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THE ROLE OF DIGITAL ECONOMY IN THE EFFICTIVE MANAGMENT OF MODERN ECONOMIC RELATIONSHIPS

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Digital technologies are becoming an integral part of every sphere of the everyday life of the modern world. Today it is difficult to imagine human activity without the help of electronic, computer network and many other important automated technologies. The digital environment has touched communication, production of goods, provision of services, performance of work, independent firms work. In connection with this, such a unique concept as "digital economy" appeared and originated. This article is devoted to the emergence of a new economic era – the era of the digital economy. The article discusses the nature and meaning of the concept "digital transformation of the economy" at the present stage of management; the development of global digital economies; the place of Russia is indicated in the international ratings of the digital economy. Information and communication technologies stand out as a key component of digital economy. The business benefits of digitization of the economy are considered: saving on resources, lowering the entrance threshold to business, mastering new products and technologies, reducing costs, the possibility of using new business models. Highlighted the challenges and threats that the digital economy brings with it: the possibility of fraud, the risks of information leakage, the threat of job cuts. The research results showed the need for digital transformation not only in human activities, but also in the manufacturing sector. It was proved that digital transformation is an integral part of the innovation management process.

Keywords: innovation management, digital economy, digitalization, information and communication technologies

Digital economy is an economic activity caused by billions of everyday online connections between people, businesses, appliances, data, and processes. The basis of the digital economy is hyperlinks, which interconnect people, organizations, and technical devices based on the Internet, mobile technologies, and the Internet of Things (IoT).

New technologies are increasingly developing on a global scale. The explosive growth of social networks, the smartphone market, broadband access to the Internet and artificial intelligence is changing the world space. Currently, about 40% of the world's population have access to the World Wide Web. The use of digital technologies for the sale of goods and services, the provision of public services, education of citizens will allow the whole society to receive the so-called "digital dividends", which are understood as the growth of national welfare, material profits, and transparency of government.

Digital technologies are changing the very operating model of companies, especially in the banking and telecommunications sectors, increasing cost efficiencies and identifying new market opportunities. Methods of analyzing large amounts of data are actively used to obtain new information and make effective and optimal management decisions. This phenomenon is called "digital economy".

Forming and developing, digital economy changes traditional ideas about the work of enterprises; the cooperation between different companies; the services, information and products, which consumers can get.

Professor W. Brenner of the University of St. Gallen in Switzerland considers that the comprehensive use of digital data transmission technologies transforms existing business models, contributes to the creation of new products and services, gives rise to the new processes that become more efficient and form a new management culture [5].

For the first time the concept of "digital economy" was introduced in 1995. Nicholas Negroponte a computer science specialist, founder of the Media laboratory of the Massachusetts Institute of Technology (MIT), notes that the new economy is characterized by lower resource costs and instantaneous global movement of goods through the network. According to A. Engovatova, digital economy is an economy based on the new methods of generating, processing, storing and transmitting data, as well as digital computer technologies [3]. Another famous scientist R. Meshcheryakov defines digital economy as economic production, which uses digital technologies (Internet of Things, Industry 4.0, fifth generation communication networks, etc.) [3].

The World Bank describes this term as a variety of economic relations, reducing long chains of intermediaries using the Internet, information and communication technologies that accelerate relations between companies, banks, government and public, transactions and operations: sales, loans, leases, taxes, fines, fees, payments and settlements, etc. [1]. Modern understanding and analysis of this term is presented in the Strategy for the Development of the Information Society of the Russian Federation for 2017-2030, where the concept is viewed as an economic activity, in which the key factor in production is data in digital form,

processing large volumes and using the results of the analysis compared to traditional forms of management, which can significantly improve the efficiency of various types of production, technology, equipment, storage, sale, supply of goods and services [7].

Taking into account all the definitions, we can conclude that "digital economy" is an economy of a new technological generation who uses a huge amount of data produced in a wide variety of information systems [2].

Creating conditions for the development of a knowledge society in the Russian Federation, improving the well-being and quality of life of citizens of our country by increasing the availability and quality of goods and services produced in digital economy using modern digital technologies, raising awareness and digital literacy, improving the availability and quality of public services for citizens, as well as security both within the country and abroad.

The problem of the formation and development of the digital economy is relevant not only in theoretical, but also in the field, including at the state level, in connection with the understanding of the crucial role of digital technologies in the development of the country's strategic competitiveness.

Digital economy is represented by the following three levels, which in their close interaction affect the lives of citizens and society as a whole:

– markets and sectors of the economy (areas of activity), where the interaction of specific subjects (suppliers and consumers of goods, works and services);

– platforms and technologies where competencies are formed for the development of markets and sectors of the economy (fields of activity);

– the environment that creates the conditions for the development of platforms and technologies and effective interaction of market entities and sectors of the economy (spheres of activity) and covers regulations, information infrastructure, personnel and information security.

The digital age makes us rethink the usual business standards and established business processes. Immersion in the digital environment becomes a necessity.

The world industrial giants were convinced by their own experience that production in the format of a new sample is a reduction in costs and an increase in productivity due to the informatization of production. A key success factor is the ability to react sensitively and quickly to changes in the market and customer needs, realigning itself to digital production (when all operations are automated, robotic equipment is used).

To move to Industry 4.0, you must first fulfill three conditions:

1. To computerize workplaces and production equipment.

2. To use modern software for the preparation of production, production management and resource management.

3. To create a single information space at an industrial enterprise, with the help of which all automated enterprise management systems, as well as industrial equipment, production personnel will be able to quickly and timely exchange information.

Business benefits from the project:

- saving on resources
- avoiding long deliveries and eliminating a series of intermediaries,
- lowering the entrance threshold to the business,
- mastering new products and technologies
- creation of smart factories and network production,
- reducing the cost of products, reducing the time to release,
- the possibility of using new business models.

Digital transformation of production will lead to increase efficiency of labor productivity; improving the quality of products; complication of products; production automation at all stages of product manufacturing.

Digitalization will allow production to optimize costs, increase the profitability of existing assets and increase profitability.

Despite bright prospects, the digital economy carries with it obvious challenges and threats:

1. control of the field of digital services is reduced, and opportunities for fraud are increasing;

2. increased risks of information leaks, which requires an increase in the level of protection, the allocation of additional investments in information security;

3. the threat of job cuts. The transition to a digital economy also makes it difficult to use foreign software;

4. A digital divide is a gap in digital education, in terms of access to digital services and products, therefore, in the degree of society of one or different countries located in one country or in different countries.

Interest in the digital economy is due to the fact that research by scientists, international organizations, in particular the World Development Report 2016: Digital Dividends of the

World Bank, shows that information technologies are becoming increasingly important in the economic development of all countries of the world without exception.

Currently, digital economy is a strategic sector of the economy that promotes the growth of productivity and competitiveness of various companies and countries. The cross-border nature of the digital economy affects all areas of activity and is the source for the development of new innovative sectors in business.

According to The Australian Bureau of Statistics, digital economy is a global network of economic and social activities, which is based on such platforms as the Internet, mobile and sensor networks, including electronic commerce. Actual areas of the digital economy are improving the efficiency: production processes, inventory management and knowledge management.

It is noteworthy that advances in digital technology are directly related to organizational innovations aimed at improving business efficiency by optimizing the organization's management process (for example, reduce administrative costs, transaction costs, increase productivity).

It should be emphasized that internet economy offers new business opportunities and contributes to the creation of new jobs. Besides, information and communication technologies (ICT) are the key components of the digital economy. For their effective functioning in this area, it is necessary to develop; cloud applications; new business models and innovations in the field of trade and services; new digital security technologies in the implementation of digital business operations; norms, standards and special programs to ensure the integration of traditional technologies with ICT through user-friendly interfaces.

In this regard, the training of specialists in this field of knowledge is essential and relevant, as new jobs created in the field of digital economy imply compliance with high standards. These standards should be implemented by qualified staff with specific skills.

Today, the concept of digital economy for enterprises includes the use of virtual processes for the most optimal and rapid adoption of effective industrial, economic, managerial decisions.

To improve the efficiency of their activities, industrial enterprises are actively beginning to use digital technologies, which allow them to reduce the cost of a product, to decrease the market time, to improve their technical and consumer properties.

With the help of modern digital technologies, it is possible to conduct virtual tests of equipment (and, if necessary, promptly make changes to the digital model), optimize its loading and maintenance; manage production processes; effectively and quickly interact with suppliers, partners, etc. Digitalization is needed to increase the final efficiency of digitized processes [5].

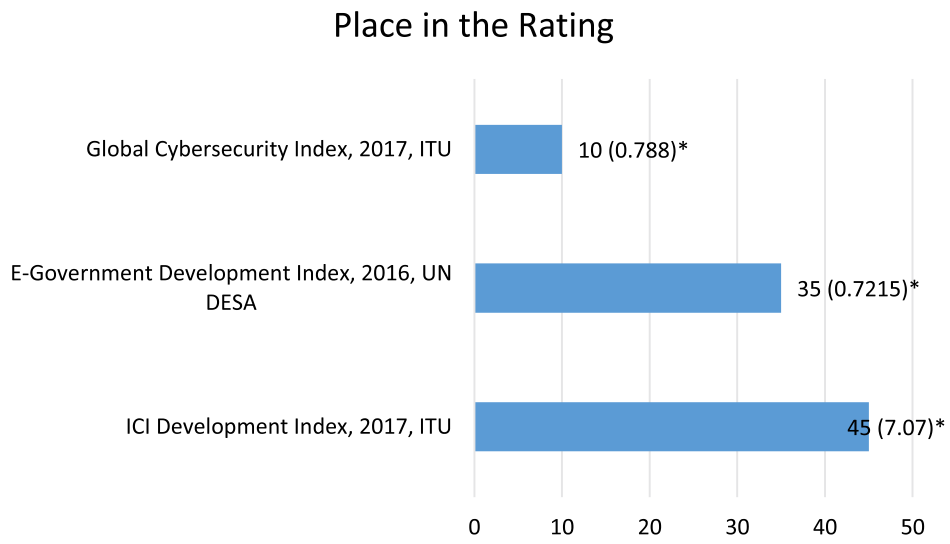
According to the data, Norway, Sweden, Switzerland, Denmark, Finland, Singapore, South Korea, Great Britain, Hong Kong, the USA were in the TOP-10 countries with the most developed digital economy in 2017[8].

For example, in the United States, the departmental program Digital Economy Agenda was announced, in which the Internet is viewed as a global platform for communication, trade, and innovation. Digital Attache program was implemented for American companies so that they could participate in the global digital economy and work in the market of any country in the world.

Russia is adjacent to China, India, Malaysia and the Philippines. These states are at the peak of digital development and demonstrate steady growth rates (figure) [4, 8].

Today in Russia the question on creation of own systems of development of digital economy is given attention. Digital technologies are becoming a ubiquitous part of economic, political, and cultural life of enterprises of the Russian Federation. Russia is on the progressive stage in the development of modern civilization, which is characterized by the domination of knowledge, science, technology and information in all sphere of life of the country. Events Russia's foreign policy and global trends of recent years, our country faces the issue of global competitiveness and national security. No small role in this issue played by the development of the digital economy in the country. Some elements of the digital economy are already successfully functioning. For example, bulk transfer of documents and communications in digital media, resolution, electronic signatures, communication with the state are also moving to an electronic platform.

The analysis of indicators of development of the digital economy, namely, level of digitalization, the digital economy share in GDP, average delay in the development of technologies, leads to the conclusion that Russia is not included in the group of countries-leaders in the development of the digital economy, but despite this, the development of digitalization of our economy in recent years has been steadily growing and a significant number of positive trends.



The place of the Russian Federation in the international ratings of digital economy development (*the corresponding index value is indicated in brackets.) ITU – International Telecommunication Union [4]

There are companies that have achieved high results in the field of digitalization in Russia. Such organizations have made digital transformation of production one of the development priorities. Among these companies are "Gazprom" and "KamAZ". In particular, Gazprom called digital platforms a key asset ensuring production efficiency. "KamAZ" also participates in the digitalization program, which includes the transition to digital design and production [9].

It seems logical to assume that the intensive introduction of digital technologies will significantly reduce the backlog of the Russian Federation from the leading countries, as well as increase long-term sustainable development. According to the forecast, by 2020 the share of the digital economy in Russia will increase. Such economic forecasts are associated not only with the automation of processes, but also with the introduction of fundamentally new, breakthrough business models and technologies. Among them are digital platforms, digital ecosystems, in-depth analytics of large data arrays, Industry 4.0 technologies, such as 3D printing, robotization, Internet of things [6].

The development of the digital economy will expand trade diplomacy, provide a link between politics and trade, and give the necessary assistance to small and medium-sized enterprises that can use reliable channels for e-commerce.

To sum up, digital economy is a new type of economic relations in all sectors of the world market, which is rapidly developing and can become the main type of commodity-money exchanges at the global world level. Russia faces tremendous opportunities to improve technological progress in many areas. The intensive introduction of digital technologies will significantly reduce the backlog of Russia from the leading countries, as well as increase long-term sustainable development.

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THE LEVEL OF WELFARE AS A FACTOR IN THE EVALUATION OF THE QUALITY AND STANDARD OF LIVING OF THE RURAL POPULATION (ON THE EXAMPLE OF OMSK REGION)

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Currently, various scientists are actively engaged in the assessment of the level and quality of life. Many agree on one thing: the process is complex and multifaceted. A special role in the study of this issue is given to the assessment of living standards through a system of indicators, each of them can be reduced to a set of criteria that allow to differentiate all indicators. A special role in assessing the level and quality of life is given to well-being, which many authors consider to be essentially synonymous with the standard of living, however, other researchers of this issue believe that well-being is estimated through a system of income indicators at the macro and micro levels. Certain difficulties in considering this issue arise also from the fact that the territorial statistical bodies do not form reports in the context of urban and rural population, which makes a full analysis difficult and vague. The article assesses the income and expenditure of the population of Omsk region, in order to assess the level of its well-being, as well as the analysis of the level of internal regional product for ten years, the authors present the findings of the study.

Keywords: welfare, level and quality of life, Omsk region, agriculture

There are a lot of ratings that estimate economic, political, social aspects nowadays. This happens through a system of indicators that are included in these criteria. However, the level of well-being has always remained the most important.

Many famous authors were concerned with the study of the level of well-being, for example: J.M. Keynes, V. Leontyev, J. Mintzer, A. Pete, R. Solow, S. Fisher, M. Friedman, etc. A significant contribution to the study of this issue taking the peculiarities of Russia into account was made by such scientists as: Buzlyakov N.I., Glazyev S.Yu., Mayer V.F., Razumov A.A., Rakitsky B.V., Rimashevskaya N.M., Starkov R.F., Uralov V.M., Khaustov Yu.I. and others. Thus, questions of the standard of living have always been payed with great attention, which makes the study of this issue relevant.

The definition of "standard of living" is quite multifaceted and has been considered by many authors. So, many domestic researchers (Mayer V.F., Yarygina T.V., etc.) believed that when assessing the standard of living, the priority of consumption characteristics is determining. These scientists note that only the process of meeting the immediate needs of people is reflected in the concept of the standard of living [1]. A very common approach to the interpretation of the standard of living was the "from the income of the population" approach. In official statistical materials, particularly in the collections of the State Statistics Committee of Russia, all sections listing incomes, wages, pensions, etc. were almost unconditionally related to the assessment of living standards. Thus, the concepts of "standard of living" and "well-being" are often used as synonyms, and an increase in welfare is associated with an increase in the volume of material goods and services aimed to meet the needs of subjects. Thus, the category of "standard of living" and "well-being" is used more and more widely both in scientific works and in everyday practice nowadays. However, there is no doubt that the welfare of the population is one of the most important characteristics of social and economic development.

The *purpose* of the article is to summarize and systematize various approaches to assessing the quality and standard of living through a system of indicators of such factor as the level of well-being of the rural population and its assessment using the example of rural settlements of the Omsk Region.

The results of the study and their discussion. Currently, one of the most important tasks facing the government is to increase the well-being of the rural population. It should be considered that the rural population combines various social groups, which determines the origin of sources of livelihood. Volumes of rural population depend on the level of well-being, this indicator determines the existence of poverty and its scale. The information obtained from the territorial statistics in this case is an important part of the assessment analasys of public policy effectiveness and an understanding of the causes affecting the level of well-being.

Currently, the Federal State Statistics Service of the Russian Federation (Rosstat) uses a sufficiently big system of indicators characterizing the social status and standard of living of the population in the broad sense of this category and welfare plays a central role in this

system of indicators. The existing characteristics of the level of well-being are being analyzed, specified and modified in order to provide valid comparative, not just measurement estimates [2].

There are several forms of welfare:

– wealth is the value of well-being that allows a person to fully develop;

– rational level – the consumption of goods according to certain and established norms, which allows a person to recover their intellectual and physical resources;

– poverty – the amount of income that makes it impossible to recover their strength for working capacity;

– poorness– a consumption that allows you to maintain only vitality and is below all established norms of consumption.

There are factors that influence individual values of indicators, including natural, social and economic, psychological, physiological, in all forms and existing systems of indicators that assess the level of well-being.

Since the concept of "welfare" is diverse and has no defined boundaries, many scientists include a number of indicators, each of them in one way or another characterizes the level of welfare, for example:

– GDP (or GNP) per capita;

– household incomes;

– social transfers;

– savings accumulated in banks and securities;

– food consumption;

– the acquisition of expensive goods (apartments, houses, cars);

– level of education and state of health [3].

All indicators change over time due to objective reasons, some disappear, others appear as more relevant. In Soviet times, they believed that a family had a good level of well-being, if they had a car, a TV, etc. Now the benchmarks have changed and have already replaced the scarce types of goods: computers, tablets, new smartphones, cars, etc. Thus, over time indicators are revised.

Oftentimes the level of welfare is considered by different scientists as a synonym for income, especially in relation to the population and their distribution by social groups. Revenues are usually expressed in money and kind. Sources of income of the population are: wages, pensions, allowances, scholarships, entrepreneurial activities, property leasing, finance and credit, etc.

Let's consider the level of welfare with the example of rural settlements of the Omsk region, which became the object of study in this article (table 1).

As you can see from table 1 there is an increase in the average monthly nominal wage in the Omsk region as a whole by 26,696.4 rubles in 2000-2016. If we consider this indicator in the context of agriculture, we can see that there is also a growth in wages for agricultural workers by 18 090,8 rubles. As can be seen, it grows from year to year, and is confirmed by the growth in the real average monthly accrued wages as a percentage of the previous year (fig. 1).

The possibilities of the population cannot be assessed only by income, the well-being is also characterized by the amount of income spent, for which we analyze the growth of income and expenditure of the Omsk region population (table 2). It should be noted that the data presented do not go against the information presented above and represent a tendency to increase in both income and expenditure. So, in 2005-2016. the level of consumer spending increased by 12,363.1 rubles against the growth of income by 18,272.1 rubles.

Table 1

Average monthly nominal accrued wages of Omsk region organizations' employees by types of economic activity (rubles)

	2000yr	2008yr	2009yr	2010yr	2011yr	2012yr	2013yr	2014yr	2015yr	2016yr
Total economics	1466,1	13524,8	14780,5	16708,2	19087,8	21931,2	24847,9	26204,5	27233,7	28162,5
including by type of economic activity:										
agriculture, hunting	711,5	7665,1	8485,5	9336,5	11000,3	12643,6	14436,6	16110,4	17283,6	18802,3

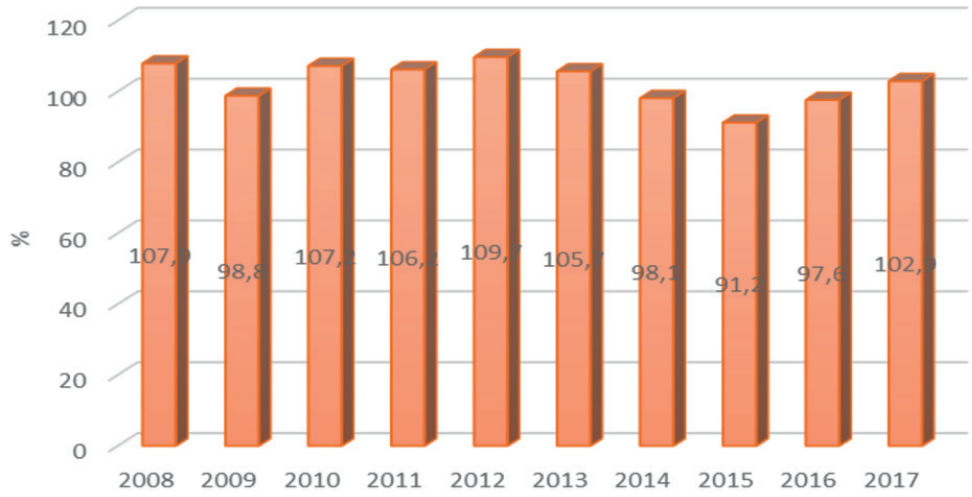

Fig. 1. The real average monthly salary (as a percentage of the previous year) in the Omsk region

If we consider the distribution of the number of employees according to the size of the accrued wages in April 2017, then it should be noted that the largest proportion of workers (11.4%), is paid from 25,000 to 30,000 rubles, the category of population 9.5% with income from 18,600.1 to 21,800.0 rubles is in the second place, a population of about 8.1% with income from 30,000.1 to 35,000.0 rubles is in third place and the smallest group consists of people with a minimum wage of 2% less than 7,500 rubles. The number of employees who receive a salary of more than 250,000 rubles is only 0.1%.

