth minute in the group of boys the maximum value of the level of constant potential was recorded in the Central lead, in the group of girls in the Central and occipital parts of the brain. *Conclusions*: Neurophysiological mechanisms that provide energy processes in the cerebral cortex, with cold stress in boys and girls in the climatic and geographical conditions of the Arctic zone of the Russian Federation, have a different character. Girls have adaptive neurophysiological processes, associated with energy supply brain, proceed more intensely and require big energy costs, compared with boys.

**Key words:** Arctic region, cold stress, adaptation, brain, cerebral energy metabolism, constant potential

ASSESSMENT OF KNOWLEDGE OF THE POPULATION OF THE REPUBLIC   
OF TATARSTAN ON ISSUES OF HIV AND COMMITMENT   
TO VARIOUS PATTERNS OF BEHAVIOR

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*The aim* of the study is to assess the degree of awareness of different population groups of the Republic of Tatarstan, of commitment to safe behaviors in conjunction with the assessment of their own risk of HIV infection. *Methods.* An anonymous survey of the working and student population (577 respondents) was conducted. The survey results were processed using Microsoft office Excel 2010 and OpenEpi online calculators (http://www.openepi.com). *Results*. Only 84 respondents (14.6 ± 1.5 %) recognize the seriousness of the HIV problem in the region. A significant proportion of respondents (43.8 ± 2.1 %) have «discriminating» thoughts. At the same time, persons older than 30 years statistically significantly more often expressed a desire to stop communicating with a friend in the case of infection than respondents younger than 30 years (55,0 ± 3,5 and 35,9 ± 2,7 % respectively, χ2 = 17,7; p < 0,001). Only half of the respondents believe that a condom is 100 % effective in the case of correct use and maintaining the integrity of the condom. The proportion of people who only have safe sex is statistically significantly higher among people under 30 years than among people over 30 years (36.0 ± 3.2 and 10.7 ± 2.2 % respectively, χ2 = 35.12; p < 0.001). *Conclusions*. The population’s underestimation of the urgency of the problem, underestimation of its own risk of HIV infection, lack of awareness of prevention and low adherence to safe behavior were identified. Continued efforts to provide reliable information to the population on ways to transmit and prevent HIV infection, with increased coverage of persons over 30 years, are required with the aim of increasing the alertness of the population and adherence to safe behaviors, and the prevention of discrimination against people living with HIV.

**Key words:** HIV infection, prevention, awareness, risk assessment

MECHANISMS OF MEMORY IN MENTAL ECOLOGY OF THE NORTHERN PEOPLES

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Theoretical significance, practical relevance and urgency of research regarding ecology of memory within the framework of the northern peoples’ ethnocultural tradition is determined by both lack of advanced studies in the area in question and the necessity for development of scientifically valid regional memory policy that would give consideration to the contemporary drift of cultural, ethnical, and ideological identities, while at the same time relying on the traditional mechanisms, forms and institutions of memorial culture in the European North of Russia. The paper mainly aims at the semiotic analysis of a sacred status and stereotypes of behavior typical of the ethnic memory keepers, as well as of mythopoetic algorithms and ritual practices for preservation, interpretation and translation of sociocultural values, codes and meanings within the mental space of the northern peoples’ ethnocultural tradition. In reliance upon the analysis of the existing historiographical circumstances, it may be deduced that the scope of ecology of memory as a transdisciplinary research area has not yet overcome its fledging period, which is why the present article shall be considered an attempt to thematize and problematize ecological and commemorative discourse. Methodological background of the research involves the theory of communication along with the phenomenological approach and the methods of structural and semiotic analysis. The main purpose of the article is presentation of scientific results of research on the mental­ecological functionality of ethnic memory keepers, related with mythopoetic algorithms and ritual practices of preservation, interpretation and transmission of sociocultural values, codes and meanings within mental space of the northern peoples’ ethnocultural traditions. Close observation of forms, mechanisms and functions of the ethnical ecology of memory within the mental space of archaic and traditional communities of the North and the Arctic has allowed obtaining new scientific results. These are in the first place related to the revealing of mental­ecological functionality of carriers and keepers of the ethnic «deified memory». In the second place, the results contribute to the identification of crucial role of Orthodox hierotopy’ heritage in the sacred mental ecology of the Pomor Land. Geocultural space of it was “territory of memory and meanings” accomplishing a higher prototypical mission of a memorial within Russian and world culture.

