

TERRITORIAL DIFFERENTIATION OF RUSSIAN FAR EAST POPULATION PROVISION WITH HEALTH SERVICES

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As part of the Russian Far East Regions' population health territorial differentiation investigation the study of the District residents' provision with various social services, health services among them, seems to be of great importance. It is especially urgent in the light of the RF Federal Program implementation in the area of health protection. That is why our task was to study out the provision of the Far Eastern Federal District residents with the services in this very important service sector. Besides, the given esteem demonstrates the situation of the first years after the adoption and implementation of the given Federal Program.

To define the level of the regions' population provision with health services the following factors were taken: the supply with doctors and low-grade medical workers (per 10000 of the population), the number of hospital beds (per 10000 of the population), the efficiency of medical outpatient institutions (visits on one shift, per 10000 of the population).

To calculate a cumulative index the linear scaling method fairly often used while calculating the life quality index was employed. It is based on defining referential points (maximum and minimum values of indicators) and shows the position of every region between them. The calculations were performed on the given factors for the period of 2006 in ten Far Eastern District subjects [1, 3].

First, the calculation of special indexes on every factor was performed by the formula:

$$Y=(X-X_{min})/(X_{max}-X_{min}),$$

where Y – is a special index, X – the factor of this or that region, X_{min} and X_{max} – referential points. The Y value varies anywhere from 0 to 1. Zero corresponds to the worst complex estimation, and 1 – to the best one.

Zero is taken for the minimum value factor. The smallest and largest values of the given factors were chosen as the minimal and maximal referential points for the studied factors in the RF in 2006. So, for the doctor supply factor the maximal referential point is 83,5 per 10000 of the population; that corresponds to the given factor value for St.-Petersburg. Maximal referential points for the low-grade medical worker supply factors were 159,3 per 10000 of the population (the Evenk AD), for the number of hospital beds – 276,8 per 10000 of the population (the Evenk AD), for the efficiency of medical outpatient institutions – 588,9 visits on one shift per 10000 of the population (the Chukchee AD) [2]. The spread in values of the chosen factors varied from 1,8 to 2,7 times.

The final index of the population provision with health service = (Y₁+ Y₂+ Y₃+ Y₄)/4, where Y₁ – is the supply with doctors (per 10000 of the population), Y₂ – the supply with low-grade medical workers (per 10000 of the population), Y₃ - the number of hospital beds (per 10000 of the population), Y₄ – the efficiency of medical outpatient institutions (visits on one shift, per 10000 of the population).

We assumed that the Far East population health service index maximum value fell on the Chukchee Autonomous District; that makes 0,95. The minimum value of the given factor is registered in the Primorski Krai – 0,46. The difference between the minimal and maximal factors of the population health service provision index among the Far Eastern regions makes 2 times.

Proceeding from the obtained population health service provision indexes we marked out 5 groups of the Far Eastern regions by the population health service provision final index value and the combination of doctor and low-grade medical worker supply levels (per 10000 of the population), the number of hospital beds (per 10000 of the population), the efficiency of medical outpatient institutions (visits on one shift, per 10000 of the population).

The Chukchee AD, in the territory of which 0,75% of the FE population live, formed the first, **very high** population health service provision level, group. The population of this region has the greatest possibility to get health services at the extremely high (100%) efficiency of medical outpatient institutions (visits on one shift, per 10000 of the population) for the RF, high level of supply with doctors and low-grade medical workers and also the number of hospital beds.

The population health service provision level **above the average** is observed in the Koryak AD and Magadan Region and makes 2,9% of the residents from the total population of the District. A high supply with low-grade workers is indicative of this group of regions. The factors of the hospital bed number, medical outpatient institutions' efficiency and supply with doctors conform to the above-the-average value or one factor is lower and the other is higher.

The **average** population health service provision level is observed in the Amur, Kamchatka Regions and the Republic of Sakha (Yakutia), in the territory of which 33,3% of the FE population live. For the given Far Eastern subjects the average values of supply with doctors and low-grade medical workers, hospital beds and medical outpatient institutions' efficiency is typical, or one factor is lower and the other is higher.

The population health service provision level **under the average** is defined in the Khabarovsk Territory, Jewish and Sakhalin Regions, where 32,4% of the FE population live. The average values of supply with low-grade medical workers and under-the-average supply with hospital beds, medical outpatient institutions' efficiency and supply with doctors are typical for the given regions' health service provision level.

The low population health service provision level is defined in the Primorski Krai with the part of 30,8% of the total District population. The low efficiency of medical outpatient institutions (visits on one shift, per 10000 of the population) and number of hospital beds at the average supply with doctors and low-grade medical workers.

An **index-map** with the Far Eastern subjects' population health service provision level territorial difference has become the result of our research.

The analysis of the Far Eastern Federal District population health service provision level allowed coming to the following conclusions:

- The Far East as a whole has average, under-the-average and low population health service provision levels in Russia (in the whole Russia in 2006 – 0,52).
- Regional differences in the population health service provision final index within the Far East are essential and make from 0,46 to 0,95.
- On the final index value and the combination of special indexes of supply with doctors, low-grade medical workers and hospital beds, the efficiency of medical outpatient institutions there are 5 groups of regions marked out in the Far East with the differentiation on the population health service provision level. The majority of the FE subjects has an average and under-the-average population health level (33,3% and 32,4% of the FE population accordingly).

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EVOKED BRAIN POTENTIALS IN DIAGNOSTICS OF LIVER CIRRHOSIS WITH SIGNS OF ENCEPHALOPATHY AND EVALUATION OF CRIO-APHERESIS' EFFECTIVENESS

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Currently existing methods of hepatic encephalopathy (HE) diagnostics at patients with liver cirrhosis, including psychometric tests, measuring ammonia level, electro-encephalography, magnetic resonance spectroscopy and other methods, are either not sensitive and specific enough, or are too expensive.

The objective

Our goal was to evaluate the method of cognitive evoked brain potentials in diagnostics and evaluation of hepatic encephalopathy dynamics at patients with liver cirrhosis who receive a complex therapy.

Materials and methods

We examined and treated 25 patients with liver cirrhosis of classes A and B according to Child-Pugh, with HE of 0-2 stage. The test group consisted of 15 men and 10 women aged between 38 and 63 years old (average age 49,9±1,5). Beside the common therapy that included detoxification measures, hepatoprotectors, aldosterone blockers and preparation «Dufalak» (Solvay Pharma) in dose 45-60 ml/day during 30 days, all patients received a course of crio-apheresis (from 5 till 7 treatment procedures). Method of cognitive evoked brain potentials or P300 was applied in order to analyze cognitive processes in the brain. Using method P300, we studied slowing dynamics of inter-peak latency before and after the therapy. The study was conducted using multifunctional computer equipment «Neuro-MVP».

Results

We analyzed the results of the research on the cognitive evoked brain potentials, and saw an obviously bigger latency of peak P300 at all test persons. Average P300 wave was 531,1±10,8 ms. Normal latency in this age group should not exceed 361 ms. These data proved a clear disruption of cognitive functions, which was probably not related to defective identification of important stimulus, but was rather connected with defects in memorizing and operative memory of events. Positive dynamics was observed after the treatment: the latency of component P300 decreased ($p<0,001$), its average value reached 424,2±7,2 ms.

Conclusion

To sum up, quantitative parameters of inter-peak latency (P300) could be used as criteria in the evaluation of treatment effectiveness for hepatic encephalopathy, and improve its control.

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