Table 2

Cash income and consumer spending of the population of the Omsk region (per capita; rubles, per month)

	Cash income of the population per capita	Consumer spending per capita
2005yr	6969,1	4581,8
2006yr	9084,2	5678,2
2007yr	11450,7	7177,1
2008yr	13801,5	9060,3
2009yr	14061,1	9386,3
2010yr	15199,0	10401,7
2011yr	17247,9	12663,1
2012yr	19494,6	14513,0
2013yr	21363,6	16222,6
2014yr	24060,2	17408,6
2015yr	25839,5	17255,2
2016yr	25241,2	16944,9

Let's analyze the income distribution of the population of the Omsk region (fig. 2). A fairly high proportion of incomes of the population of the Omsk region in 2016 were incomes in the form of wages of hired workers 34.4%, the category of other incomes is in the second place 33.5% and social payments are in the third place 20.8%.

Let's consider income indicators at the macro level, that means at the level of the gross regional product of the Omsk region. In 2017, the turnover of the Omsk region in all types of economic activity amounted to 1 726 308,2 million rubles, which is 106.3% more than in 2016. If we consider this indicator relative to agriculture, then the total turnover from it amounted to 38 021,1 million rubles in 2017, which is 97.9% less than in 2016. Let's analyze the formation of the gross regional product of the Omsk region by income sources at current basic prices, which makes it possible to say that in 2016 the total value of the gross regional product amounted to 625 918 144,5 thousand rubles, including: the remuneration of employees – 234 178 320,8 thousand rubles, other net taxes on production – 7 135 208,3 thousand rubles, gross profit of the economy and gross mixed incomes – 384 604 615,4 thousand rubles (fig. 3).

The Omsk region in the Russian Federation in terms of the gross regional product took the 30th place in 2016, compared to 2015, where it was on the 29th place. In the Siberian Federal District, Omsk Region ranked fifth in 2016 and 2015 [4].

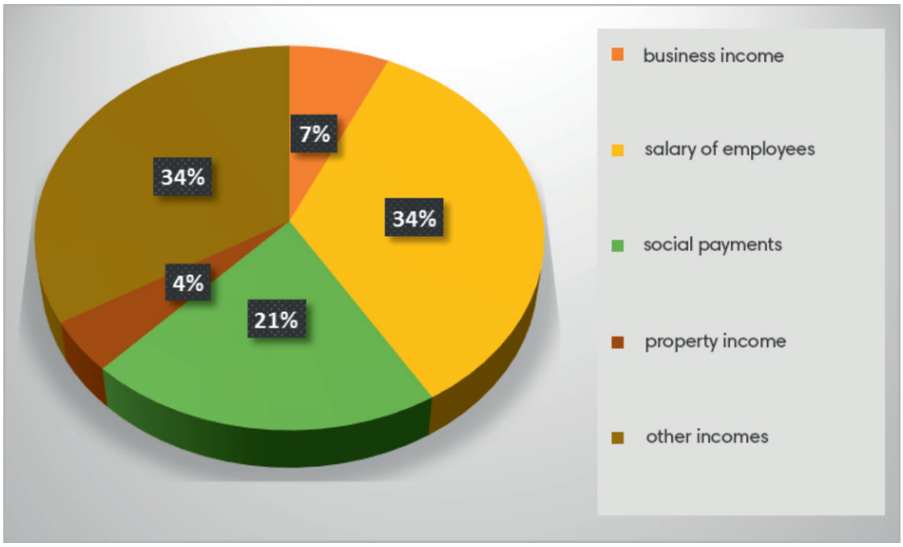

Fig. 2. Structure of cash income of the population of the Omsk region in 2016 (as a percentage of the total cash income of the population), %

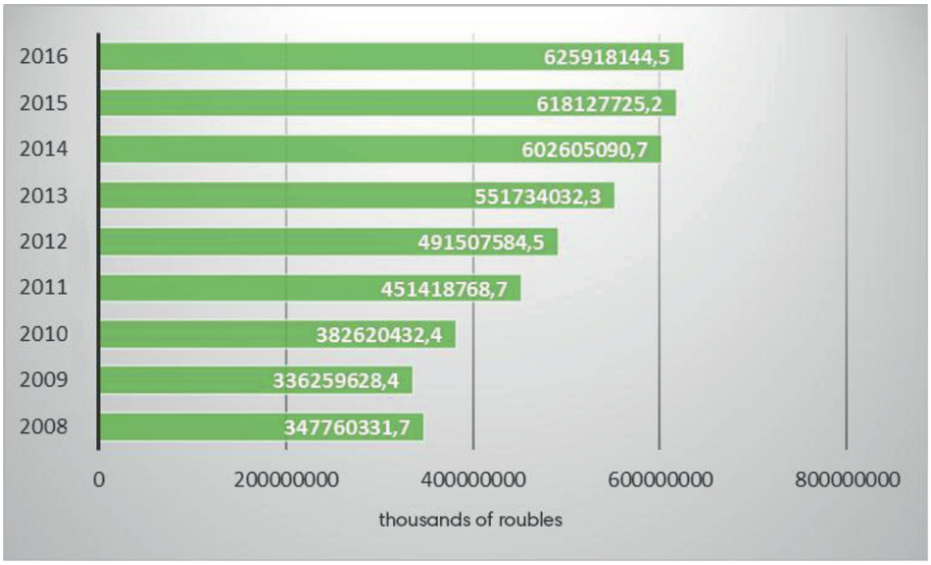

Fig. 3. The volume and dynamics of the gross regional product of the Omsk region in 2008-2016

Analyzing 2016 data in terms of activities, it should be noted that in 2016 in the Omsk region the largest share in the structure of the gross regional product by type of economic activity in the current basic prices takes manufacturing production – 37.3%, the second place was retail, repair of motor vehicles, motorcycles, household goods and personal items – 11.7%, third place went to real estate operations, rent and the provision of services – 9.9%. The smallest share belongs to the financial activity of 0.3%. In 2016, the gross regional product per capita increased and amounted to 316.8 thousand rubles. [5]

Thus, the administration of the Omsk region pursues an active policy of stimulating wage growth in all sectors of the economy. The relevance of these measures is reinforced by the fact that wages at the expense of the personal income tax has become the main source for the formation of the budget of the Omsk Region since 2002. However, due to the lack of high-yield jobs in the Omsk Region, a significant proportion of the working population

works outside the region. According to estimates made by the Economic Committee of the Omsk Region Administration, about 70 thousand Omsk people work in the north. If these people were employed on the territory of the Omsk Region, the gross regional product could increase by 7%, the average salary by 10-15%, and the consolidated budget revenues by 90 million rubles [6].

Attempts to measure and assess the level of well-being have been made by various scientists for quite some time, along with these attempts various methods of assessment were proposed through a system of indicators. Some of these indicators are used in their annual reports by statistical bodies at both federal and regional levels. At the same time, the shortage of this assessment at present is the lack of income differentiation in the context of the urban and rural population, which makes it difficult to conduct an analysis to assess the level and quality of life of rural settlements. There is no single sound methodology for assessing the welfare of the rural population and the population in general at the moment, which makes this question relevant and open to new scientific ideas.

«Study of the system of indicators of the level and quality of life within rural population, allowing to evaluate the results of social development of rural areas of the Omsk region", project No. 18-410-550024 p_a.

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ROLE OF SYSTEM OF INDICATORS IN TECHNOLOGY OF OPTIMIZATION AND BALANCE OF A PLURALITY OF DATA OF SUPPLY AND DEMAND

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Article is devoted to significant problems of creation of system of the indicators for stimulation of balance of supply and demand of products. It is very important for increase of competitiveness of products. The new methodology of calculation of target function of a product and indicators of its efficiency is offered in article. The special place in article is devoted to methodology of definition of an indicator of aggregate useful effect, which includes useful effect of the producer and consumer and promotes balance of their interests. All offered indicators of efficiency of a product are interconnected with each other and only in united system possess the stimulating mechanism of balance of supply and demand. They promote increase of effectiveness of process of planning and allow to find reserves for increase of competitiveness of products.

Keywords: balance, indicators, system, product, demand, offer, useful effect, producer, consumers

Efficiency of modern economy of various countries of the world is inseparably linked with increase in competitiveness of products. Competitiveness of products depends not only on opportunities of resource base and rationality of production, but also from mechanisms of balance of supply and demand. Methodical questions of assessment of economic balance and competitiveness of products were researched on the basis of analysis of theoretical elaborations of foreign and Russian scientists [1– 6, 10]. Various mechanisms of balance of supply and demand were developed, which all together are system, and they only in system can lead to effective result. However, improvement of system of the planned indicators has special importance, because it influences optimization of data of the offer of any product, its competitiveness.

Materials and methods of research

During the conducted research, methods of the scientific analysis, system and comprehensive approach were used. The matrix technologies of balance of data were recommended for calculation of aggregate useful effect.

Results of research and their discussion

The system of the interconnected technologies and tools for balance of supply and demand was developed. One of such mechanisms is the developed system of indicators for assessment of efficiency and competitiveness of products. This direction of researches, certainly, is very relevant, because the offered system of indicators has to be used not only for forecasts and estimate, but has stimulating role, and this system of indicators creates a base for balance of data of supply and demand. The balance mechanisms based on essentially new system of the indicators interconnected with each other are a basis for formation of new economy of data. Process begins with formation of dynamic rows of the predicted data of demand and the planned data of the offer during long-term prospect and in current period.

Firstly, the indicator of target function is included in system of indicators of optimization of data of the offer of a product. Target function of a product is determined by the relation of effectiveness of a product during full life cycle of its use to costs of its creation, sale and exploitation. This indicator is very important for finding of an optimum ratio of the price and quality of a product. At the heart of target function not only price of the producer, but also effectiveness of a product and costs of its exploitation. Therefore, target function is an indicator, which connects interests of the producer and consumer. Optimization of target function is reached over means of balance of data of supply and demand. Other indicators are constructed over the analogous principle of action.

Secondly, interconnected coefficients of effectiveness of a product for the producer, consumers and intermediaries (marketers, resellers, financiers) are offered for calculation. These indicators are relative. Coefficients are calculated by the relation of aggregate effect to cumulative expenses of each of participants of process: “production – sale – consumption”, namely: producer, resellers and financial intermediaries, consumer. Coefficient of effectiveness of a product for the producer is the relation of the price of a product for the producer to cumulative expenses of all stages of its creation and sale, since research and development. Coefficient of effectiveness the of a product for the consumer is the relation of effect of the consumer in form of saving of costs in the markets of services, as benefit from purchase of commodity to cumulative expenses of the con-

sumer. Cumulative expenses of the consumer are the price of purchase of goods and cumulative operational costs for all guaranteed product service life. Coefficient of effectiveness of intermediaries is defined by the relation of the benefit received by them to their costs of rendering intermediary services. The cumulative indicator of all participants of process: "production – sale – consumption" will characterize economic efficiency of a product for national economy in relative expression. The purpose of calculation of these indicators – to balance interests of the producer, resellers, financial intermediaries and the consumers among themselves. Set of these indicators will allow to smooth disproportions in profitability from a product for different participants of process of its creation, sale and consumption. If the indicator of target function has to be predicted and planned, then this system of indicators has to be used for assessment of data. It can serve as an incentive for taking measures to regulation of proportions of the income of different participants and balance of their interests, and also for development of measures of antimonopoly regulation. Therefore, this system of indicators can become the effective regulator of increase in competitiveness of products. These indicators are indissolubly connected with indicator of useful effect. Useful effect of product has to be both by planned indicator, and valuation indicator at the same time.

The planned level of aggregate useful effect of a product is a reference point for transformation of data of supply and demand of a product and their balance. In this regard the methodology of calculation of an indicator of aggregate useful effect is of special importance. Theoretical and methodological bases of calculation of useful effect are offered in the course of scientific research [7, p. 204 – 217; 8, p. 225 – 232; 9, p. 68 – 74].

The useful effect (UE) – the effectiveness of the planned plurality of indicators of offering of products, which is expressed in cumulative usefulness of products for the consumer and the producer. In difference from relative indicator of economic efficiency of a product for national economy, at calculating useful effect from it the benefit of intermediaries and their contribution in the form of tax contributions to economic benefit is not considered. It is made specially, in order that the benefit of the non-material sphere, which is often not caused by consumer properties of a product and depends on a set of other factors, for example, from game on rise or drop in prices, excessive demand, competition level in the markets, exclusive role of marketing, monopoly of retail chain stores and other factors, did not distort of useful effect from product and did not influence the choice of an optimal variant.

The useful effect from product is defined by benefit of the producer, i.e. in the sphere of direct creation of material values, formation of effect of manufacturer from it and by benefit of the consumer, i.e. in the sphere of satisfaction of public requirements and formation of public effect of product. At calculation of useful effect from product not only for producer, but and for consumers, it is necessary to consider different requirements of buyers of different markets in volumes, the prices of purchases even of the same type of a product, because conditions of purchases and conditions of exploitation of products can differ. For example, purchases can be in result of wholesale, retail, sales of stocks, preferential sales at a discount, and consequently, various both at the price, and over volume. The various conditions of use of a product by consumers can have significant influence on the operating costs, or bring effect due to their decrease, or is no. However, on practice it is almost impossible to predict precisely features of acquisition and conditions of exploitation of product by each buyer. Therefore, segmentation of buyers is carried out over general signs, namely: at purchases prices, over channels of goods movement, features of purchases, conditions of exploitation of products. Strategic zones of sales of firm are defined in each market, because most often consumer inquiries differ over the markets. After that the firm predicts volume, price parameters of demand of certain consumer groups in each type of products on different markets, as well as their potential consumer effect and possible decrease of expenses. Different factors should be taken into account because not only spatial parameters (the different markets), but also temporary factors exert huge impact on the change in price and sales volumes of products, and consequently, not only on useful effect of manufacturer, but also on useful effect of consumers. Therefore, the consumer inquiries are classified not only over the markets, but also over temporary stages of demand. The indicators of the prices and sales volumes of products, possible decrease of expenses, and also indicators of useful effect as for producer, so and for the consumer have to be calculated for each market and the temporary stage of demand. The sales volumes of products in the market are defined over potential number of buyers of this type of products on it, taking into account the predicted norm of consump-

tion of a product by the buyer of this market with average inquiries. The producer defines part from all made product volume, which will sell in certain market during the planned period of time.

The useful effect of the producer is defined not only directly its by benefit from the price and volumes of realization of each type of a product, but also from decrease of expenses on its production and sale. The full life cycle of creation of a product begins with scientific research and includes design developments, the technological preparation of production, the organizational preparation of production and directly production. The extent of effect of a product (its profitability for the producer), but also possible saving of cost of its production and sales depends from temporary and spatial parameters. The expenses on publicity, sales promotion and sales volumes of products change on the different markets and during the different temporary periods. Besides, the different modifications of the same type of a product, different not only at the price, but also by costs on creation of product are offered usually in the different markets and during the different temporary periods. Therefore, at calculation of saving from decrease of cost of production and sales of products for each of markets the share of saving is calculated from each product, intended for realization in the certain market during a certain period of time.

Such approach was used not only for assessment of the expenses on production and sale, which are calculated from volume of each type of the made product, sold in the certain market during a certain period of time, but also concerning of costs of scientific researches, of technological and organizational preparation of production, which do not depend from volume of the outputs.

If separate modification of a product "$A_{1.1}$" was not developed for each market and costs of scientific researches, of technological and organizational preparation of production were not formed, and were defined in general for creation of product "$A_{1.1}$", then for definition of sum of saving over these articles of expenses, in the beginning the general saving over them was divided on total number of products of "$A_{1.1}$", i.e. the saving with of unit of product was defined, and then it was multiplied by products volume intended for realization in the certain market during a certain period. As a result, useful effect of the producer from realization, for example, offer of product "$A_{1.1}$" during a certain period in the local markets is defined over the following formulas:

$$E^1_{mA1.1} = P^1_{mA1.1} \times Q^1_{A1.1}\ ;\ldots;\ E^n_{mA1.1} = P^n_{mA1.1} \times Q^n_{A1.1}$$

$$\nabla C^1_{mA1.1} = (\nabla C^1_{SDA1.1} \times Q^1_{A1.1}) + (\nabla C^1_{CDA1.1} \times Q^1_{A1.1}) + (\nabla C^1_{TPA1.1} \times Q^1_{A1.1}) + (\nabla C^1_{OPA1.1} \times Q^1_{A1.1}) + (\nabla C^1_{PA1.1} \times Q^1_{A1.1}) + (\nabla C^1_{SA1.1} \times Q^1_{A1.1})$$

$$\nabla C^n_{mA1.1} = (\nabla C^n_{SDA1.1} \times Q^n_{A1.1}) + (\nabla C^n_{CDA1.1} \times Q^n_{A1.1}) + (\nabla C^n_{TPA1.1} \times Q^n_{A1.1}) + (\nabla C^n_{OPA1.1} \times Q^n_{A1.1}) + (\nabla C^n_{PA1.1} \times Q^n_{A1.1}) + (\nabla C^n_{SA1.1} \times Q^n_{A1.1})\ (1-4)$$

where $E^1_{mA1.1};\ldots;E^n_{mA1.1}$ – effect of the manufacturer from acquisition of the offer of a product "$A_{1.1}$" by buyers on market, respectively: 1; …; n during a certain period;

$Q_{A1.1}$ – volume (number of units) of all the made products "$A_{1.1}$";

$Q^1_{A1.1},\ldots,Q^n_{A1.1}$ – volume (number of units) of products created and sold by the manufacturer on market, respectively: 1, …, n during a certain period;

$P^1_{mA1.1};\ldots;P^n_{mA1.1}$ – price of the manufacturer per unit of output "$A_{1.1}$", established for realization her by buyers, respectively: 1, …, n of market during a certain period (the price of the producer is not equal to the price of the buyer as it does not include extra charges of reseller and the value added tax);

$\nabla C^1_{mA1.1};\ldots;\nabla C^n_{mA1.1}$ – saving of the manufacturer at production and sale of the offer of products "$A_{1.1}$" to buyers, respectively: 1; …; n of market during a certain period;

$\nabla C^1_{SDA1.1},\ldots,\nabla C^n_{SDA1.1}$ – saving from rationalization of scientific research with of unit of offering products "$A_{1.1}$", of intended for realization, respectively on 1, …, n market during a certain period;

$\nabla C^1_{CDA1.1},\ldots,\nabla C^n_{CDA1.1}$ – saving from rationalization of the constructional elaborations with of unit of offering products "$A_{1.1}$", of intended for realization, respectively on 1,…, n market during a certain period;

$\nabla C^1_{TPA1.1},\ldots,\nabla C^n_{TPA1.1}$ – saving from rationalization of technological preparation of production with of unit of offering products

"$A_{1.1}$", of intended for realization, respectively on 1, …, n market during a certain period;

$\nabla C^1_{OPA1.1},\ldots,\nabla C^n_{OPA1.1}$ – saving from rationalization of organizational preparation of production with of unit of offering products "$A_{1.1}$", of intended for realization, respectively on 1,…, n market during a certain period;

$\nabla C^1_{PA1.1},\ldots,\nabla C^n_{PA1.1}$ – saving from rationalization and intensification of production with of unit of offering products "$A_{1.1}$", of intended for realization, respectively on 1, …, n market during a certain period;

$\nabla C^1_{SA1.1};\ldots;\nabla C^n_{SA1.1}$ – saving of costs from sale of a unit of products "$A_{1.1}$" to buyers, respectively on 1, …, n market during a certain period.