**Keywords:** mental ecology, mechanisms of memory, northern peoples, memory keepers, semiotics, ecological­commemorative discourse

REGIONAL FEATURES OF INFLUENCE OF RISK FACTORS FOR CHRONIC   
NON­COMMUNICABLE DISEASES ON FORMATION OF POLYMORBID PATHOLOGY

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*Purpose*. To study regional features of the association of frequency of occurrence and the magnitude of the indices of the main risk factors for chronic non­communicable diseases (RF CNCD) with the degree of transnosological polymorbidity (PM) in male residents of the Novosibirsk Region (NR) and Saha (Yakutia) Republic. *Methods*. The analysis of 10 187 medical records of patients with therapeutic profile (men), examined and treated in the clinic of the Federal Research Center for Fundamental and Translational Medicine, Novosibirsk was carried out. The index of transnosological polymorbidity was assessed by the number of nosological forms in accordance with the ICD­10. According to the clinical and laboratory examination, the following RF CNCD were assessed: high blood pressure, increased blood levels of total cholesterol, low­density lipoprotein cholesterol, triglycerides, glucose, uric acid, decreased blood level of low­density lipoprotein cholesterol, obesity. *Results*. Both among the residents of the NR and of the Yakutia, with an increase in the index of polymorbidity, there was an increase in the severity and frequency of occurrence of the studied RF CNCD. There was an increase in the frequency of occurrence in persons with high PM in comparison with those with a low degree of PM: arterial hypertension among residents of NR and of the Yakutia ­ by 2 times (p < 0.001), increase in total cholesterol in the blood among residents of the NR and of the Yakutia ­ by 1.2 times (p < 0.001, p = 0.003 respectively), obesity ­ for residents of the NR by 2.4 times, for residents of the Yakutia ­ by 1.7 times (p < 0.001), hyperglycemia ­ in residents of NR ­ by 2 times (p < 0.001), hyperuricemia ­ among residents of NR ­ by 1.5 times (p < 0.001). *Conclusion*. The role of some hemodynamic and metabolic risk factors of RF CNCD in the development of polymorbid pathology among residents of the regions of Siberia and the North has been established. The obtained data indicate the need to take into account the region of residence of such patients in the course of personalized prophylaxis with mandatory detection and correction of the modifiable RF CNCD.

**Key words:** risk factors; chronic non­communicable diseases; polymorbidity, Siberia, North

RELATIONSHIPS BETWEEN EEG RHYTHMICAL COMPONENTS IN THE PROCESS   
OF PREPARATION TO VISUAL RECOGNITION IN STUDENTS WITH SLEEP DISORDERS

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*The aim* of the study is to identify the features of fast and slow rhythmic components of EEG in preparation for visual identification in students with sleep disorders, compared with the control group of well ­ sleeping students. *Methods*. Twenty three (12 of them with poor quality of sleep) students comprised the sample. We studied associations of theta, low­and high ­ frequency alpha and beta rhythms in the process of listening to the instructions for the activity, in a state of working rest and in pre ­ tuning to the identification of the emotional expression. Multi­channel EEG was recorded. Distributions of the values of the modulus of the coefficient wavelet transform (CWT) for characterizing the amplitude of the potentials were studied. Pearson correlation coefficients were calculated. *Results*. Both groups of students showed the connection of almost all studied pairs of rhythms during listening to the instruction. Students with sleep disorders were characterized not only by a lack of communication alpha 1­and beta rhythms, but also theta and beta rhythms during the state of rest after instructions listening. We see the only one significant coupling alpha 1­and beta rhythms (r = ­ 0,56; p = 0,048) in students with sleep disorders in the presentation of two faces with different expressions. Students with sleep disorders revealed a significant relationship of alpha 1­and theta rhythms (r = 0,71, p = 0,006) in the pre­stimulus period at the stage of the experiment, when two identical faces were presented. *Summary*. 1. Significantly fewer links alpha and theta rhythms with beta rhythm revealed in preparation for visual recognition in students with sleep disorders. 2. Students with sleep disorders in the performance of tasks committed identification errors in the presentation of pairs of faces with different expressions and the same. Whereas students without sleep disorders at presentation of faces with different expression didn’t make mistakes of recognition.

**Key words:** sleep disorders, wavelet transformation, rhythm coupling

USING OF RM­ANOVA IN R AND SPSS SOFTWARE ON THE EXAMPLE   
OF PROSPECTIVE ANALYSIS OF GLUCOSE TOLERANCE TEST RESULTS   
IN PATIENTS WITH POLYCYSTIC OVARY SYNDROME

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The paper presents the use of repeated measures analysis of variance (RM­ANOVA) in biomedical studies. Special attention is given to conceptualization of research questions, data computerization and data presentation as well as to assumptions for this method. We also discuss recommendations for presenting results of RM­ANOVA in scientific reports. For better understanding of the method we present practical example using the data on repeatedly measured blood glucose levels in patients with PCOS and healthy women from different ethnic groups after oral glucose tolerance test. Practical implementation of RM­ANOVA in R and SPSS software is also given with syntax and graphs.

**Key words:** Repeated Measures Analysis of Variance (RM ANOVA), R, SPSS, carbohydrate metabolism, oral glucose tolerance test (OGTT), polycystic ovary syndrome (PCOS)

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