Final summary data of useful effect for producer are found by means of summation of components of this indicator over the markets and over temporary phases, namely:

$$\sum_{z\in 1\ldots n}^{t\in 1\ldots 5} |E_{mA1.1}| = \sum_{z\in 1\ldots n}^{t\in 1\ldots 5} \left((P^1_{mA1.1}\times Q^1_{A1.1})+\ldots+(P^n_{mA1.1}\times Q^n_{A1.1})\right) = \sum_{z\in 1\ldots n}^{t\in 1\ldots 5} (E^1_{mA1.1}+\ldots+E^n_{mA1.1})$$

$$\sum_{z\in 1\ldots n}^{t\in 1\ldots 5} |\nabla C_{mA1.1}| = \sum_{z\in 1\ldots n}^{t\in 1\ldots 5} \left(\nabla C^1_{mA1.1}+\ldots+\nabla C^n_{mA1.1}\right);\ UE_{mA1.1} = \sum_{z\in 1\ldots n}^{t\in 1\ldots 5} |E_{mA1.1}| + \sum_{z\in 1\ldots n}^{t\in 1\ldots 5} |\nabla C_{mA1.1}| \quad (5-7)$$

where $UE_{mA1.1}$ – useful effect of the manufacturer from creation and sale of all volume of the offer of products "$A_{1.1}$" in all markets during full life cycle;

$\sum_{z\in 1\ldots n}^{t\in 1\ldots 5} |\nabla C_{mA1.1}|$ – cumulative savings of the manufacturer from decrease of cost of production and sale of all volume of the offer of products "$A_{1.1}$" in all markets during full life cycle;

$z\in 1\ldots n$ – the zones (markets) of positioning of product from the 1st to n, respectively;

$t\in 1\ldots 5$ – duration of life cycle includes stages of life cycle from the 1st to the 5th, respectively;

$\sum_{z\in 1\ldots n}^{t\in 1\ldots 5} |E_{mA1.1}|$ – aggregate effect of the manufacturer from realization of all volume of offering products "$A_{1.1}$" in all markets during full life cycle.

The useful effect of the producer depends from finding of the best spatial positioning of a product over the markets. Therefore, only matrixes for determination of aggregate useful effect allow to carry out comprehensive analysis with more efficiency. It is necessary to estimate useful effect of the producer of a product on each of the markets, also a contribution of each of them into the general result. Besides, it is important to estimate potential, prospects of each product, as well as opportunities for transformation of indicators of its offer during life cycle on markets. Therefore, useful effect of the producer during full life cycle of a product is calculated on the basis of forecasts. Such calculation procedure allows to connect the data over different markets and temporary phases, as well as data from one cell with data from another cell of matrix and to optimize the parameters, taking into account their influence on each other, what allows to receive the best synergetic result. However, for calculation of aggregate useful effect from a product it is necessary to define not only useful effect of the producer, but also public effect from its consumption. Only assessment, which includes the consumer effect, will allow to define the most effective variant of configuration of a matrix.

The consumer useful effect from product is determined by degree of satisfaction of needs of buyers of the market during a certain period (of stage of consumer demand for this type of product), and it includes consumer effect and the saving of consumer on the prices and operational expenses. The consumer effect is defined by calculation of benefit of the consumer from satisfying its requirements at the expense of purchase of commodity. In this case a consumer prize means possible consumer expenses in the market of services, which the buyer reserves at purchase of commodity. Price list of the market of services (price multiplied on volume of the services similar by services volume of commodity) is the base of calculation of consumer benefit. This indicator can be calculated as for various temporary periods, so and it is predicted for full life cycle of commodity. Prices will often change during guaranteed service life of commodity, therefore price list of the market of services changes too. Thus, value of effect of consumers from purchase of commodity is the expected, predicted data, which characterize not only the current advantage, but also prospects for consumers of commodity.

The useful effect of consumers includes also the pure saving, which buyers of a certain market will be able to receive in result of fa-

vorable difference of the price and operational costs of product from analogs (or from average data him of analogs). Volumes and the prices of purchases, and also expenses on use of products can strongly differ among buyers of the different markets and during different temporary phases of demand. Therefore, at calculation of consumer useful effect from products, the segmentation of consumers, which was used at calculation of useful effect of the producer, is used. It is assumed that the buyers from one classification group of one market during one of temporary phases of demand gain consumer effect of one level from improvements of a product because have identical purchase prices and the possible savings on the price, as well the similar conditions of exploitation of product, what leads to savings on operational expenses of one level.

At the same time, in each consumer group of the local market pure saving from lower price and of decrease of operational expenses should be considered separately, because not all purchased products volume, which provides consumer effect, can participate in formation of saving, especially at the expense of different factors. At calculation of consumer useful effect from products, indicators of the consumer effect and pure saving only at the expense of that volume of products, which it provides, are considered. It can be described by means of the following formulas:

$$E^1_{c_{A1.1}} = E^1_{A_{1.1}} \times Q^1_{c_{A1.1}} \;;\ldots;\; E^n_{c_{A1.1}} = E^n_{A_{1.1}} \times Q^n_{c_{A1.1}} \quad (8,9)$$

$$\nabla C^1_{c_{A1.1}} = (\nabla P^1_{c_{A1.1}} \times Q^1_{c_{\nabla P A1.1}}) + (\nabla C^{\,1}_{oc_{A_{1.1}}} \times Q^1_{c_{\nabla Co A1.1}}) \;;\ldots;$$

$$\nabla C^n_{c_{A1.1}} = (\nabla P^n_{c_{A1.1}} \times Q^n_{c_{\nabla P A1.1}}) + \left(\nabla C^{\,n}_{oc_{A_{1.1}}} \times Q^n_{c_{\nabla Co A1.1}}\right) \quad (10,11)$$

where $\nabla C^1_{c_{A1.1}};\ldots;\nabla C^n_{c_{A1.1}}$ – pure saving of consumers, respectively: 1, ..., n of the markets on operational expenses and the price of consumption of all volume of product "$A_{1.1}$" during a certain period;

$z \in 1\ldots n$ – the zones (markets) of positioning of product from the 1st to n, respectively;

$\nabla C^{\,1}_{oc_{A_{1.1}}};\ldots;\nabla C^{\,n}_{oc_{A_{1.1}}}$ – pure saving of consumers, respectively: 1,.., n of the markets on operational expenses with of a product unit "$A_{1.1}$", which brings more saving in exploitation in comparison with analogs;

$\nabla P^1_{c_{A1.1}};\ldots;\nabla P^n_{c_{A1.1}}$ – pure saving of consumers, respectively: 1, …, n of the markets during certain period from acquisition of a product unit of "$A_{1.1}$", over lower price in comparison with analogs;

$Q^1_{c_{A1.1}};\ldots;Q^n_{c_{A1.1}}$ – volume of acquisition of a product "$A_{1.1}$" (number of units) by consumers, respectively: 1, …, n of the markets during a certain period;

$Q^1_{c_{\nabla P A1.1}};\ldots;Q^n_{c_{\nabla P A1.1}}$ – volume of a product "$A_{1.1}$" (number of units), acquired by consumers, respectively: 1, ..., n of the markets over lower price in comparison with analogs during a certain period;

$Q^1_{c_{\nabla Co A1.1}};\ldots;Q^n_{c_{\nabla Co A1.1}}$ – volume of a product "$A_{1.1}$" (number of units), acquired by consumers 1, …, n of the markets during a certain period, which brings more saving in exploitation of product in comparison with analogs;

$E^1_{A_{1.1}};\ldots;E^n_{A_{1.1}}$ – the effect, which consumers, respectively: 1, …, n of the markets receive during a certain period from acquisition of a product unit "$A_{1.1}$" in the sum of expenses in the market of services which it is possible to avoid;

$E^1_{c_{A1.1}};\ldots;E^n_{c_{A1.1}}$ – aggregate effect of consumers, respectively: 1, …, n of the markets from everything of volume of the product "$A_{1.1}$", which is acquired by them during a certain period.

Thus, the data of indicators of consumer benefit (of effect) and of pure saving can differ significantly from each other in the different markets and temporary stages of demand. Therefore, components of the consumer useful effect should be counted over each market and temporary phases of demand, what formulas reflect:

$$\sum_{z \in 1\ldots n}^{t \in 1\ldots 5} |E_{cA1.1}| = \sum_{z \in 1\ldots n}^{t \in 1..5} \left((E^1_{A_{1.1}} \times Q^1_{c_{A1.1}}) + \ldots + (E^n_{A_{1.1}} \times Q^n_{c_{A1.1}})\right) = \sum_{z \in 1\ldots n}^{t \in 1\ldots 5} \left(E^1_{c_{A1.1}} + \ldots E^n_{c_{A1.1}}\right)$$

$$\sum_{z\in 1\ldots n}^{t\in 1\ldots 5} |\nabla C_{cA1.1}| = \sum_{z\in 1\ldots n}^{t\in 1\ldots 5} \left(\left(\nabla P^1_{c_{A1.1}} \times Q^1_{c_{\nabla P A1.1}}\right) + \left(\nabla C^{\,1}_{oc_{A_{1.1}}} \times Q^1_{c_{\nabla Co A1.1}}\right)\right) + \ldots +$$

$$+\left(\left(\nabla P^n_{c_{A1.1}} \times Q^n_{c_{\nabla P A1.1}}\right) + \left(\nabla C^{\,n}_{oc_{A_{1.1}}} \times Q^n_{c_{\nabla Co A1.1}}\right)\right) = \sum_{z\in 1\ldots n}^{t\in 1\ldots 5} \left(\nabla C^1_{c_{A1.1}} + \ldots \nabla C^n_{c_{A1.1}}\right);$$

$$UE_{cA1.1} = \sum_{z\in 1\ldots n}^{t\in 1\ldots 5} |E_{cA1.1}| + \sum_{z\in 1\ldots n}^{t\in 1\ldots 5} |\nabla C_{cA1.1}| \quad (12-14)$$

where $\sum_{z\in 1\ldots n}^{t\in 1\ldots 5} |E_{cA1.1}|$ – aggregate consumer effect from acquisition by buyers of all volume of products «$A_{1.1}$" in all markets during full life cycle;

$\sum_{z\in 1\ldots n}^{t\in 1\ldots 5} |\nabla C_{cA1.1}|$ – cumulative saving of consumers on the price and operational expenses from all volume of the acquired products "$A_{1.1}$" in all markets during full life cycle;

$z \in 1\ldots n$ – the zones (markets) of positioning of product from the 1st to n, respectively;

$t \in 1\ldots 5$ – duration of life cycle includes stages of life cycle from the 1st to the 5th, respectively;

$UE_{cA1.1}$ – consumer useful effect from consumption of a type of product "$A_{1.1}$" by all buyers on all markets during full life cycle.

Thus, methodology of calculation is recommended for providing not over separate, but for coordinated planning of data of effect and saving according of producers and consumers over each product on various markets and temporary stages of its life cycle for obtaining the best cumulative result. Calculation of an indicator of consumer useful effect on the basis of assessment of expected data for full life cycle of a product is very important, as it characterizes prospects of implemented updating of the offer of products from the point of view of satisfaction with them of consumer demand not only in current period, but also in the long term. The aggregate useful effect from all offer of a certain type of a product "$A_{1.1}$" is gained by summation of the useful effect of the producer and of the useful effect of all consumers of this product, what characterizes advantage of this product not only for the producer and consumers, but also for satisfaction of public need for it.

$$UE_{A1.1} = UE_{mA1.1} + UE_{cA1.1} \quad (15).$$

where $UE_{A1.1}$ – aggregate useful effect from products "$A_{1.1}$";

$UE_{mA1.1}$ – useful effect of the manufacturer from products "$A_{1.1}$";

$UE_{cA1.1}$ – useful effect of consumers of products "$A_{1.1}$".

Conclusions

Thus, the aggregate useful effect is formed of a plurality of useful effects from product on different markets and various stages of positioning of a product in them, because not only there is a dependence between volume and price of offering product "$A_{1.1}$" on one market, but and they influence on data of these indicators in other markets. Planning in a matrix of all indicators of the offer of products in the different markets and during various temporary periods will allow to consider influence of data in different cells on each other and to find the best option of a plurality of data of configuration of a matrix that will allow to define optimum useful effect of the coordinated plurality of data of the offer of any product. The offered methodological approach to determination of optimum aggregate useful effect differs from its calculation in form of the simple sum of various effects of a data set of the offer of a product which are not optimized among themselves comprehensively. Forecasting of aggregate useful effect has to be implemented by means of planning the optimal coordinated plurality of data of the offer of a product. Assessment of the actual useful effect of a product will allow to establish bottlenecks and to transform data of the offer according to the current demand.

Thus, the matrix technology of optimization of a plurality of data and determination of optimum aggregate useful effect of a product provides finding of the optimum ratio of useful effect of his producer and consumers. It opens the new horizons for optimization of interests of the producer and consumers in compliance with each other. Relative coefficients of efficiency of a product and indicators of target function and aggregate useful effect from a product have to be used in united system, as each of them from the different parties promotes optimization of parameters of a product, but only them cumulative use can provide the

best synergetic result. The offered system of indicators is a necessary important part of new technology of optimization of a variable plurality of data on the basis of use of matrixes of multi-purpose optimization. This system contains mechanisms for stimulation of growth of competitiveness of products, achievement of balance of supply and demand in goals of the best satisfaction of public needs.

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THE HISTORY OF LARGE-SCALE FARMS IN THE BREEDING OF CATTLE IN THE KYRGYZ REPUBLIC (1991-2017)

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The article examines the history of the formation and development of large-scale farms that bred cattle during the agrarian and land reform in the Kyrgyz Republic, on the basis of archival documents. The main attention was paid to the reasons for success in the production and development of agricultural products of large-scale farms, cattle breeding farms and the factors hindering their development. Based on the statistical data, the growth of cattle population in private breeding farms, the state of livestock production and livestock productivity indicators were analyzed. Also the achievements and progress in the development of experience in the above mentioned period were highlighted. It was noted that the lack of financial support and an absence of a single flexible policy on the part of the State lead to difficulties for the further successful operation of large farms and private breeding farms. The article also mentions the major role of large scale breeding farms in carrying out the valuable tasks on selection of livestock husbandry, the implementation of the latest achievements of science and technology in the production, automation and specialization of production. The article uses data from the field records of the researcher, reflecting conversations with the heads of large-scale farms and private breeding farms.

Keywords: the Kyrgyz Republic, land and agrarian reform, pastoral dairy farming, breeding farms, cooperatives, large-scale farms, cow breeds, productivity

More than 60% of the population of the Kyrgyz Republic live in rural areas, 40% of the working-age population is employed in the agricultural sector, therefore, the main source of family income comes from livestock and agricultural products. The natural and climatic conditions of the country contribute to the successful development of animal husbandry, of which 83% or 9.6 million hectares of agricultural land is herbage mountain pastures. During the years of reforming agriculture in Kyrgyzstan, large-scale farms that have achieved high productivity have emerged in the regions of the country, as well as hundreds of farmers and heads of peasant farms, who have achieved significant success in increasing livestock numbers and productivity, increasing crop yields and growing their own income. For example, large-scale farms such as "MIK" and "Kirovets" of Issyk-Ata district, "Vetka" of Alamudun district, "KOSO" and "Rassvet" of Sokuluk district, "Zavety Ilyicha", "F. Engels", "Rossiya" of Moscow district "Zhayil" of Zhayil district of Chui oblast, "Zarya" of Ak-Suu district of Issyk-Kul oblast, "Abubakir" of Kara-Suu district of Osh oblast turned into profitable farms producing livestock products.

To date, the most promising form of agricultural production regardless the form of ownership are large agro-industrial enterprises. As the practice of the USA, Germany, France, Netherlands and other economically developed countries show, the labor productivity of large-scale farms is 1.5-2 times higher, and the cost of production is several times lower compared to small farms. For instance, according to the US statistics, small farms selling annually goods in the amount of $5 000 make up about 34% of the total number of working farms in the USA, producing only 3-4% of the total agricultural products, the annual loss of the farmers is $700 million [1, pp.12-15]. In recent years, U.S. agricultural production has shifted to large-scale family and non-family farms with annual gross income (GCFI) of more than $ 1 million, which is half the cost of U.S. agricultural production. This comparison takes account of inflation in prices for agricultural products, therefore, reflects the shift of production towards large-scale farms [2]. In Russia, about half of the industry's goods are produced by large agricultural enterprises, and only 2% – by small farms. The volume of cattle and poultry meat production (live weight) produced by peasant farms and individual entrepreneurs of the Russian Federation in 2017 amounted to only 3% [3, p. 350].

In the Kyrgyz Republic, livestock production is accounted for by small private peasant farms and small household farms. But, in terms of labor productivity, large enterprises maintain better yields. This is proven by the experience of some large-scale farms in our country. For instance, the "Chabrets" breeding farm in Frunze district of the Sokuluk district of the Chui oblast was established in 2000, which raises Alatau and Black-and-White cattle as well as some German pig breeds. In 2007, out of 150 heads of cattle on the farm, 50 were purebred, with 80 calves received from 100 cows. In the same year, the average milk yield per cow was 4390 kg [4, p.206]. According to the Decree of the Government of the Kyrgyz Republic No. 285 dated November 18, 2010, this breeding farm was given the status of "Farmer Cattle Breeding Plant Chabrets". By 2017, the plant bred 849 heads of Alatau, 436

heads of Holstein-Friesian, 76 heads of Aberdeen-Angus breed of cows and 436 heads of a large white breed pigs. In 2017, 760.7 tons of milk and 98.7 tons of meat were produced. On average, 4285 kg of milk was obtained from each cow, with 91 calves from 100 cows [5]. This shows the annual increase in livestock numbers and the achieved success in the production of livestock products. The breeding plant processed meat and dairy products, and sold them in the domestic market of the country. The farm has become profitable through integrated veterinary services, year-round indoor breeding of livestock, year-round calving, and rational use of feed.

All livestock farming complexes of the breeding plant are equipped with modern milking machines, refrigeration units and equipment for the preparation and distribution of feed. The automation of the major industrial processes at the plant led to the achievement of high quality in the meat and milk production.

In 1995, the "MIS" (Machine Testing Station) of the Kant district received 5,000 liters of milk from each of 1,800 dairy cows, and 95 calves from 100 heads [6, pp.7–8]. In 2001, "MIS" received a net profit in the amount of 30.2 million soms. The level of profitability of the farm exceeded 50%, and the labor productivity for each member of the cooperative was 402 thousand soms of wholesale products [7, p. 170]. This is several times higher than the indicators of peasant farms in the country.

By 2017, the farmer breeding plant "MIS-Sut" had 1993 hectares of arable land, bred 1,854 head of cattle (including 925 cows) of the Holstein-Friesian dairy breed. With each cow, the farm received 5850 kg of milk, with 100 heads – 81.3 calves. In the same year, the cooperative produced 151.4 tons of meat, 5223 tons of milk [8]. This means that in the first years of the agrarian-land reform and in its subsequent period the economy reached a stable development. The productivity of the dairy cows on the farm was much higher than in the rest of country, this is due to the continuous breeding and selection work of the "MIS-Sut". This proves that in the last few years the milk yield from each dairy cow remained 5700-6600 kg. The country's average annual total productivity was 2000-2200 kg per cow.

Cooperative "Vetka" (former Lenin collective farm) in the years of agricultural reform managed to preserve its production resources, land and livestock. In 1991, it was legally registered as an agricultural cooperative. In the first years of the agrarian-land reform (1992-1995), the farm was on the verge of bankruptcy, its losses amounted to 12 million soms. Since 1996 under the leadership of the honored worker of agriculture of the Kyrgyz Republic Orel Boris Abramovich and efforts of the whole team, the farm began to develop and its economic rise began. Cooperative "Vetka" (the current head is Mustakov S.), one of the few farms in the country, producing agricultural products in large volumes. The farm also breeds purebred horses. In 2005, "Vetka" cooperative bred over 3,467 heads cattle (including 1,214 dairy cows), 266 horses, wholesale milk production amounted to 7,072 tons, annual milk yield from each cow amounted to 6,049 liters of milk [9, p.58]. In terms of milk yield from each cow, the cooperative "Vetka" showed a high result in the country. Over 400 cooperative members were provided with stable high wages and low-priced agricultural produce. The agricultural cooperative "Vetka" was obtaining its main income from livestock husbandry. In 2010, its income from the livestock production was 76.7 million soms, from the sale of milk – 58.6 million soms, cattle (live weight) – 12.4 million soms [10, p.13]. The labor productivity and profitability of this dairy cooperative is much higher compared to small-scale peasant farms and households farms in the country.

Cooperative "Vetka" had reached some high economic indicators using the achievements of scientific and technological progress, the mechanization of the production process, and improvement of the breeding qualities of cows. But, in recent years, the number of livestock in the farm has decreased. In 2010, there were 2500 thousand cattle (including 774 cows), 200 horses, producing 4631 kg and 3643 kg of milk from each of the cows respectively [11]. The reduction of arable land and reduced forage have caused a decrease in livestock on the farm. In addition, payments to the Social Security, high tariffs for electricity and for the use of irrigated land, the high cost of fuels and lubricants, unbalanced tax policy towards cooperatives, difficulties in the marketing of the produce have become obstacles to the successful functioning of the farm. The absence of the processing industry on the farm also had a negative impact.

In the years under review, along with large-scale farms, personal private farms for breeding cattle were organized on the personal initiative of citizens. For example, farm "Bakyt" (head A. Musienko) was established in 1994 in the village of Pervomai, of Sokuluk district, starting with only 4 cows, 100 sheep and 18 hectares of land. In 2003, the farm had already grown to 60 heads of cattle, including 40 heads of cows. The arable land of the farm had

reached 93 hectares. During those years each cow produced over 4,300 liters of milk [12]. A dairy mini-factory built with the help of Israel operated in the farm. The mini-plant produced various dairy products (cheese, sour cream, cottage cheese, yogurt, etc.), 2.5 tons of milk was processed daily. This success was achieved through the introduction of new technologies in farming, improving the breed composition of cattle and feed composition, proper organization of labor and livestock breeding. In addition, the processing industry was developed on the farm, so the profitability was high compared to other farms, since processing of raw goods was more profitable than selling it.

Due to the insufficient and poor development of the processing industry in the Kyrgyz Republic, many farms in the regions faced difficulties in marketing their products. Established in 1996, the Bakyt breeding farm (head Kakhar Eshkozuev) in the Suzak district of the Jalal-Abad oblast, bred over 10 cattle on the farm, in 2017 their number reached 200 heads (including 90 cows). The farm bred Alatau beef cattle breed. The total land used by the farm was 146.5 hectares, of which 46.5 hectares were of arable land, 100 hectares of land was leased by the redistribution foundation. According to the head of the enterprise K. Eshkozuev, there were considerable difficulties in the marketing the farm produce. Very high land tax and rent for breeding farms, they were not able to purchase breeding cows, because of the high cost. There were no milk processing enterprises in the Jalal-Abad region, therefore the cost of breeding cattle does not pay for itself [13]. Thus, the existence of the above mentioned problems, the lack of financial support from the state and the absence of a single flexible policy for breeding farms all together contribute to the difficulties in the development of such farms.

State support for large-scale farms and other farms should be implemented through subsidies, primarily by bringing the number of breeding cows to the level of sold breeding cattle.

In order to improve the genetic resources of breeding livestock, to establish and support breeding farms, to improve the productivity of cattle, on December 15, 2017 the Government of the Kyrgyz Republic adopted a Resolution No. 812 “On the payment of state subsidies to the entities that have been granted the status of a breeding plant or a breeding farm by the Government of the Kyrgyz Republic”. Unfortunately, until today, the subsidies have not yet been paid to the breeding farms due to the state budget deficit.

The above mentioned facts prove that large-scale breeding farms, compared to small peasant and private farms, are highly productive and achieve higher results. But there are very few large farms in the Kyrgyz Republic, therefore their share in the production of farming products in the country remains low.

The preservation of large-scale farms, the increase in their numbers, the intensification and specialization of agricultural production, will make it possible to shift to modern developed forms of livestock breeding. Feeding animals using new equipment and production technologies, will open the way to introducing efficient methods of feeding them.

Therefore, the existing large-scale farms need state support: it is necessary to give them additional arable land, lower their rent, develop a mechanism for simplified flexible tax policy, lower electricity tariffs, provide quality seeds for breeding animals, open processing plants in the regions, etc. In addition, large-scale cattle farms need to develop their own processing industry. The development of large-scale farms will stimulate the growth of the economy of the Kyrgyz Republic, suitable conditions will be created for the export of manufactured local produce.

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RESULTS OF USE ANTIOXIDATE THERAPY WITH "ANTOKSID" IN COMPLEX TREATMENT OF CHRONIC GENERALIZED PARODONTITIS OF MODERATE SEVERITY

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Studies have revealed a close relationship between the development of inflammatory changes in the periodontium and the activity of free radical processes (antiparticles) and antioxidant protection (AOP). Objective: to study the effectiveness of antioxidant therapy with "Antoksid" in the complex treatment of patients with chronic periodontitis of moderate severity. The task of the study was also the determination of the antioxidant activity of the developed therapeutic and dental agent "Antoksid" (Patent # 960) by the "in vitro" method. The object of the study was the shade of erythrocytes obtained from peripheral blood taken from 20 adult patients with periodontitis at the age of 30 to 39 years. It was revealed that "Antoksid" possesses antioxidant properties when exposed to pathological biological fluids, in particular, the blood plasma of patients with periodontitis. Comparative clinical studies in evaluating different treatment methods were performed in 30 patients, the control group consisted of 10 healthy people. The results of the treatment were evaluated on the 5th and 10th days of treatment. The evaluation was carried out by biochemical methods on the effect on the state of the processes of LPO, AOP systems in cell membranes (erythrocyte) and blood plasma. It was found that the best effect was achieved by treatment with the introduction of "Antioxidant" by the method of UFF, and the treatment with the traditional method was the least effective. Studies have shown that the use of "Antoksid" in the treatment of chronic generalized periodontitis leads to an increase in cell resistance to oxygen deficiency, activation of enzymatic reactions, and elimination of microcirculation disorders. Activation of the AOZ system, in turn, leads to restriction and breakage of chain radical reactions, normalization of oxidation-reduction reactions in cells and tissues, restriction of the inflammation focus and intensification of proliferative processes in periodontal tissue.

Keywords: Chronic periodontitis, free radical processes, lipid peroxidation, antioxidant protection, "Antoksid" phonophoresis

According to the opinion of many authors the lipid peroxidation processes (LPP), which are of general biological nature and, in opinion of many authors, are the universal mechanism of cell damage the level of membranes and play an important role in periodontitis pathogenesis. LP processes accelerate in case of any inflammatory diseases, cell membrane damage, stress factors effect on the human body, and in carcinogenesis, with a deficiency of vitamins and microelements, as well as in radiation illness, aging [1]. The products offree-radical processes (FRP) are able to damage the endothelia by causing microcirculation disorders, and also the basic components of connective tissue, including disturbance of the synthesis of alveolar bone protein matrix, collagen with disturbance of regeneration processes [2]. Basic representatives are the enzyme antioxidants and low molecular weight species of various chemical nature. When using in gnonenzymatic antioxidants, firstly vitamins, not only their anti-oxidant properties, but also pro-oxidant properties can be observed, which, certainly, is the undesirable property and reduces their antiradical efficiency [3, 4]. The development and introduction in practical stomatology of the medicinal facilities, which have high antioxidant activity, but don't have pro-oxidant properties, is perspective. Such medications include the substances from the group of enzymic antioxidants (superoxide dismutase, catalase and glutathione peroxidase). All the above mentioned enzymes are metalloproteases, i.e. their prosthetic centers include copper, zinc, cobalt and selenium and, accordingly, adequate functioning of these enzymes is possible only in condition of sufficient micronutrient content in the body. This task can be successfully solked by prescribing medicinal preparations consisting of anti-oxidation micronutrient elements, firstly Zn, Cu, Co and Se being basis of antioxidant enzymes [5].

The research goal is to study the efficiency of antioxidant therapy with "Antoksid" in patients with moderate severe chronic periodontitis.

Materials and methods of research

Depending on the treatment methods, the patients are divided into the following groups: first group – 10 patients who received traditional medical treatment; second group – 10 patients, in which treatment "Antoksid" in the form of applications was applied; third group – 10 patients, in which treatment "Antoksid" was introduced by the Ultraphonophoresis method. The treatment results were assessed on the 5th and10nd days of treatment. The control group comprised 10 healthy adults. The assessment was carried out by biochemical methods under effect on the condition of the LP processes, antioxidant defense system in cell membranes (erythrocyte) and blood plasma. Before you can assess the effectiveness of different regimens for treatment of patients periodontitis, one of the research

objectives was to determine the antioxidant activity of "Antoksid" by in vitro method through inhibitory action on free-radical oxidation of the red-cell membranes of patients with periodontitis, in which the free-radical oxidation processes are initiated by UV light. The object of research was the achromacytes produced from peripheral blood (venous), taken from 20 adult patients with periodontitis aged 30 to 39 years.

Results of research and their discussion

As the research have shown, the optical density of samples in the experimental series decreases in proportion to the activity of the investigational medicinal product "Antoksid" (table 1). Thus, the optical density fluctuations in the experimental samples after adding "Antoksid" ranged from 0.016 to 0.044 nm (on average, 0.029 ± 0.005 nm), whereas these fluctuations in the control samples ranged from 0,044 to 0,078 nm, which was on average 0,061 ± 0,09nm. Consequently, the inhibition of free-radical oxidation processes with "Antoksid" initiated by ultraviolet irradiation in experimental samples decreases by 51,9 ± 3,96%.

Thus, "Antoksid" has antioxidant properties on exposure to pathological biological fluids, particularly blood plasma of patients with periodontal disease. Taking into consideration that the "Antoksid" comprises the micronutrients such as zinc, cobalt, copper and selenium, which, in its turn, are the key elements in prosthetic groups of main enzymes of the antioxidant defense system, it is likely that its pharmacological effect will be determined by the activity of main antioxidant enzymes, namely superoxide dismutase, catalase and glutathione peroxidase. As shown by research, the activation of LP processes is observed in patients during the height of disease in comparison with the control group (table 2). So, if the content of primary products of lipid peroxidation in red-cell membrane – Lipid hydroperoxides, increases by 56% ($P < 0.01$), the concentration of end products of peroxidation – valid concentration, increases by more than 3 times ($P < 0.001$). The antioxidant defense system activity is changed in parallel to the change in LP intensity in steady-state functioning of biological membranes and about the role of these processes in the mechanisms of oral mucosa diseases development. Thus, the reference is made to the decrease in the general antioxidative activity of blood plasma lipids ($P < 0.01$), catalase activity ($P < 0.01$) and decreased concentration of ceruloplasmin in blood plasma ($P < 0.001$). Therefore, the intensity of oxidative processes under periodontitis, the indicator of which is the level of lipid peroxidation products content in the body, can give ideas about the stages of changes.

Table 1

Antioxidative activity of the dental agent "Antoksid" in vitro

Sample No.	Optical density of test samples (nm)	Optical density of control samples (nm)	Antioxidative activity, %
1	0,03	0,054	45,5
2	0,022	0,061	64,0
3	0,035	0,067	47,8
4	0,026	0,07	62,9
5	0,4	0,067	40,3
6	0,016	0,048	66,7
7	0,018	0,055	67,3
8	0,037	0,06	38,4
9	0,044	0,071	38,1
10	0,023	0,049	53,1
11	0,04	0,078	48,8
12	0,031	0,068	54,5
13	0,024	0,054	55,6
14	0,028	0,059	52,6
15	0,036	0,071	49,3
16	0,23	0,044	47,8
17	0,042	0,082	48,8
18	0,019	0,054	64,9
19	0,033	0,067	50,8
20	0,026	0,044	41,0
M ± м	0,029 ± 0,005	0,061 ± 0,009	51,9 ± 3,96

Table 2

Indices of LP processes andantioxidant defense system in red-cell membrane and blood plasma in patients with periodontitis

Analyzed indices	Units	Study group		Difference reliability
		Healthy people n = 10,M ± m	Patients with periodontitis, n = 30,M ± m	
Lipid hydroperoxides of red-cell membranes	Optical area	0,111 ± 0,008	0,174 ± 0,011	P < 0,01**
Valid concentration of red-cell membrane	Optical area	0,016 ± 0,003	0,059 ± 0,006	P < 0,001***
Antioxidative activity of blood plasma	%	25,1 ± 0,97	17,1 ± 0,8	P < 0,01**
Blood plasma catalase	μkat/L	22,5 ± 1,03	11,2 ± 0,67	P < 0,01**
Blood plasma ceruloplasmin	mcmol/l	3,07 ± 0,06	1,31 ± 0,03	P < 0,001***

Table 3

Indices of the LP products and the antioxidant defense system in red-cell membrane and blood plasma in the patients with periodontitis receiving traditional treatment

Patient groups and examination periods	Statistical indicators	Analyzedindices				
		LP products optical area		Antioxidative-activity, %	Catalase μkat/L	Ceruloplasmin mcmol/l
		Lipidhydrop-eroxides	Validcon-centration			
1. Healthy(control group), n = 10	M ± m	0,111 0,008	0,016 0,003	25,1 0,097	22,5 1,03	3,07 0,06
2. Patients at the height of the disease, n = 30	M ± m	0,174 0,011	0,059 0,004	17,1 0,084	11,2 0,67	1,31 0,03
3. Patients on the 5th treatment day, n = 10	M ± m P_{3-1} P_{3-2}	0,166 0,008 < 0,01** > 0,05	0,048 0,004 < 0,001*** > 0,05	17,8 0,092 < 0,01** > 0,05	10,3 0,63 < 0,01** > 0,05	1,41 0,06 < 0,001*** > 0,05
4. Patients on the 10th treatment day, n = 10	M ± m P_{4-1} P_{4-2} P_{4-3}	0,159 0,009 < 0,01** < 0,05 < 0,05	0,037 0,003 < 0,01** < 0,05* < 0,05*	17,9 0,074 < 0,01** > 0,05 > 0,05	13,9 0,8 < 0,01** > 0,05 > 0,05	3,2 0,08 > 0,05 < 0,01** < 0,01**

The first group of patients has not shown any significant changes in the analyzed parameters on the 5th day of treatment, that is, the lipid peroxidation intensity and the activity of antioxidant defense system remain at the height of the disease (P > 0.05), and accordingly in relation to the control indicators (P < 0.01- < 0.001) (table 3). On the 10th day of treatment there is a significant decrease in the valid concentration level of the red-cell membrane as compared with the data of previous examination periods (P < 0.05), but still its value remains significantly increased relative to the control index (P < 0.01). Also on the 5th treatment day the concentration of lipid hydroperoxides in red-cell membrane remains at the level of the height of disease and (P > 0.05). On the part of the indicators of the AOSIS system, the following picture is marked: antioxidant defense system indicators: general anti-

oxidative activity and catalase activity remain without significant dynamics compared to the previous examination terms ($P > 0.05$) and, accordingly, significantly reduced as compared to the control group indicators ($P < 0.01$).

The values of ceruloplasmin concentration in blood plasma reach the level of control ($P > 0.05$) and, accordingly, significantly increase in comparison with the data of the period of clinical manifestations and on the 5th day of treatment ($P < 0.01$).

Thus, the studies of the functional state of red-cell membranes and blood plasma in this group of patients at the end of treatment show that the depleted homeostatic potential at the micro level in the treatment process is not fully restored, which can create conditions for the prolongation of clinical disease manifestations in the future. The group of patients, who received "Antoksid" treatment in the form of applications, shows other picture in dynamics of changes in LP processes and antioxidant defense system in red-cell membranes and blood plasma (tab. 4). Thus, on the 5th treatment day as compared with the disease onset period, there was a significant decrease in the content of lipid hydroperoxides of red blood cell membranes ($P < 0.05$), valid concentration ($P < 0.05$), as well as a significant increase in catalase activity ($P < 0.05$) and the content of ceruloplasmin ($P < 0.01$) in blood plasma.

The general antioxidative activity has not changed during this period ($P > 0.05$). Despite the dynamics of changes in the functional state of red-cell membranes and blood plasma, these values do not reach the control indicators ($P < 0.05$- < 0.001) (table. 4).At the end of treatment (10 day) the indicators of lipid hydroperoxides, valid concentration, antioxidative activity, ceruloplasmin reach control values ($P > 0.05$), and the value of catalase activity, despite an increase relative to the period of height and on the 5th treatment day ($P < 0.05$), remains significantly lower ($P < 0.05$) than the control values. Accordingly, as compared with the previous examination periods, the indicators of lipid hydroperoxides, valid significantly reduce ($p < 0.01$), and the indicators of antioxidative activity, catalase and ceruloplasmin are significantly increase ($P < 0.05$- < 0.01).

Thus, in the periodontitis treatment the use of "Antoksid" in the form of applications has a pronounced antioxidant effect provided by the inhibitory effect on lipoperoxidation processes in cell membranes, by increasing the enzymatic system of antioxidant defense in blood plasma and by increasing the general antioxidative activity of blood lipids.

Table 4

Indices of the LP products and the antioxidant defense system in red-cell membranes and blood plasma in the patients with periodontitis receiving treatment with "Antoksid" applications

Patient groups and examination periods	Statisticalindicators	Analyzedindices				
		LP products optical area		Antioxidative activity, %	Catalase, μkat/L	Ceruloplasmin, mcmol/l
		Lipidhydroperoxides	Validconcentration			
1. Healthy (control group), n = 10	M ± m	0,111 0,008	0,016 0,003	25,1 0,097	22,5 1,03	3,07 0,06
2. Patients at the height of the disease, n = 30	M ± m	0,174 0,011	0,059 0,004	17,1 0,084	11,2 0,67	1,31 0,03
3. Patients on the 5th treatment day, n = 10	M ± m P_{3-1} P_{3-2}	0,146 0,009 < 0,01** < 0,05	0,043 0,005 < 0,001*** > 0,05*	19,9 0,10 < 0,05* > 0,05	14,3 0,72 < 0,01** < 0,05*	2,4 0,08 < 0,05* < 0,01*
4. Patients on the 10th treatment day, n = 10	M ± m P_{4-1} P_{4-2} P_{4-3}	0,099 0,01 > 0,05 < 0,01** < 0,01**	0,023 0,003 > 0,05 < 0,01** < 0,01**	24,2 0,11 > 0,05 < 0,01** < 0,05*	18,6 1,09 < 0,05* < 0,01** < 0,05*	2,98 0,06 > 0,05 < 0,01** < 0,05*

Table 5

Indices of the LP products and the antioxidant defense system in red-cell membranes and blood plasma in the patients with periodontitis receiving treatment with "Antoksid" by the ultraphonophoresis method

Patient groups and examination periods	Statisticalindicators	Analyzed indices				
		LP products optical area		Antioxidative activity, %	Catalase, μkat/L	Ceruloplasmin, mcmol/l
		Lipidhydroperoxides	Validconcentration			
1. Healthy (controlgroup), n = 10	M ± m	0,111 0,008	0,016 0,003	25,1 0,097	22,5 1,03	3,07 0,06
2. Patients at the height of the disease, n = 30	M ± m	0,174 0,011	0,059 0,004	17,1 0,084	11,2 0,67	1,31 0,03
3. Patients on the 5th treatment day, n = 10	M ± m P_{3-1} P_{3-2}	0,137 0,007 < 0,05* < 0,01**	0,039 0,004 < 0,01** < 0,05*	18,1 0,09 < 0,05* > 0,05	13,3 0,57 < 0,01** > 0,05	2,54 0,07 < 0,05* < 0,01**
4. Patients on the 10th treatment day, n = 10	M ± m P_{4-1} P_{4-2} P_{4-3}	0,102 0,009 > 0,05 < 0,01*** < 0,05*	0,21 0,003 > 0,05 < 0,01** < 0,05*	26,2 0,121 > 0,05 > 0,05 < 0,01**	20,4 0,98 > 0,05 < 0,01** < 0,05*	3,12 0,08 > 0,05 < 0,01** < 0,05*

In the third group of patients treated with "Antoksid" by the ultraphonophoresis method, the dynamics of change in the functional state of red-cell membranes and blood plasma has a picture almost identical to the second study group (table. 5).

At the end of treatment (10 days) the complete normalization of functional state of red-cell membranes and blood plasma is observed in this patient group. In other words, the analyzed indicators do not have a significant difference with respect to the indicators of the control group ($P > 0.05$) (table. 5). Thus, the conducted studies have shown that the "Antoksid" application in the treatment of chronic generalized periodontitis leads to increased cell resistance to the oxygen deficiency, enzymatic reaction activation, elimination of microcirculatory disorders. The activation of the antioxidant defense system, in its turn, leads to the limitation and breakage of chain radical reactions, normalization of oxidation-reduction reaction in cells and tissues, and to the limitation of inflammation site and enhancing proliferative processes in the periodontal tissue.

Conclusions

1. The determination of "Antoksid" antioxidant activity has revealed that "Antoksid" has antioxidant properties, and its pharmacological action is determined by the activity of the main antioxidant enzymes, namely superoxide dismutase, catalase and glutathione peroxidase.

2. The "Antoksid" administration by the ultraphonophoresis method increases the enzymatic component of antioxidant defense system, which results in the normalization of the main enzymes in the blood plasma, and in more restrictive lipo-pereoxidation processes. All this contributes to the faster recovery of periodontal tissues.

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EFFECTS OF THE REHABILITATION PROCESS WITH STRENGTH AND HIGH-INTENSITY WORKOUTS ON THE BODY COMPOSITION OF WOMEN WITH ALIMENTARY OBESITY

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The work was aimed to assess the effectiveness of the impact of the rehabilitation complex including high-intensity physical exertion on women with alimentary obesity. Obesity is a common disease among women. The anthropometric indices and component composition of the body in 50 women with obesity were investigated, including 1 group of women of reproductive age, 2 group of women in the postpartum period, and 3 group of women of the per climatic period. , reduction in waist coverage, adipose tissue mass and an increasing in the proportion of musculoskeletal tissue, as well as normalization of blood pressure, blood sugar, cholesterol and LDL. More pronounced positive dynamics were observed in the group of women of reproductive age. In women of the per climatic period the effect was less pronounced but reliable for a number of indicators.

Keywords: adipose tissue, strength training, anthropometry, body composition

Relevance of this research. The problem of obesity in the modern world does not lose its relevance. Moreover, every year it becomes more relevant. According to statistics, more than 1 billion people in the world are overweight, and of these, 300 million are obese. It means that every seventh inhabitant of the planet hasoverweight. For example, 50% of overweight people have high blood pressure and 65% of obese people are suffering from atherosclerosis. Moreover, 50% of these patients have serious health problems and have heart pains. Isolation of the metabolic syndrome in a separate nosological form shows its pathological basis [2]. In case of obesity, not only lipid metabolism suffers, however suffering the overall reactivity of lipid metabolism, immunity, resistance to stress and phycology [1].

Regular exercises can be determined as a salvation from obesity and the path to health. Obesity is a condition of the body in which fat deposits and accumulates in excess amount. For all times women seek tohave perfect forms, but not all of them have achieved the expected results. How to choose the best type of training for effective fat burning and the formation of a beautiful relief body? If the word "obesity" is disassembled, then its essence lies in the particle "fat", but histologically the adipose tissue consisting of adipocytes, which are divided into white, brown and intermediate beige [1-3]. They can affect human body in completely different ways. White adipose tissue is not only a passive tissue for storing additional energy in the form of fat but also a tissue that performs extensive endocrine functions [4-6]. It contains a nucleus shifted to the periphery of one large lipid drop and affects the increase in blood pressure, development of diabetes and other pathologies [7-9].

In turn, the brown adipocytes contain centrally located nuclei and several lipid droplets. They are especially rich by peculiar mitochondria and abundantly supplied with the ends of the sympathetic nerves and blood vessels [10], which is the key to weight loss.

If earlier it was believed that a person has brown VT almost completely disappears with time, now it has become clear that it is also present in adults and is located in the same place as in newborns, but in smaller quantities [5].

Regular physical activity contributes to the secretion of the hormone irisin, which turns white adipose tissue into brown, which due to its high energy activity, prevents obesity [11, 12].

Materials and methods of research

For the studywere selected 50 women from Osh region with alimentary obesity. They had completed a four-week rehabilitation course in a health center in the summer and autumn in 2017. The first main group consisted of 20 women of reproductive age (on average 34.2 ± 1.5 years), the second main group – 20 women who applied to a health center in the period 0.5-1.5 years during post-partum period,the third main group – 10 women of the periclioma period (on average 48.4 ± 1.2 years).

Inclusion criteria:

– Informed consent of women to conduct research and the implementation of the proposed program

– Relative health, lack of current infectious and somatic diseases

– Overweight, exceeding the age norm of more than 10%, body mass index (BMI) is

more than 25 kg / m^2, thickness of the skin fold on the abdomen is more than 3 cm.

The control group was consisted of 20 healthy residents of Osh region with reproductive age of (average 34.8 ± 1.6 years), with a normal body weight who underwent a similar health course. All surveyed patients had a similar lifestyle and they were representatives of mental labor professions.

In this study group sessions were conducted, including the combination of strength and high-intensity cardio trainings lasting ***3*** times per week for 1 hour.

Classes were included: warm-up, strength training was conducted according to the scheme: Monday – hands, Wednesday – legs and Friday – the whole body; high intensity cardio trainings according to the Tabata protocol with 3 sets for 12 minutes and stretching. Tabata training is a high-intensity interval training, the goal of which is to perform the maximum number of movements in minimum amount of time. High-intensity Tabata workouts significantly speed up the metabolism and cause the body to be active.

In addition to strength and high-intensity cardiovascular training the rehabilitation complex included lymphatic drainage massage, diet therapy with a calorie deficit and Maxim national healing drink, containing mostly fiber, was used for snacking. The complex developed by the rehabilitation is filed for patenting as a way to correct body weight and shape.

The following methods have been used in this study:

1. Standard clinical and laboratory examination (complete blood count, determination of sugar, cholesterol, and blood pressure monitoring).

2. Somatometric measurements (measurements of height, weight, calculation of body mass index, waist circumference, thighs, buttocks, and shoulder).

3. Determining the thickness of the skin folds on the abdomen, chest, back, hip and shoulder an electronic digital cetac-100 calipers were used with 1 mm of error bar.

4. Determination of body composition using the ABDS-01 "Medass" bio impedance analyzer with the following parameters: basal metabolic rate, body mass index, fat mass, lean mass, active cell mass, musculoskeletal mass, specific (normalized to the surface area of the body) basal metabolism, total body water, extracellular fluid volume, as well as body fat percentage.

The study was performed twice: before the start of the rehabilitation course and upon its completion in a month. The results were processed using Excel and SPSS variation statistics computer programs for parametric and non-parametric indicators using Student's t-test for parallel distribution. Differences between the compared values were considered statistically significant at a significance level of $p < 0.05$.

A monthly rehabilitation course led to significant weight loss in all three groups. This training scheme has reduced fat mass and added muscle.

Results of research and their discussion

A monthly rehabilitation course led to significant weight loss in all three groups. This training scheme has reduced fat mass and added muscle.

Table 1 is showed the changes after the course of power and high-intensity loads among healthy women of reproductive age.

Table 1

Dynamics of changes after the course of power and high-intensity loads among healthy women of reproductive age (control group)

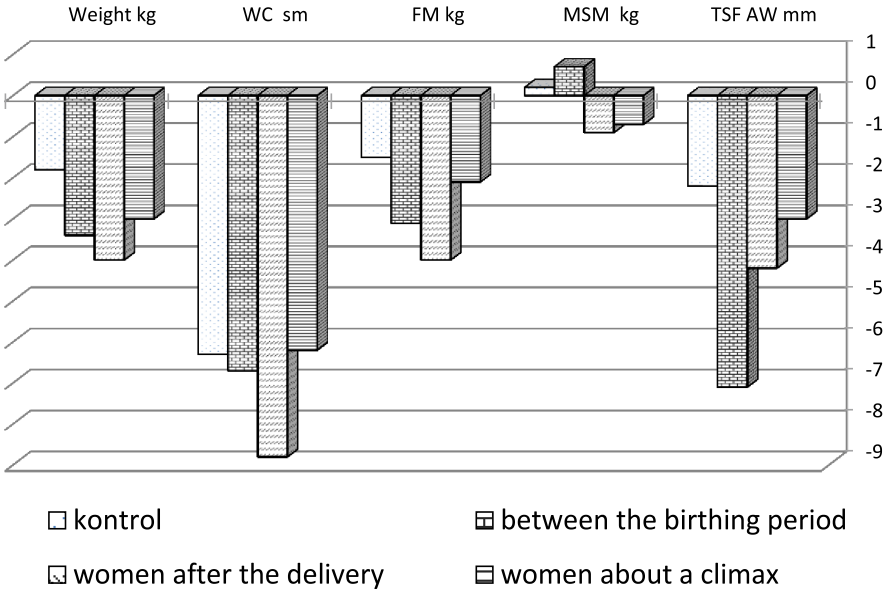
Research points	Weight kg	BMI	WC sm	BC sm	FM kg	MSM%	TSF AW mm	TSF T mm	TSF B mm	SME kcal/sq.m/ days
Initial	57,1	21,95	76,8	93,6	26,4	48,2	19	8,1	13,5	840
aftertrainings	55,3	21,03	70,5	91,8	24,9	48,4	16,8	6,5	11,1	844
Difference Δ	1,8 * ±0,5	0,92 ±0,4	6,3 * ±1,1	1,8 ±1,1	1,5 * ±0,6	+0,2 ±0,2	2,2 * ±0,6	1,6 ±0,5	2,4 ±0,5	+4 ±1,6

Note: BMI – body mass index, WC – waist circumference, BW – buttock circumference, FM – fat mass, MSM% – musculoskeletal mass relative, TSF AW – the thickness of the skin fold on the anterior abdominal wall, TSF T – the thickness of skin folds on the thigh, TSF B – the thickness of the skin fold on the back, SME – the specific main exchange. Asterisk * – difference with baseline level reliably, $p < 0.05$

Table 2

Dynamics of changes in the studied parameters after the health course among women with alimentary obesity in the off-period (group 1), post-partum period (group 2), in climacteric period. (group 3)

group		Weight kg	BMI	WC sm	BC sm	FM kg	MSM%	TSF AW mm	TSF T mm	TSF B mm	SME kcal/sq.m/days
1	before	75,5	29,66	91,3	103,9	29,3	45,2	34,5	17,1	25,5	823,6
	after	72,0	28,1	84,6	102,1	26,2	45,9	27,4	11,3	20,6	835,8
	Δ	-3,45* ±0,5	-1,56 ±0,4	-6,7 ±1,1	-1,8 ±1,1	-3,1 ±0,6	+0,7 ±0,3	-7,1 ±0,6	-5,8 ±0,5	-4,9 ±0,5	+12,2 ±2,8
2	before	67,8	27,7	87,2	98,8	25,0	45,1	30,6	13,6	22,0	838
	after	63,6	26,0	78,4	97,8	21,0	46,0	26,4	8,6	18,2	859
	Δ	-4,2 * ±0,5	-1,7* ±0,4	-8,8* ±1,0	-1,0 ±1,1	-4,0 * ±0,7	-0,9 ±0,4	-4,2 * ±0,6	-5,0 * ±0,5	-3,8 * ±0,5	+21 * ±2,9
3	before	79,2	30,6	97,0	107,2	31,4	43,7	36,2	18,2	28,8	846
	after	76,2	29,4	90,8	104,6	28,7	44,4	33,2	13,4	26,4	826
	Δ	-3,0 * ±0,5	-1,2 ±0,5	-6,2 ±1,2	-2,6 ±1,1	-2,7 ±0,7	-0,7 ±0,4	-3,0 ±0,6	-4,8 ±0,6	-2,4 ±0,5	-20 ±2,8



Summary weight changes after a course of power and high-intensity loads among the 4 study groups

According to the Table 2, the best dynamics (-3.45 ± 0.4 kg) was observed in women at post-partum period. The dropped weight by women of per climatic age was also significant, but somewhat less pronounced (-3.0 ± 0.4 kg). In a healthy women dropped weight as a result of the health program also was turned out to be reliable (-1.91 ± 0.4 kg), although initially they had a small mass. Weight loss occurred due to fat mass, which in 1 and 2 main groups decreased by -3.2 ± 0.5 kg and -2.62,±0,5 kg, respectively ($p < 0,05$).

Chart shows that effective weight correction is possible with the use of strength and high-intensity training at any age.

Clinical and laboratory studies have shown that in all women with alimentary obesity who had abnormal blood pressure, blood sugar, cholesterol and LDL, after the rehabilitation course, the indicators returned to normal.

Conclusions

The use of the described comprehensiverehabilitationprogram with strength and high-intensity workoutsprovides evidence-based instrumental on its effectiveness, which allow us to recommend this program for helping to obese patients and healthy people wishing to lose their weight and maintain longevity of their life.

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OPTIMIZATION OF PREOPERATIVE PREPARATION OF PATIENTS WITH BILATERAL PULMONARY TUBERCULOSIS

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To develop a preoperative preparation method of patients with bilateral pulmonary tuberculosis and to prove its advantages in comparison with the standard procedure. The study included 44 patients with bilateral fibrous-cavernous pulmonary tuberculosis. The patients were divided into two groups. The treatment group included 20 patients in the preoperative preparation of which the retrosternal lymphotropic antibacterial therapy developed by us was additionally included. In 24 patients, the preoperative preparation, including its antibacterial part, was carried out according to the standard procedure. The complex clinical observation of patients with bilateral cavernous tuberculosis showed that the use of the retrosternal administration route of chemotherapeutic agents for 28.6 ± 1.2 days allowed to achieve a significant effect in 39.8 % ($p = 0.014$), and partial effect in 51.1 % of patients. The medicinal effect was not observed in 9.1 % of patients ($p = 0.008$). When using the conventional method of preoperative preparation for 56.5 ± 1.3 days, which included oral administration of Isoniazid, the obtained results were significantly worse, as follows: significant clinical effect was 11.7 %, partial clinical effect was 40.5 %, and no effect was 47.8 %. The use of retrosternal administration route of chemotherapeutic agents in patients with bilateral fibrous-cavernous pulmonary tuberculosis as a part of preoperative preparation allows to achieve a significant clinical effect in almost 40 % of patients, which is 3.4 times more often than in the control group; herewith, preparation time for surgery decreases by a factor of 1.8. The high confidence of the results obtained ($p < 0.05$) confirms the need for more effective chemotherapy in the preoperative period and, at the same time, the insufficiency of the conventional methods of antibacterial treatment in the preoperative stage in patients with bilateral destructive pulmonary tuberculosis.

Keywords: tuberculosis, preoperative preparation, lymphotropic therapy, bilateral pulmonary tuberculosis

Surgical treatment of patients with bilateral pulmonary tuberculosis caused by specific fibrous and destructive changes in the lungs, MBT drug resistance and reduced functional respiratory reserves requires special preoperative preparation [1]. Maximum suppression of the Mycobacterium tuberculosis population and a decrease in the activity of specific inflammation are the main goals [2]. The key to successful surgical treatment of patients with bilateral cavernous lung disease is the stabilization of the tuberculous process before the operation. The severity of a specific inflammatory process affects not only the surgical tactics, but also the prognosis of surgical treatment [3, 4].

Most foreign surgeons recommend the implementation of early surgical interventions because long periods of preoperative preparation against the background of ongoing bacterial excretion, the formation of irreversible destructive changes significantly increase the risk of unsuccessful results of surgical treatment [5–7]: in 10-month preoperative preparation, 8 % were unsatisfactory the results of [8, 9], with a 14-month – 26.6 % [10].

As a rule, standard chemotherapy is carried out by taking 4 to 5 anti-tuberculosis drugs within patients with bilateral pulmonary tuberculosis during preoperative preparation, the expected effect is the clinical stabilization of the tuberculosis process. The reasons that counteract the achievement of the result is the low efficiency and the long duration of this method of preoperative preparation involving the administration of tablets. The reasons that counteract the result achievement is the low efficiency and the long duration of this method of preoperative preparation involving the tablets intake. Furthermore, there is a low bactericidal concentration in case of peroral intake (due to the loss of their activity under the influence of the gastrointestinal tract and inactivation in the liver). Thus, the creation of high concentrations of drugs in the patient's blood is impossible due to their rapid inactivation, they do not create a depot in the lymph nodes of the lung root and mediastinum. Moreover, the oral route of drug intake involves long-term chemotherapy (60 – 90 days), which is not consistent with the goal of reducing the period of preoperative preparation [11].

The method of preoperative preparation of patients with bilateral pulmonary tuberculosis is used, the introduction of water-soluble forms of anti-tuberculosis drugs is performed retrosternally by puncture of the retrosternal space from the yugular fossa, which allows to create a depot in the retrosternal tissue. The method has several disadvantages, the main of which is the fact that the needle is inserted into the retrosternal space blindly, which significantly increases the risk of injury to the mediastinal pleura, the development of pneumothorax, and damage to the v. brachiocephalica sinistra Puncture of the retrosternal space from the jugular fossa does not achieve lung root level and doesn't create a depot of drugs in this particular

area, which, in fact, is the goal of lymphotropic therapy. In addition, the implementation of this technique requires systematic puncture of the retrosternal space every day, which significantly increases the risks described above with the duration of preoperative preparation up to 45 days. In view of this we have developed a new method of preoperative preparation – retrosternal lymphotropic therapy.

Materials and methods of research

The study included 44 patients with bilateral fibro-cavernous pulmonary tuberculosis. Patients were divided into 2 clinical groups. The first main group included 20 people, in the preoperative preparation of which the retrosternal lymphotropic antibacterial therapy developed by us was additionally included. Preoperative preparation, including its antibacterial part, was carried out according to standard methods within 24 patients. Selected clinical groups differed insignificantly ($p > 0.05$) by sex, age, number of comorbidities and nature of comorbidities.

Retrosternal lymphotropic therapy for the preoperative preparation of patients with bilateral pulmonary tuberculosis. The introduction of drugs through a retrosternal catheter

We developed a method of preoperative preparation of patients with bilateral pulmonary tuberculosis that is outlined as follows: in the position when patient is on the back, surface anesthesia of the xiphoid process zone of the sternum is performed with 6 ml of 1% lidocaine solution. A needle from the set for the central vein catheterization is injected retrotissually, it is held behind the sternum in the direction of the IInd rib behind the sternum. At the same time, hydraulic tissue preparation is constantly performed, pre-supplying a solution of 1% lidocaine as the needle is being held. When the end of the needle reaches the level of attachment of the IInd rib to the sternum, a guide is inserted through the needle, and the needle is removed. When the conductor installed this way, a catheter is inserted into the retrosternal space from the kit and guided to the level of the IInd rib, and then conductor is removed. The installed catheter is fixed to the skin with a separate suture (figure). Every day, 10 ml of a 5% solution of isoniazid, 1.0 amikacin or kanamycin, 5000 IU of heparin, 4 ml of a 0.5% solution of novocaine, 2 ml of a 2% solution of hydrocortisone with a total volume of 18 ml are injected through the catheter. The course of preoperative retrosternal lymphotropic therapy consists of 20 injections.

As criteria for the effectiveness of preoperative preparation, the reduction or elimination of symptoms of tuberculous intoxication, cessation of bacteria excretion, resorption of infiltrative foci, closure of decay cavities were taken into account. The introduction of microcatheters from the retroxifoidal region allows to avoid injuring v. brachiocephalica sinistra, which significantly reduces the invasiveness of the intervention, and the implementation of the technique of Seldinger helps to avoid injury to the pleura. The location of microcatheters at the level of the IInd rib with the introduction of anti-tuberculosis drugs allows to create their depot in the lymphatic system of the roots of the lungs, ensures the penetration of drugs into the lung tissue to the visceral pleura. The use of catheterization of the retrosternal space allows to create a high concentration of anti-tuberculosis drugs directly in the lymphatic system of the mediastinum and to obtain a bactericidal effect by daily administration of drugs, thereby reducing the time of preoperative preparation. In addition, the introduction of anti-tuberculosis drugs directly into the mediastinal tissue leads to the resorption of infiltrative changes and fresh foci in both lungs, greatly improving the condition of patients with bilateral lung lesions.

Results of research and their discussion

We studied the concentration of GINK in the blood by the method of T. V. Satirova (2010) [13] with a single oral intake of isoniazid at a dose of 10 mg / kg body weight and retrosternal administration of 10 ml of a 5% isoniazid solution within 20 patients with bilateral cavernous lung disease. After oral intake of isoniazid 600 mg 1 time per day, the concentration of the drug after 4 hours was 3.2 ± 0.3 μg / ml, after 8 and 12 hours – respectively 1.5 ± 0.2 and 0.17 ± 0.12 μg / ml. After 8 hours the concentration of the drug was close to the minimum bacteriostatic. With the retrosternal administration of isoniazid, after 4 hours, the

concentration was 6.1 ± 0.56 μg / ml, after 8 and 12 hours, respectively, it decreased to 2.6 ± 0.27 and 0.29 ± 0.1 μg / ml. Thus, with retrosternal administration, the rate of decrease in concentration (half-life) remained the same, however, the concentration of the drug was 1.7 times higher than when administered orally. During the retrosternal lymphotropic method of administration the depot GINK was created, its concentration was higher and maintained for a longer time. In addition, retrosternal administration of GINK did not require the use of high doses of pyridoxine to prevent the neurotoxic effect of the drug.

The analysis conducted during the study showed that the results of preoperative preparation depended not only on the duration of the disease and the clinical form of tuberculosis but also on the effectiveness of chemotherapy. In this regard, we isolated various degrees of the effectiveness of chemotherapy for preoperative preparation, depending on the clinical, radiological, laboratory and bacteriological picture of the disease before and after the treatment.

The pronounced effect of chemotherapy was noted with:

- absence of complaints and clinical manifestations of intoxication;
- stable normalization of body temperature and hemogram;
- reduction of the size of cavities or their transformation into thin-walled cavities according to x-ray data;
- closing of cavities of disintegration or the formation of caseous-necrotic foci in both lungs;
- abacillation.

The partial effect of preoperative preparation was characterized by:

- lack of complaints and intoxication;
- persistent normalization of body temperature;
- radiographic disappearance of infiltrative perifocal changes, partial resorption of dissemination foci, reduction of cavities and cavities of decay;
- abacillation or oligobacillus.

We regarded the similar result of specific chemotherapy as a partial effect of treatment, which allows to perform surgical intervention.

The lack of treatment effect consisted in improving the patient's overall well-being while maintaining individual symptoms of intoxication, radiologically stable picture with the presence of lung tissue destruction zones on both sides, as well as infiltrative changes and foci of dissemination; preservation of bacteria.

We considered the described condition as the absence of the treatment effect and the presence of an active, unstable destructive tuberculous process. Considering further treatment to be unpromising, an operation was suggested.

Comprehensive clinical observation of patients with bilateral cavernous lesion of the lungs showed that using the retrosternal method of administering chemotherapy for 28.6 ± 1.2 days made it possible to achieve a significantly pronounced effect in 39.8% (p = 0.014), a partial effect in 51.1% of patients. The treatment effect was significantly less common in 9.1% of patients (p = 0.008). When applying the generally accepted method of preoperative preparation, which includes inter alia, oral administration of isoniazid, significantly worse results were obtained for 56.5 ± 1.3 days: a pronounced effect – 11.7%, a partial effect – 40,5%, no effect – 47.8% (table 4.1).

Thus, the use of more intensive chemotherapy with the proposed method led to a reduction in the length of patients staying in the hospital before surgery by 1.8 times (p < 0.001) and to a significant improvement in the results of preoperative preparation (table).

The results of preoperative preparation of patients with bilateral cavernous pulmonary tuberculosis, depending on the method of chemotherapy

Chemotherapy method before surgery	Number of patients	The duration of preoperative preparation (days), M ± m	The result of preoperative preparation (P ± mp%)		
			Pronounced effect	Partial effect	Lack of effect
Standard oral chemotherapy	24	56,5 ± 1,3	11,7 ± 1,1	40,5 ± 2,7	47,8 ± 2,3
Retrosternal chemotherapy + standard chemotherapy	20	28,6 ± 1,8	39,8 ± 1,2	51,1 ± 2,4	9,1 ± 1,3
p		p < 0,001[2)]	p = 0,014[1)]	p = 0,199[1)]	p = 0,008[1)]

The level of differences significance between chemotherapy methods before surgery:
1) by criterion 2 – Pearson;
2) by one-way analysis ANOVA

For effective preoperative preparation it is necessary to conduct pathogenetic and symptomatic therapy aimed at correcting the main parameters of the body's vital activity and eliminating functional disorders of all organs and systems in addition to conducting specific anti-tuberculosis therapy in accordance with accepted standards. The main directions of such treatment were:

– correction of the acid-base state;
– correction of water and electrolyte balance;
– correction of protein and carbohydrate metabolism;
– correction of anemia;
– correction of hemostasis;
– detoxification therapy;
– elimination or reduction of signs of pulmonary and heart failure;
– correction of intestinal dysbiosis;
– hepatotropic therapy;
– vitamin therapy with the use of multivitamin preparations and complexes with a high content of vitamins;
– carrying out rehabilitation PBS in the presence of endobronchitis;
– treatment of comorbidities.

Conclusion

As a result of the conducted research, it was established that the use of the retrosternal method of chemotherapy in patients with bilateral fibrous-cavernous tuberculosis allows to achieve a pronounced effect of preoperative preparation in almost 40% of patients, which is 3.4 times more often than in the comparison group; at the same time, preparation time for the operation is reduced by 1.8 times. The high reliability of the results obtained ($p < 0.05$) indicates the need for more effective chemotherapy in the preoperative period and at the same time the insufficiency of the standard methods of antibacterial treatment in the preoperative period in patients with bilateral destructive pulmonary tuberculosis.

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ECOLOGICAL SELF-EDUCATION OF ADULTS AS AN ELEMENT OF SUSTAINABLE DEVELOPMENT

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The article highlights the importance of environmental education in ensuring the sustainable development of the country's economy and contribution to the achievement of sustainable development goals. The importance of environmental education for adults and the availability of its receipt is emphasized. The importance of these issues in the system of strategic planning of the Russian Federation, the role of specially protected natural territories in the formation of environmental thinking is described. The problematic aspects related to the mechanism of environmental education, including depth of study of these issues in the federal state educational standards are revealed. The directions and forms of adult self-education on environmental education and improving environmental culture are shown.

Keywords: sustainable development, self-education of adults, environmental education, standards, environmental protection, environmental management, environmental safety

The ecological self-education of an adult is a significant component of the general system of ecological education.

According to the Federal Law of December 29, 2012 No. 273-FZ "On Education in the Russian Federation" (hereinafter referred to as Law No. 7-FZ), education is a single purposeful process of education and training, which is a socially significant benefit and is carried out in the interests of the individual, family, society and the state , as well as a set of acquired knowledge, skills, abilities, values, experience and competence of a certain amount and complexity for the purposes of intellectual, spiritual, moral, creative, physical and (or) professional development of a person, satisfying creating his educational needs and interests. One type of education is additional education, which, both for children and for adults, is aimed on shaping and developing the creative abilities of children and adults, meeting their individual needs for intellectual, moral and physical improvement, developing a culture of healthy and safe lifestyle, health promotion, as well as the organization of their free time [1].

Environmental education is a process of training, education, personal development and population, self-education and accumulation of experience, aimed at the formation of value orientations, behavioral norms and special knowledge on environmental protection, environmental management and environmental safety, implemented in environmentally competent activities [2].

The relevance of environmental self-education for adults is of particular importance for ensuring the sustainable development of the Russian economy. Based on the principles described in the UN Conference on Environment and Development (Rio de Janeiro, 1992), sustainable development implies a balanced solution of socio-economic problems and the problems of preserving a favourable environment and natural resource potential in order to meet the needs of the present and future generations of people. The need for a gradual transition of the Russian Federation to sustainable development was first voiced at the state level in 1996 [3].

Sustainable development includes three types of assets: physical, natural and human capital [4, p. 82]. Accordingly, indicators of sustainable development include three blocks relating to the level of economic development, environmental well-being and quality of life. The main indicators characterizing the quality of life include the level of knowledge and educational skills. The Declaration on Environment and Development, adopted by the United Nations Conference on Environment and Development, proclaims that at the national level everyone should have appropriate access to information relating to the environment. [5].

Among the United Nations Member States in 2015, the Sustainable Development Goals (SDGs) include a goal of providing inclusive and equitable quality education and encouraging lifelong learning opportunities for all (goal 4). This goal includes the goal to ensure that by 2030 all students acquire the knowledge and skills necessary to promote sustainable development, including through training on sustainable development and sustainable lifestyles, human rights, gender equality, promoting a culture of peace and non-violence, citizenship of peace and awareness of the value of cultural diversity and the contribution of culture to sustainable development [6].

Objective: analysis of the existing system of adult environmental self-education and

identification of ways for its development to ensure the possibility of achieving the SDGs.

Research methods: study, analysis and systematization of existing regulatory legal acts and other documents and materials on research issues.

Results of research and their discussion

Issues of environmental education occupy an important place in the strategic planning documents of the Russian Federation.

As determined by the Fundamentals of the State Policy on Environmental Development of the Russian Federation for the period until 2030, approved by the President of the Russian Federation on April 30, 2012, the formation of environmental culture, the development of environmental education and training is one of the tasks of state policy in the field of environmental development.

The National Security Strategy of the Russian Federation, approved by Decree of the President of Russian Federation No. 683 dated December 31, 2015, notes that the low level of environmental education and ecological culture of the population reinforces the effect of factors that have a negative impact on the state of environmental safety (such as depletion of natural resources as a result of their irrational use, the presence of a significant number of environmentally hazardous industries and environmentally disadvantaged areas characterized by a high degree of pollution and degradation of natural complexes, etc.).

The strategy of environmental safety of the Russian Federation up to 2025, approved by Decree of the President of the Russian Federation of April 19, 2017 No. 176, has established that one of the priority areas for solving the main tasks in the field of ensuring environmental safety is the development of a system of environmental education.

In the strategies of social and economic development of federal districts until 2020, environmental education and education of the population are considered as the basis of the country's environmental well-being.

In a message dated March 1, 2017, to the Federal Assembly of the Russian Federation, the President of Russian Federation stressed that the main priorities of the state, such as spatial development, investment in infrastructure, education, health care and the environment, new technologies and science, economic support measures, promotion of talent, youth – everything is intended to work for one strategic task which is the breakthrough development of Russia.

According to the Decree of the President of the Russian Federation of 07.05.2018 No. 204 "On the national goals and strategic objectives of the development of the Russian Federation for the period up to 2024", the goal of ensuring the global competitiveness of Russian education and the entry of the Russian Federation into the 10 leading countries by the quality of general education.

The federal law of January 10, 2002 No. 7-FZ "On Environmental Protection" (hereinafter referred to as Law No. 7-FZ) organizes and develops the system of environmental education, education and formation of ecological culture are referred to the basic principles of environmental protection [7]. According to Article 71 of Law No. 7-FZ, a system of general and integrated environmental education is established for the purpose of forming an ecological culture and vocational training of specialists in the field of environmental protection, which includes general education, secondary vocational education, higher education and advanced vocational education of specialists, and also the dissemination of ecological knowledge, including through the mass media, museums, libraries, cultural institutions, nature conservation institutions, organizations, sport and tourism.

One of the key platforms for the dissemination of knowledge about the rational use of natural resources, environmental protection and environmental safety, sustainable development can be considered especially protected natural territories (SPNA).

The State Program of the Russian Federation "Environmental Protection" for 2012–2020", approved by the Government of the Russian Federation of April 15, 2014 No. 326, determined that increasing the role of civil society in environmental protection and preservation of biological diversity, the formation of environmental thinking, the environmental culture of citizens, as well as the creation of an effective system of environmental education and education on the basis of protected areas are among the main priorities and objectives of the state policy in the field of biodiversity conservation.

In the Concept of development of the system of protected areas of federal significance for the period up to 2020, approved by the decree of the Government of the Russian Federation No. 2322-p of December 22, 2011, one of the main directions of development of the system of protected areas is environmental education. These activities are intended to contribute to the increase in the level of environmental

culture of the population of the Russian Federation and to form an understanding of the conservation of biological and landscape diversity, the role of protected areas in solving these problems, as well as their place in the socio-economic development of the regions, which should ensure an effective public support of protected areas as national heritage sites.

The strategy of preserving rare and endangered species of animals, plants and mushrooms in the Russian Federation for the period up to 2030, approved by the Government of the Russian Federation of 17.02.2014 No. 212-p, among the main activities within the framework of the task of developing a responsible attitude to natural complexes among citizens and facilities, as well as to create conditions for their information and participation in decision-making in the field of conservation of rare and endangered species of animals, plants and fungi and the protection of such species, includes:

– the formation of public interest in the preservation of rare and endangered species of animals, plants and fungi, propaganda among the various categories of legal entities and individual entrepreneurs and citizens of the ecological, economic and cultural value of rare and endangered species of animals, plants and fungi;

– the contagion of knowledge about environmentally responsible methods of environmental management and the formation of interest and the need for active support by citizens of activities and actions aimed at preserving rare and endangered species of animals, plants and fungi;

– the inclusion of the conservation of rare and endangered species of animals, plants and fungi in the environmental component of the federal state educational standards of primary, basic and secondary (complete) general education;

– the preparation and implementation of additional vocational education and advanced training programs for teachers in biological and environmental subjects;

– the development of a system of training and advanced training for managers of organizations and specialists in the field of environmental protection, including the conservation of rare and endangered species of animals, plants and fungi;

– the formation of an environmentally responsible attitude among citizens towards rare and endangered species of animals, plants and fungi.

The integrated strategy for handling solid municipal (household) waste (MSW) in the Russian Federation, approved by order of the Ministry of Natural Resources of Russia dated August 14, 2013 No. 298, states that the task of developing a system of environmental, sanitary and epidemiological education, education and upbringing on the treatment of MSW in conjunction with other activities, it will ensure the achievement of the main goal of the integrated strategy for handling MSW in the Russian Federation – the prevention of the harmful effects of MSW on human health and the environment, as well as the involvement of waste components (organic matter, scrap metal, paper, glass and plastic containers, textiles, worn car tires, etc.), as an additional source of raw materials, semi-finished products, other products or products for the production of goods (products), performing work, providing services or for power production.

The formal system of environmental education is regulated by federal state educational standards. However, there are no such standards for additional adult education. There is also no single professional standard of university education in terms of environmental education.

Competences, knowledge, skills and abilities in the use of natural resources, environmental protection and environmental safety are included in federal state educational standards (for example, in the Approximate Basic Educational Program of Secondary General Education [8]), in professional standards that include relevant labor functions (for example, in professional standards "Environmental Safety Specialist (in Industry)» [9], "Specialist in the field of waste management» [10]).

At the same time, the main educational program aims to form the following personal results of its development:

– the readiness and ability to self-education throughout life, a conscious attitude towards lifelong education as a condition for successful professional and social activities;

– the formation of ecological culture, respect for the native land, the natural wealth of Russia and the world; understanding the impact of social and economic processes on the state of the natural and social environment, responsibility for the state of natural resources; skills and knowledge of rational nature management, intolerant attitude to actions harmful to the environment; gaining experience in green activities [8].

Analysis of the content of the state program of the Russian Federation "Development of Education", approved by Decree of the Government of the Russian Federation No. 1642

of December 26, 2017, showed that it does not provide a separate area (subprogram) or individual activities related to environmental education or adult self-education. It has only the direction "Development of additional education of children and the implementation of youth policy measures", which includes an event to create conditions for effective self-realization of young people, aimed at increasing the proportion of young people aged 14 to 30 who are involved in events held by executive bodies in the framework of the implementation of the state youth policy, youth and children's public associations enjoying state support, in total number of young people aged 14 to 30 years.

Law No. 7-FZ supplements environmental education with professional activities only, and does not disclose issues of environmental self-education for an adults that does not concern their professional activities.

The actual regulatory legal framework in terms of issues of environmental self-education for adults does not have detailed mechanisms for its implementation, formalized results requirements, and the necessary methodological and educational and methodological support.

The issue of creating in the interests of sustainable socio-economic and environmentally safe development of Russia a modern model of environmental education as a systemic process that has a cross-cutting, continuous and prestigious character throughout a person's life, with the coordination of goals, objectives and implementation mechanisms, is pending.

Additionaly, the leading experts in the field of environmental education point out the problem of the lack of education of the necessary level of training for the implementation of the modern environmental education model [11, p. 658], in connection with which the creation of a state order for training and raising the level of skills in this area is required.

Thus, the issues of environmental self-education of adults at the goal setting level are worked out, but the methodology, tactics and approaches to the implementation of the system of environmental self-education for adults require taking into account world trends in this area and the need to improve the environmental awareness and environmental responsibility of people to lay the ideology of sustainable development.

There must be a need in society to achieve a socially, economically and environmentally significant result, manifested in increasing a person's motivation to responsibly treat nature and to form a high level of ecological culture and a culture of healthy lifestyle inseparably linked with it.

Currently, the issue of developing the concept of integrated general environmental education is being worked out [11, p. 658-659].

The action plan for the Implementation of the Fundamental Principles of State Policy on Environmental Development of the Russian Federation for the period until 2030, approved by the order of the Government of the Russian Federation No. 2423-r dated December 18, 2012, is planned to develop by the Ministry of Education and Science of Russia by 2020 methodological, programmatic and educational support of the implementation of the State educational standards of primary, basic and secondary (complete) general education based on the Concept of General Environmental Education.

Article 42 of the Constitution of the Russian Federation guarantees everyone the right to reliable information about the state of the environment. In conditions of free and wide access to environmental information, an adult has all the prerequisites and opportunities for obtaining environmental education on his own, and, often, it is fairly accessible and does not require significant financial and time costs. You can find the necessary information in specialized literature, on the Internet, from the mass media, interacting with environmental organizations and public associations of the appropriate focus, participating in environmental activities, attending thematic lectures, seminars, museums, environmental education centers and environmental education departments of SPNA. Protected areas, field camps, volunteering, etc. or training in additional general education programs. For adults, these programs are of general developmental nature and, as a rule, special training is not required for their mastering. Any person is allowed to master without setting requirements for the level of education (unless otherwise stipulated by the specifics of the educational program being implemented) [1]. In postgraduate education, distance learning is especially popular, designed for a different number of hours.

It should be noted that there are initiatives to promote the ideas of sustainable development in the educational environment. For example, the pilot project "Interregional Network Partnership" Learning to Live Sustainably in a Global World: Ecology. Health. Security "launched in 2016 as part of the UNITWIN / UNESCO program; the project "Arctic Floating University", jointly implemented by the Northern (Arctic) Federal University. M.V. Lo-

monosov and the Northern Administration for Hydrometeorology and Environmental Monitoring of Roshydromet; Projects of the Non-Governmental Ecological Fund named after IN AND. Vernadsky, etc. [11, p. 661-690].

The ecological self-education of an adult in the field of sustainable development should include the issues of the impact of social and economic processes on the state of the environment; studying global and internal challenges and threats to environmental safety, civil rights and obligations on environmental issues, and the danger of waste to the environment; the use of measures to ensure environmental management and resource conservation, including the culture of using water, energy, other resources and materials in everyday life, developing practical skills and actions on the application of environmental knowledge in life situations (at home, in the store, in the street, in transport and etc.) and various fields of activity (public, financial, medical, etc.), including to minimize the amount of human waste.

Benefits for an individual from environmental self-education are obtaining new knowledge on environmental protection, environmental management and environmental safety, transformation of behavioral skills and value orientations, lifestyle changes and housekeeping aimed at minimizing resource usage (water, electricity, etc.), reducing the amount of household waste, the formation of a healthy lifestyle and proper eating habits, etc. In practice, this can bring quite obvious benefits in the form of revenues from the delivery of secondary raw materials, from reducing the cost of medical services, saving on utility bills, etc.

Conclusion

If the acquisition of environmental self-education by an adult becomes a mass phenomenon involving the younger generation in the process, this will help shape responsible consumption patterns in society and, through them, responsible production patterns, which is key to ensuring the transition to a green economy. In general, this will improve the quality of life of the population, including by minimizing health risks, will have a positive social and economic effect and will contribute to the achievement of the SDGs. Consequently, the state should both create conditions for stimulating environmental education and self-education of a person at all stages of his life, and ensure the availability of such education, as well as the quality of this education.

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PRACTICAL TRAINING OF STUDENTS IN THE FIELD OF SPECIAL EDUCATION – ACHIEVEMENTS, DIFFICULTIES AND FUTURE PERSPECTIVES

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This article discusses the practical training of students majoring in Special Education at Trakia University in the city of Stara Zagora. It reveals their positive attitude towards their practicum and awareness of its significance for their future careers. It presents a summary of the authors' views on the students' achievements in the development of outlines for teaching lessons and language therapy sessions with special needs pupils. The article discusses the idea of Zh. Stoykova and V. Katsarska to implement a new model that includes experienced special needs teachers and psychologists in the practicum supervision team. The current standards prescribe that such specialists almost entirely limit their participation to the theoretical training of students. Resources for improving the students' skills in the planning and conduct of practical sessions are explored, involving specific forms, content and methods to achieve this and to meet the increasing social demands regarding student training, rehabilitation and speech and language therapy. The article concludes that the positive attitude of the students towards their practicum can serve as an excellent foundation for this undertaking, along with their understanding of its significance for their future careers and their relatively high level of preparedness for working with special needs children.

Keywords: children and students with special educational needs, practical training sessions, lessons, speech and language therapy sessions, outlines for lessons and speech and language therapy sessions, resource used for correction of mistakes

The practical training of Special Education students is an integral part of the learning process in all accredited institutions of higher education that admit students in this field. The Faculty of Education at Trakia University in the city of Stara Zagora has been admitting students and training specialists to work with children and students with special educational needs since its founding in 2002. The necessary conditions to train such students have been established since the very beginning. A lot of positive experience has been accumulated and summarized over the years. At the same time, the demands of our society concerning the quality of student education, and their practical training in particular, have been on the increase. The higher requirements stem mostly from: the continuous in-depth study of the specific characteristics in the development of children and students with special needs and the findings concerning their significant and largely untapped potential, the improved options for comparing the outcomes of their training, rehabilitation and socialization in different countries, and the development of special education and its increasing integration with other scientific fields. In order to meet the rising demands of our society, the practical training of students needs to be explored further, analyzing its current state and the perspectives for the future. Proof of this can be found in the development and regular updates of the instructions for the organization and implementation of different types of practice – classroom observation, ongoing and pre-graduation teaching practicum, the inclusion of specific requirements in these instructions concerning the organization, form and content of the activity, the control and assessment process, the acquisition of key competences, etc. The respective facilities for practical training are also expanding. The selection of structures to be used for this purpose and on-site teachers and speech therapists is improving. To summarize, the focus falls on all aspects of this exceedingly complex process and the optimal utilization of all available resources. Practical training is becoming a question of present interest and an increasingly important part of specialist theory and research. Proof of the latter can be found in the publications of authors like N.M. Nazarova et al [1], Gadzhalova – Lefterova D. [2], Tsvetkova M. [3], Radulov Vl. [4], Trashliev R., E. Evgenieva [5], Karagyozov Iv., V. Katsarska [6], Katsarska V., Zh. Stoykova [7] and many others. Their works explore not only the present state of practical training, but also provide evidence for the need to discuss this topic within a new conceptual framework requiring the inclusion of as yet unused resources – team-based practicum management, including assistant and habilitated instructors with high level training and experience, regular discussions of the observed lessons conducted by on-site teachers and students, and summarization of the results – in some cases they are "repeated" and in others they appear "unreplicable» [5], establishment of student support structures for critical situations [7] etc. This as yet underutilized resource aims to improve the results of the students' practice and encourage them to transform successfully their theoretical knowledge into practical skills, and, last but not least, it has a positive impact on the students' moti-

vation to pursue the complex and difficult, but socially significant profession of the special needs teacher and speech therapist.

The present study is also aimed at enhancing the teaching practice and improving the results of the students in the field of Special Education.

For that purpose, we analyzed 64 lessons and sessions, presented by students in the aforementioned field, conducted over the last five years [2012 – 2017] at the Special Needs School in Stara Zagora, the Resource Center, as well as the speech and language therapy offices at the Fourth, Fifth, Sixth and Ninth schools in the city.

Even though the two authors of the present research collected lesson plans and speech and language therapy session outlines over different timeframes, general findings and conclusions are presented below.

The types of outlines analyzed are presented in Table No.1.

Table 1

Analyzed sessions

Type of analyzed session	Number of sessions
Classroom lessons	22
Sessions at the Resource Center	17
Sessions at speech and language therapy offices	25
Total:	64

As seen in the table above, the types of analyzed sessions are not equal in number. Even though the differences in this respect are relatively minor, the three types of outlines will be analyzed separately based on their specific characteristics.

The more common mistakes have been identified and described for each type of outline, and they appear similar in practical terms. This can be explained with the students' difficulties in specifying precisely the topics, goals and tasks, as well as in selecting the linguistic materials and exercises for solving a particular task that are the most suitable for the children's needs.

Our observations, informal conversations with the students and the results of the analysis show that they generally subscribe to the idea that practical training is crucial for their future professional career. Our direct discussions with them, however, revealed that they want an increase in the number of hours dedicated to practical training, especially concerning their pre-graduation practicum.

All analyzed outlines were developed independently by the students, submitted in print and well structured.

The analysis of the outlines shows that they contain all the important structural elements – session topic, principles, goals, tasks, linguistic material, demonstration tools. The plan for the course and direction of the specific sessions is also provided. The necessary demonstration tools are available – toys, pictures, models, etc. This can be viewed as evidence of the well-developed skills of the university students to plan and prepare specific lessons and speech and language therapy sessions.

The observations and the analysis of the detailed course of the session, described by the students, also show a desire to create a pleasant and stimulating environment, to establish successful contact and communication with the children, as well as to properly select the linguistic and nonlinguistic means [gestures, fingertalk, body language, etc.] that meet the children's needs.

The positive aspects described above lend credence to the claim that in general students demonstrate adequate preparedness for working with children with special educational needs.

We appreciate the positive aspects of the planning the students performed and believe that on the one hand, they demonstrate a relatively high level of preparation, and on the other hand, what they have already achieved can serve as a successful basis for improving their skill in planning different types of sessions designed for children with special educational needs.

The analysis of the outlines presented by the students also showed some mistakes. The most common mistakes have been identified and described for each type of outline, and they appear similar in practical terms. This can be explained with the students' difficulties in specifying precisely the topics, goals and tasks, as well as in selecting the linguistic material and exercises for solving a particular task that are the most suitable for the children's needs.

Figure No.1 below presents the most common mistakes made in the development of lesson plans for students at the Special Needs School in Stara Zagora.

It is immediately obvious that the lowest percentage of mistakes are those connected with the formulation of the topic. This is prob-

ably due to the fact that the topics had already been formulated in the teachers' respective programs and syllabi. The few mistakes might be due to the students' lack of experience in adapting certain topics to the needs of children with a more serious form of intellectual disability [moderate or moderate to severe]. For example, the topic of one lesson was formulated as "Animals", while the lesson plan only covered the "Domestic Animals" topic.

Students find it more difficult to achieve consistency between the topic and the goals of the planned lesson. One examples of this is the following: The topic of the lesson plan is "Fruits", while the goal derived from it is "Fruits that grow in our country". This transforms the goal into a specification of the topic. In agreement with the ideas of Prof. R. Trashliev and E. Evgenieva [5] that preparation is an ongoing process for teachers in both mainstream and special needs schools, we firmly believe that the students who made mistakes will be able to overcome them and perform just as well as the other 80 % who achieved consistency between goals and topic, as long as they are they receive the proper encouragement and support from the teaching staff.

What is more troubling is the fact that approximately one-third of the analyzed lesson outlines included the use of linguistic material that was not precisely selected for the needs of students with intellectual disabilities. It goes without saying that they need to learn new words and phrases within the context of the topic covered by the lesson, but it is not acceptable to use vocabulary with low communication value for this specific category of students. There is a good reason why specialists place so much emphasis on the practically oriented training for these children. Understanding expressions [under the aforementioned topic] such as "People have cultivated this fruit", "hybrid seed", "fiber-rich" is a difficult task for primary school children with special needs. Such expressions can be replaced with others that would be less problematic for the children to grasp, or in some cases, they can be completely omitted. As they go on to practice the complex and difficult teaching profession, most of the university students will learn on their own to avoid such mistakes, but it would be much easier to have the teaching staff at the school help them to prevent these problems in the first place.

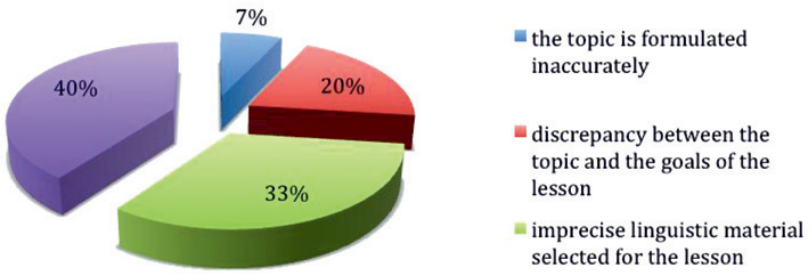

Fig. 1. Common mistakes in the lesson plans developed for students at the special needs school

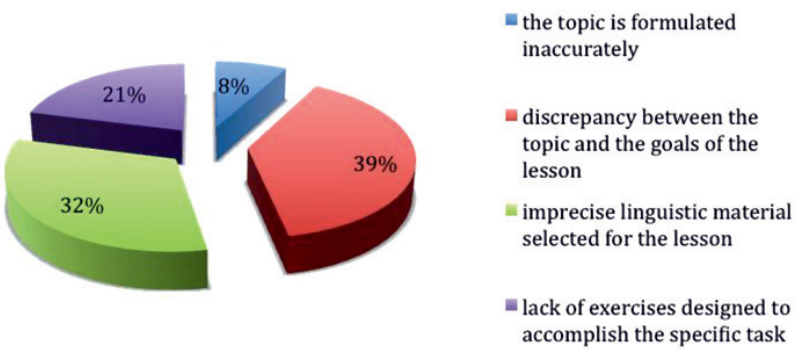

Fig. 2. Common mistakes at the Resource Center

This also applies to another type of mistake – the lack of exercises for the accomplishment of a specific task. For instance, in one case the formulated task was to identify and specify the colors and shapes of different types of fruit, but no exercise connected with this task was included in the planned activities for the lesson.

Similar mistakes were found in the outlines for sessions with special needs children at the Resource Center. They are depicted in Fig. No. 2.

These outlines are also characterized by fewer mistakes related to the topic formulation. In this respect, there are minimal differences in comparison with the situation at the special needs school [one percent], but they still exist. The explanation for the relatively low number of mistakes of this type is similar to the one for the session plans for children at the special needs school – it is the presence of topics already developed by the resource teachers.

The second most common type of mistake relates to the planning of exercises corresponding to the specific task to be performed for the purpose of achieving the main goal of the session. In comparison with the mistakes of the same type made in the planning of lessons at the special needs school, their frequency is approximately half of what we saw at this institution, but they still should not be overlooked. Evidence supporting that last statement can be found in the lack of exercises that correspond to tasks with a significant corrective function.

The imprecise linguistic material constitutes the majority of the mistakes made at the Resource Center. The most common subtype is the use of words and expressions connected with the topic that are characterized by low communication value for the children, as well as ones they find difficult to understand. Some of the important functions of the Resource Center are to expand the active vocabulary of the children and to enable understanding of the lesson content. Bearing this in mind, it should be obvious how important it is to focus on avoiding such errors.

A surprisingly large proportion of the mistakes are connected with inconsistency between the topic and the goals of the session. This observation can be discussed not only in the context of the individual planned session, but also from the perspective of the entire series of sessions covering a particular topic. To some degree, students still lack the necessary skills to envision the whole cycle of sessions on a specific topic and thus to plan the respective goals and tasks for each of them. It would very useful to observe their skill level in this respect at different stages of their training. The results would probably lead to the development of different forms and means of training that would produce better results in theoretical and practical terms.

The session plans developed for working with children and students at the speech and language therapist's office are also characterized by certain mistakes [Fig. No.3].

The percentage of mistakes concerning the topic formulation is much higher compared to the other two categories of outlines discussed above. In almost one-third of the cases, the topic is inaccurately described. Often it simply reflects the goal of the session. Most commonly, such mistakes can be found in the sessions developed for improving the children's pronunciation. A typical example of this type of mistake is formulating the topic of the session as "Automation of the "s" sound".

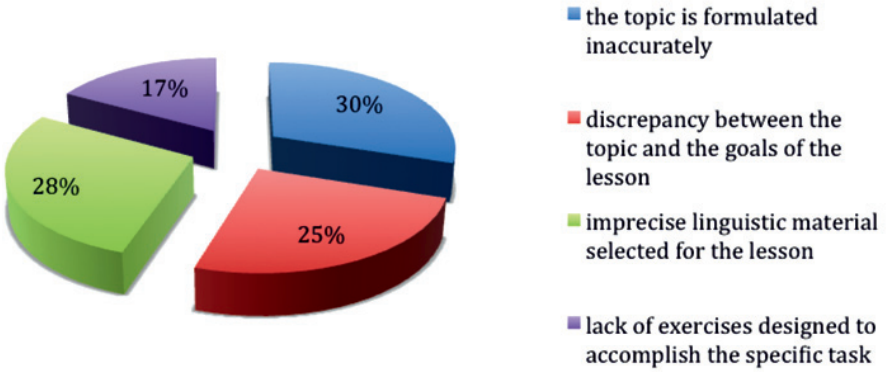

Fig. 3. Common mistakes at the speech and language therapy office

The therapy session plans are often plagued by inconsistency between the primary goal and the topic of the session. In a session on the aforementioned topic [«Automation of the "s" sound»], the main goal is formulated as follows: "Correct pronunciation of the "s" sound". The discrepancy is obvious and the topic and goal cannot be distinguished from one another.

It is a common occurrence to find imprecisely selected linguistic material as part of a session plan. This type of mistake usually relates to the low communication value of the linguistic material chosen for the young children. There are many examples of this. For instance, in a session outline for the correction of the "sh" sound in young children, in addition to appropriate and common vocabulary such as the Bulgarian words for "neck", "hand", "sew", "chocolate" and others, there are less common and useful words like „furcoat", "overshoes", "mill-wright", a colloquial word that means "doing the housework", etc.

In one-quarter of the session outlines for the speech and language therapy office, there are mistakes related to the lack of exercises for accomplishing the specific task. A typical example of this is the absence of exercises corresponding to the tasks of improving the auditory gnosis, the language-related visual perception skills of children with impaired hearing, the fine motor movement, the letter-sound knowledge, etc.

The analysis of the mistakes and the observations in general point to the need for improving both the theoretical and the practical training of the university students.

With regard to theoretical knowledge, it is important to emphasize and explain more clearly the meaning of the goals and tasks of each type of session, to clarify to the students their interrelationship and relative individual function, to seek the correlation between them, as well as between the place and role of the individual exercises with regard to the general goals and tasks.

It is recommended that such mistakes are discussed during seminar and practical training sessions in order to help the students understand why they should not be included in lesson plans and outlines and how to avoid them in their practice.

We agree with Zh. Stoykova and V. Katasrka [7], who espouse the idea that a model needs to be implemented to include experienced special needs teachers and psychologists as part of the student practicum supervisor team. The existing standards of higher education involve these specialists for the most part only in the classroom training of university students

Resources for improving the skills of the student body in the planning and conduct of practical sessions can be found in the students themselves, as well as in their professors and instructors. It is simply a matter of placing the emphasis on this extremely important question and seeking specific forms, content and methods to solve the problem successfully in order to meet the increased demands of society regarding student training, rehabilitation and speech and language therapy. The positive attitude of the university students towards their practical training can serve as an excellent foundation for this undertaking, along with their understanding of its crucial importance for their future professional career and the relatively high level of preparedness they demonstrate when it comes to working with special needs children.

And last but not least, it is important to point out the students' wish for more hours of practical training, which they expressed on many different occasions. It is imperative to fulfil their desire just based on the presence of many different subgroups of special needs children and the need for specific activities tailored to their needs and the individual characteristics of each child.

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MAJOR UNITS IN THE NOTION OF PRAGMALINGUISTICS

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The article is devoted to the study of the pragmalinguistics in line with anthropocentric tendencies. At present, pragmatics is an inter-sectoral branch, as well as a wide range of logical-philosophical, sociological, psychological, ethnographic, and even cybernetic trends along with all aspects of linguistics. The general theoretical objectives of pragmatics include the development of cognitive modeling, memory modeling, and the model of communicative interaction and models of language use in specific socio-cultural situations. And the form of pragmalinguistics is formed according to the requirements of the structural system of the language, but it is possible to distinguish between additional values, depending on the circumstances of the relationship. Pragmalinguistics studies aspects of speech. So, to deliver a particular point of view, a person performs a certain action oriented towards the addressee. This is directly related to the purpose and intent of the speaker. In pragmalinguistics it is called speech acts. Thus, the basic concepts that make up the terminological device of this science are: communicative, addresser, addressee, purpose-and-speech, and presupposition.

Keywords: presupposition, speech act, language interaction, communicative situation, addresser, addressee, intention, contingency

One of the most dynamically developing directions in modern linguistics is pragmalinguistics. The researchers interpret various aspects of pragmatic linguistics. According to Y.D Apresyian, the pragmatics is speaker's (1) true nature; 2) the content of the communication; 3) written convention of the addressee in any language unit (lexema, affix, grammatical syntax). In general, the definitions of linguistic pragmatics in scientific literature can be grouped as follows: 1) explanations that overpass human factor; 2) the definitions of the functional aspect of linguopragmatic researches, their contextual condition: "science of language use", "language in context"; 3) definitions that focus on studying the effectiveness of language interaction in the context of communicative interaction; 4) definitions that distinguish an interpretive aspect of the speech that is reflected in any communicative context. The interpretation here is pragmatic meaning of the word [1,78].

Materials and methods of research

Pragmatics means "action" in Greek. Hence, its subject is the language in use. In philosophy and psychology, this term is used to refer to action, practice. Linguistic pragmatics is a language that is studied as a means of "use within itself, not for itself". At present, pragmatics is an inter-sectoral branch, as well as a wide range of logical-philosophical, sociological, psychological, ethnographic, and even cybernetic trends along with all aspects of linguistics. The general theoretical objectives of pragmatics include the development of cognitive modeling, memory modeling, and the model of communicative interaction and models of language use in specific socio-cultural situations. In fact, pragmalinguistics is not yet fully formulated as a science. However, it is clear that its language presence is a research oriented one. This is the need to put human factor first in linguistic research. This idea comes from the idea that it begins with semioticss. Semiotics (Greek symbol) is a science discipline that studies the structure and use of various character systems in the storage and delivery of information. It includes systems that relate to human society, nature, or human beings. In general, knowledge of the language is based on its system structure, i.e. acquisition of grammatical rules, understanding of lexical meaning of words, ability to compose sentences on the basis of syntax, etc. is understood. This is a requirement for traditional linguistics.

And the form of pragmalinguistics is formed according to the requirements of the structural system of the language, but it is possible to distinguish between additional values, depending on the circumstances of the relationship. *Well, this room was light, yes?* There are a number of things to consider: Firstly, the speaker has never been in this room; secondly, that the other rooms are darker and dingy; thirdly, the speaker wants to make a positive impact on the house owner; fourthly, the speaker takes an interest in the opinion of the house owner, etc. Likewise, the phrase *He goes to the race too* is that the speaker is disrespectful or surprised; the unexpectedness of which is that he disagrees with him. If we changed that phrase to the race, all of the above values would imme-

diately become relevant. This means that the speaker's attitude toward him is neutral. Then only particle *too* is loaded with pragmatic push apart from its grammar service. Therefore, the listener should be aware of the communicative situation in order to understand it correctly. Also, inexpedient tools are very helpful in understanding the pragmatic meaning of each speaker in oral speech. At first glance, speeches in the sense of a straight line with no additional tone can affect the listener. These are issues that arise in connection with the pre-existing situation. At the moment of the word, nothing extra may be meaningless, but only one word may refer to the whole of the communicative relationship. Let's take an example from the narrative "My name is Kozha" written by B. Sokpakbaev: Young teacher Maikhanova tells the old teacher, "You are big head of science now." The person who is not aware of the content of the story does not understand the meaning of these words. Indeed, it means that the elderly teacher's advice on forgiveness of the poor teacher is inappropriate and disagrees with him. Rakhmanov's words "I could not lead the way to Sultan", which regretted that a boy named Sultan could not get on well with the others at school and he had left the school. An old teacher blames himself for this situation. And a young teacher who understands a disadvantaged child as the most effective way to drop out of school is fully supported by the same sentence. The problem with the long history of the Sultan was based on a single candle burning compound. A few months later, the teacher fully reflects the past, using a single word. Here's the point in the pragmatism of the term presupposition. That is, Maykhanova's unanimous word cannot have any effect on the person who is unaware of the previous part of the work. And its full pragmatic sense can only be understood by a person who is aware of the prior communicative situation. Pragmalinguistics studies these aspects of speech. So, to deliver a particular point of view, a person performs a certain action oriented towards the addressee. This is directly related to the purpose and intent of the speaker. In pragmalinguistics it is called speech acts. Thus, the basic concepts that make up the terminological device of this science are: communicative, addresser, addressee, purpose-and-speech, and presupposition.

Certain situation in which every speech takes place is the situation. It is known that the person needs to speak and communicate with another person. Such a set of circumstances constitutes the notion of intrinsic situation. In the works of pragmalinguists, there are various definitions of affiliation. We find one of them in the book N.I. Formanovskaya: The contingency is a complex that reflects the external conditions of communication and the internal state of the participants in the form of speech and discourse [2,12]. V.G. GAK, I.P. Susov, K.A. Dolinin, and other researchers' work, the relationships are different, but they can be summarized as the following key components:

– partners and associates in the contingency;
– participatory approach (intention);
– the conditions of contingency (reason, etc.)

Results of research and their discussion

The contingency can be summarized as follows: "I – you – here – at the moment – for the following reason – through the following message or sentence -tell you» [3]. This sequence should be considered conditional. According to each situation, the sequence changes. Generally speaking, speech consists of several stages: stage 1 – preparation for the speech. Here, the speaker is trained internally, assessing what he / she is going to do to convey his / her thoughts, intentions, motives, and previous similar situations. Particularly, in the case of official co-operation, the partner's age, gender, service, etc. Taking into account the peculiarities of each individual, he / she interprets every word; in stage 2 the speech is structured, i.e. the addressee mimics the phrase, using the words it finds most effective for the most accurate and effective manner of its own approach; during the transition to external words, the built-in speech is sounded or sent to a letter in stage 3. In some instances, the speaker may not be able to extract the entire oral presentation. This makes it difficult for the surrounding audience to understand that the address of this address is irrelevant and distorted. In general, you can see the result of the speech by looking at the address of the addressee. That is, it is possible to say that speaking at the moment of feedback has already taken place. For such a connection, the word must be taken correctly. In other words, the process of adoption consists of several stages: 1) switching from acoustic or graphic code to the internal word code (hearing or perceiving audio or reading messages); 2) analysis and analysis of syntax structures, graphic forms; 3) understanding the general direction of the speech; 4) understanding the meaning and meaning of the speech; 5) evaluation of the received information (content of the speeches, ideas, views and position of the speaker); 6) understanding the reason for the choice of language tools.

It is known that the communicative interaction interacts during the contingency. This can also be divided into several stages: establishing contacts, continuing and stopping communication. During the first set-up period, language and patterns of greetings are used; at the second stage, attention will be paid to issues that are important for stakeholders. Their interests are clearly defined and emotionally discussed, and the participants express their affection for each other. This is a general scheme of our involvement. In fact, the presence can be shorter. For example, in the informal situation, the first or third stage may even be ignored. Of course, it depends on whether the participants are acquainted, intimate, interested, or casual, temporary partners. The correct understanding or misinterpretation of the message delivered by one of the participants relates to several factors.

A combination of these conditions is called pragmatic context in scientific literature. Generally speaking, the content of the conversation type is explicit and confidential. All visible, direct observable explicitly covered. It can be conditionally divided into verbal and non-verbal. And the underlying or hidden context is not directly visible to the eye – the purpose, interests, motives, personality attitudes of participants – in particular the level of education, social status, specifications etc. The result of the speech depends on the results of these terms. The presence of a single type of contingency depends on its basic components. That is, the place and time of the communication is known to the participants, the peculiarities of speech and behavior of the addressee, presence of certain presuppositional properties (interests, interests, goals, knowledge) in the addressee; the message has a specific topic. Thus, the pragmatic context of the phrase is primarily the participants. Therefore, it is desirable to consider these participants as important components of the co-operation situation. We use the communicative approach instead of the term "intention" in pragmalinguistic literature. Firstly, J. Austin's talents were included in the word of enthusiasm. In general, the aspiration of the participants to express their own intensity, as well as the attempts to express their own mentality, forms the form of speech [4, 98]. In any case, intention is equivalent to pre-thought thinking. Linguistic interaction, usually involving phenomena, is influenced by events, facts, and things. In a word, it can be said to be an environment or external environment. In most cases, the need for communication between people arises from the situation in the environment. For example, if one of the participants thinks that the situation in the environment is uncomfortable, unpleasant or unpleasant; he will try to change the situation immediately. Such motivation is the basis for the intentional intention. In the scientific literature, this term is understood in the version of a collaborative intention (the intention of translating from Latin into the original meaning). Generally, the concept of intention began to be used in philosophical science. The concept of intent is understood as the initial stage of speech in psychology. Later, the word must be in the form of a verbal formulation. And in the linguistic researches, intent is understood as the ultimate idea and intent of the participants. Whatever we say, the person does not start the speech without cause. Every word that comes from the speakers is aimed at achieving some aspect of it. This, in turn, assumes the effectiveness of the partnership. It should be noted that the intention, which is the root cause of the involvement, may be explicitly delivered or presented in a concise manner. That is, in all cases the same speeches do not try to express their intentions. It is likely that an experienced partner will immediately disclose the way in which they come in such a secret form. However, it is common for the inexperienced person to remain in a mysterious way. It is possible to say that in the opinion of the Kazakh people, the ways in which the speaker expresses his intentions, the ways of presenting his way in a more representative way. In particular, it is possible to see a wide range of options, examples between an old man and the youngest, familiar and unfamiliar person, in the story of the girl and the guy secretly delivering intentions. The need to apply such a private conversation may arise in various circumstances. The examples of classical contingency may include the following: to be engaged, to be married off, congratulations, inquiring after health, indicating the direction; looking for the lost object etc. other situations can be illustrated. Typically, forms of intercourse are established in each one of them, which are quite prominent in the Kazakh mentality. At the same time, it should be noted that there are situations in which changing situations arise outside the established pattern. For example, the story of the survivor from the country shows that the tense situation is surprising, not in the typical form. A young man traveling in the early days is a chance comer in a home with a girl. The owner of the house lay the table and puts it in front of the guy. A young fatigued man ran out of the way and drank a hot dish without waiting for the food to cool. When the hot food burst into the mouth, the gentleman looked at the shanyrak and wondered which tree was

used to decorate. The young lady who poured tea, responded, "This lilac is a tree of the desert, a mournful man's spit." A guy, who is so upset about his behavior and his question, remains silent. And in this situation, the ultimate goal is to say that the concept of absolute is not. That is, the guy was able to come from afar, exhausting his horse and tearing his clothes made an impact to find out which tree it was. Well, the intelligent girl has been so keen on it. Thus, the communicative situation is not always carried out according to a particular scheme. However, it is clear that, depending on the place and time of the engagement, it is possible to plan ahead in advance.

The most common shorthand definition of pragmatics as the study of how language is used can easily be extended in such a way as to include everything that linguists can possibly deal with. Remember that pragmatically oriented students of language felt the need to supplement Chomsky's dichotomy between competence and performance with the notion 'competence to perform', 'communicative competence' or 'pragmatic competence', the validity of which was even recognized by Chomsky in the following terms:

For purposes of inquiry and exposition, we may proceed to distinguish 'grammatical competence' from 'pragmatic competence', restricting the first to the knowledge of form and meaning and the second to knowledge of conditions and manner of appropriate use, in conformity with various purposes. Thus we may think of language as an instrument that can be put to use. The grammar of the language characterizes the instrument, determining intrinsic physical and semantic properties of every sentence. The grammar thus expresses grammatical competence. A system of rules and principles constituting pragmatic competence determines how the tool can effectively be put to use.

Most pragmaticians would disagree with this componential presentation because unlike many other tools, language is not a 'thing' which leads an independent and unchanging life once it has been 'made'. It requires constant adaptations to different purposes and circumstances of use. And for a descriptive account of the meaning and an explanatory account of the form of linguistic entities, it is often necessary to refer to conditions of their appropriate use. Strictly speaking, every aspect of competence is part of one's competence to perform. In other words, also the so-called 'grammatical competence' determines the way in which language gets used. Thus the form/meaning vs.use opposition is not unproblematic. While maintaining the contrast, Morris also recognizes this issue when introducing the notion of a 'pragmatic rule'[5, 162].

Syntactical rules determine the sign relations between sign vehicles; semantical rules correlate sign vehicles with other objects; pragmatical rules state the conditions in the interpreters under which the sign vehicle is a sign. Any rule when actually in use operates as a type of behavior, and in this sense there is a pragmatical component in all rules. But in some languages there are sign vehicles governed by rules over and above any syntactical and semantical rules which may govern those sign vehicles, and such rules are pragmatical rules. Interjections such as 'Oh!', command such as 'Come here!' value terms such as 'fortunately', expressions such as 'Good morning!', and various rhetorical and poetical devices occur only under certain definite conditions in the users of the language; they may be said to express such conditions, but they do not denote them at the level of semiosis in which they are actually employed in common discourse. The statement of the conditions under which terms are used, in so far as they cannot be formulated in terms of syntactical and semantical rules, constitutes the pragmatical rules for the terms in question.

This formulation, which places everything that syntax and semantics cannot cope with in the custody of pragmatics, has no doubt contributed to the 'waste basket' view of pragmatics.

In the 'Anglo-American tradition' pragmatics sometimes looks like a repository of extremely interesting but separable topics such as *deixis, implicature, presupposition, speech acts and politeness relevance.* More often than not, theoretical unity is provided in spite of the many points of contract between these various topics. Thus, speech act rules are frequently specific applications of the more general conversational maxims. Grice's account of conversational implicatures and Searle's definition of indirect speech acts are very similar. Moreover, in his account of the 'illocutionary derivation' needed to arrive at the meaning of an indirect speech act, Searle makes explicit reference to the principles of conversational cooperation. Furthermore, there is a fundamental sense in which background information and presupposition are synonymous, though the latter acquired a number of more restricted meanings. And one of the main early definitions of presuppositions advanced in the literature crucially depends on functions of language which are generally discussed in terms of speech acts [6, 112].

The numerous identifiable points of contact have not spontaneously produced coherence in the 'waste basket', though truly powerful examples of theory formation have emerged and though interesting and useful attempts have been made even to reduce pragmatics to a single-principle enterprise. A stumbling block seems to have been the persistent attempt to define pragmatics as an additional component of a theory of language, with its own range of topics or even its own units of analysis.

Deixis

In the course of our investigations we have been that the division of labor between semantics and pragmatics when it comes to explaining meaning is far from clear-cut. In the case of presupposition, at least, we have seen that it is perhaps not always possible, or desirable, to describe semantic and pragmatic aspects of meaning in entirely separate ways, or even to stipulate which aspects of meaning belong to semantics and which to pragmatics. Presuppositions of simpler sentences are not routinely inherited by, or projected on to, the more complex sentences of which the simple sentences can form a part. It is not that presuppositions never survive when expressions that trigger them are embedded into larger units. Sometimes they do and sometimes they don't. This presents a potentially very complex set of data to be explained by a semantic theory.

As examples of complex sentences that don't inherit the presuppositions of the sentences they contain, consider so-called 'propositional attitude' statements. These are the statements that concern an attitude that the subject is said to take towards a particular proposition. The proposition is expressed as an embedded declarative sentence. Example (1) below presupposes (3), because of the existential presupposition that attaches to the use of any singular referring expression, a fact noted by Strawson and indeed by Frege. But if (1) is embedded in a propositional attitude statement as in (2) this presupposition does not survive. Example (2) does not presuppose (3) because it is quite possible that Tharg is entirely deluded. So (2) could still be true even if (3) is false:

1. The Master of the Universe admires Tharg.

2. Tharg believes that the Master of the Universe admires him.

3. There is a Master of the Universe.

Other complex constructions do seem to inherit presuppositions from their constituent parts. Example (4) presupposes (5). This is because it contains the factive verb 'regret', which acts as a presupposition trigger. And if (4) appears as the consequent of an 'if….then' clause, as in (5), the presupposition is still triggered. That is, (5) presupposes (6); (6) is a necessary precondition for the truth or the falsity of (5):

4. John regrets having invited a famous movie director.

5. If John has invited a film critic to the party, he regrets having invited a famous movie director.

6. John has invited a famous movie director.

The picture that is emerging is one in which some types of complex sentences inherit the presuppositions of their constituent parts while some do not. It might seem that the difference is a fairly easily identifiable property of individual sentence types. And indeed some semantic accounts of presupposition have attempted to include such information.

Implicature

The relevance of the analysis of implicature to micropragmatics is twofold. First, implicature studies account for the further processing of information that has been encoded by the speaker based on his/her presuppositions. Second, in doing the latter, they eventually recognize the contribution implicature makes to the update of the utterance-discourse.

From the analytic standpoint, the explanatory powers of presupposition and implicature are inherently complementary, shedding light on both the speaker and the hearer side of the speech act formation. They are suited to cover, in combination, the whole process of encoding messages by speakers and decoding them by their hearers. This process is essentially a continuum, where making a presupposition paves the way for the utterance before it takes on a linguistic form, in which the presupposition is lexically or non-lexically salient. From that point on, i.e. the point of making the utterance by the speaker, the recovery of the implicature by the hearer may begin – of course, if the hearer senses a prompt to search for it/them. The inference of the implicature, whether in accordance with the speaker's expectations or not, finalizes the entire process, thus updating the status of the interaction and creating a new contextual basis on which to build presuppositions for further utterances in the exchange. The cycle in question corroborates the dynamic view of context and endorses the intrinsic relativity of the micro-macro dichotomy. While the update takes place, technically speaking, 'within the utterance', its effect is on the prospective discourse.

Delving deeper, implicatures created within the boundaries of the utterance are often 'returned to' or 'readdressed' purposefully later on in the unfolding discourse. Since implicature is rarely encoded in language form, it involves a virtually indeterminable number of more or less complex contextual inferences. As such, it constitutes a valuable rhetorical tool whereby the speaker can control the flow of discourse, adopting his or her consecutive utterances to the current goals. This is due to a central property of implicature, cancellability, which makes it possible for the speaker to deny, at any moment of speech situation, any implicature he or she apparently created. We have seen this property as partly relevant to presuppositions, but it is implicature that permits its broadest manifestation. Indeed, a great many implicatures are cancelled to re-establish adherence to the conversational norms as well as their numerous reformulations and supplements but also to 'play' with the addressee, pull a trick on him/her, or simply annoy him/her. Following on this note, many implicatures are cancelled for ironic or sarcastic effects, which are well documented in humor studies. Altogether, the phenomenon of the cancellability of implicature belongs to macropragmatics, since, first, the context that determines the cancellations is made up of a heterogeneous number of social and institutional factors, second, the 'distance' between implicature and its cancellation is a matter of discourse, rather than utterance.

Speech acts- towards macropragmatics

The three brief subsections above have shown that deixis, presupposition and implicature make their distinctive micropragmatic contributions to understanding how an utterance is built, what its referents are and how they are encoded, what assumptions are made before the utterance is produced, what effects can be expected after it has been produced and what inferential processes determine these effects. They partake in the process of enacting goals of the utterance, from the speaker's intention to realize its envisaged function via application of specific indicators of force, to the hearer's successful recognition of this function and its results. A procedure this complex needs a controlling, 'umbrella' parameter of description. It needs a conceptual tool that is able to cover both speaker and hearer related aspects of the utterance function, and, while doing so, draw upon and thus systematize the particular contributions from deixis, presupposition, and implicature in order to make them fit for macropragmatic work at the discourse level. The concept of the speech act seems an excellent theoretical candidate to take up this task.

The orientation of speech acts to both parties of a verbal exchange, as well as to its linguistic matter, is visible at a glance from the traditional distinction between the locutionary, the illocutionary, and the perlocutionary aspects of a speech act. While the locutionary aspect is the most 'objective' since it concerns the stable language form of the utterance, the illocutionary and perlocutionary aspects involve a dynamic negotiation of meaning between the speaker and the hearer. In saying "It's hot in here" a speaker may be producing an (implicit) illocutionary act requesting the hearer to open the window, and the perlocutionary act (effect) might be that the hearer indeed opens it, but it might also be that he or she turns on the air-conditioning instead. Thus, the illocutionary-perlocutionary relation not only mirrors the complex process of meaning evolution as sketched at the beginning of this subsection; it also inscribes in the distinction between explicit and implicit ways of communicating a speech act. Consequently, it invokes the notions of deixis, presupposition, and implicature, since they all situate themselves at some specific yet different points of the conceptual axis which links 'what is said' with 'what is effected'.

The classificatory, controlling power of the speech act is further reflected in its network of felicity conditions, i.e. the conditions that underlie a successful, logical, 'felicitous' production of different acts. For example, a speaker cannot make a successful order if he or she does not sincerely want the order to be followed, or if he or she deems the hearer incapable of following it. These two felicity conditions are excellent illustrations of the connection that holds between the concepts of the speech act and the other 'micropragmatic' concepts – a relation we have postulated at the beginning of this subsection. The speaker's awareness of cognitive and social context obtaining at the moment of producing a speech act gives rise to pragmatic presuppositions underlying the utterance that contains this act. Then, once the act is accomplished, the speaker's presuppositions can be assessed against the effectiveness of implicatures they helped to create.

Presupposition

Presupposition can be defined as a mechanism whereby the speaker addresses a body of knowledge and experience, involving both linguistic and non-linguistic contexts, which he or

she assumes to be common to him/herself and the hearer. The assumption of the existence of the shared knowledge may cause the speaker not to grammaticalize it in the utterance. This characterization takes presuppositionto be a phenomenon lying at several intersections: the encoded and the assumed, the semantic and the pragmatic, the linguistic and the non-linguistic.

Presupposition comes in contact with deixis on the plane of its partial anchoring in lexical and structural forms. However, since many instances of presupposition can only be approached with reference to context, presupposition also reaches out in the direction of the implicit, constituting, in a sense, a shared knowledge prerequisite for a communicating messages whose final destination is their inference by the hearer. Hence its feasible combination with the apparatus of implicature and, altogether, its relevance to the hierarchy of micropragmatic analysis, which derives its output from both accumulation and interaction of descriptions offered by the individual conceptual tools. As one of the latter, *presupposition targets the communicative act at the stage where it develops 'upwards' from the lexicogrammatical coding of context to its further abstraction and elaboration by the speaker, with a view to producing a speech act.* Throughout this stage, the speaker 'decorates' the deictic framework of the utterance with instantiations of knowledge shared by the speaker and the hearer with regard to all entities indexed, referred to, or implied in the utterance.

Traditionally, the more a presupposition was linked with a lexical item or a linguistic construction generating it, the more it was treated as a semantic phenomenon; the other cases deemed 'pragmatic' and worth less attention precisely because of the absence of fixed language forms responsible for enacting particular presuppositions. This view has produced multiple typologies of presupposition, based on its embedding in lexicogrammatical forms called presupposition triggers. Furthermore, a number of properties have been assigned to presuppositions, including cancellability and constancy under negation.

From the perspective of micropragmatic analysis oriented toward the speech act characterization of the function of the utterance, as well as the macropragmatic perspective of the discourse, a rigid distinction between semantic and pragmatic presupposition semms far from necessary. It offers little explanatory power compared to an integrated, global view of presupposition as a concept which should be studied against the utterance and discourse goals it serves. Such a view is quite naturally pragmatic, because even though there are specific lexical items associated with specific assumptions, their descriptive capacity does not expire within the structural boundaries of the linguistic expression. On the contrary, their significance goes much beyond as they are able to combine with primarily experiential premises and thus successfully contribute to a network of contextual, often non-linguistic beliefs making up the entire load of knowledge shared by the speaker and the hearer.

Most communicative goals served by presupposition have to do, in one way or another, with economy of expression, though the latter is rarely the only goal sought. If a speaker could not rely on shared assumptions, the lexical and grammatical load of his/her utterance would grow in size, potentially obstructing its comprehension. Although economizing on the linguistic form for the benefit of unobstructed communication could be an utterance goal in itself, it is often a contribution to a larger utterance or discourse function. This becomes clear when analyzing, at the macro level, a series of utterances containing consecutive acts of adjustment to shifting discourse expectations. If I am overweight and say 'I started jogging after visiting my doctor' and my confession meets with a blatant attack like "So I took you going to the doctor's to work out like you should", I can always follow a defense line in continuing "Well, to be honest, I tried to do some jogging a few times before, but now I do it regularly". Since the short form of the initial utterance makes it undetermined in terms of meaning, the denial of the 'only then and never before' presupposition comes rather easy, contributing to the overall explanation and justification.

Conclusion

Ultimately, there are two types of intentions in language communication: 1) the speaker's initial approach; 2) a suddenly emerged situation later. It should also be noted that the intent is adaptive, inconstancy. In the end, it is lawful for each of the participants to have their own objective in each particular situation and to try to harmonize the story with their own approach. The reason is that each participant has the goal of speaking effectively. Thus, the bases for describing the concept of the participatory approach can be summarized as follows: 1) the aim of the intentional intentions is direct and indirect; 2) implication and explicit intensities due to introspection or intentional representation of the intention during the conversation; 3) intentional (mentally) intentions, which are

carried out due to the motivation of any actors to act; 4) positive and negative intensities in terms of emotional impact on participants; 5) intensification of the short-term or event-related events, due to the cause of development or development. Thus, intention is an important factor that stimulates the realization of any cooperative situation.

Neither general pragmatics nor linguistic pragmatics examine its objects of investigation in isolation but rather focus on their conditions of use, the connectedness with their surroundings, and the necessary and sufficient conditions which assign the object, e.g. intentionality, rationality, model use or action, the status of a particular object and make it count as that object. While general pragmatics concentrates on the analysis of these fundamental premises of practical action, identifying their necessary and sufficient conditions, linguistic pragmatics establishes the explicit connection between those foundations and their language-specific and language-use specific constraints and requirements.

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FORMALIZATION OF PREDICATES FOR BUILDING NEURON NETWORK IN RESEARCHING THE BASIS OF ALGORITHMIZATION A PROGRAMMING A INFORMATICS COURSE

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This article is: focused on the essence of the formalization of the predicate system on the topic "Algorithmization and Programming" of the Informatics course for building a neural network to assess students' knowledge. The proposed method of formalizing the predicate system on the topic, based on the constructed neural network, allows you to assess the knowledge and competence of the student in this course, developed on the example of "Algorithmization and programming", takes into account the following features of the problem being solved: incompleteness and uncertainty of the information about skills, skills and student knowledge; multi-criteria, due to the need to take into account a large number of private indicators associated with educational activities and the formation of knowledge and skills; the presence of both quantitative and qualitative indicators that must be considered when assessing the level of knowledge. The developed methodology for formalizing the system of predicates of a topic can be applied to any disciplines of a higher educational institution to assess the competence of students on the basis of a neural network by changing the nature and number of predicates.

Keywords: algorithm, mathematical logic, utterance, predicate, neuron, neural network

At the moments of making difficult decisions, a specialist tries to "look inside himself" and comprehend how he copes with difficult and sometimes not solvable formal logic tasks. The natural anxiety and thirst for knowledge overwhelms him along with the vague consciousness that the mathematical, algorithmic approach to the construction of complex cybernetic systems is artificially absolutized. Everything should be in order, everything should be weighed, and turning to himself, he repeatedly conducts a brainstorming on that mysterious, created by nature – on his own brain.

Mathematical logic, its important section "The Algebra of Sayings" and "Theory of algorithms", really combined the principles of thinking and their automated embodiment [1, 2]. However, to realize thinking, nature has not created anything better than the human brain. It is a giant neural network, fixing cause-effect relationships, creating a knowledge base and owning procedures for logical inference. Thus, neural networks are really the basis for formalizing the means of thinking. Therefore, it is fair to assume that the study of neural networks is based on the achievements of mathematical logic.

Integration of pedagogical and intellectual information technologies, in particular neural network technologies [3, 4], defines a new kind of intellectual computer training facility – neural network computer training systems that individualize and adapt the learning process to the learner's needs through the apparatus of neural networks. Neural networks are related to artificial intelligence technologies and represent mathematical models of biological neural networks. The main advantage of neural networks is that they allow you to create a mathematical apparatus of the predicate logic, which, under the conditions of diversity, large volume, inconsistency and insufficiency of various diagnostic information, is able to solve problems of image recognition and categorization. This mathematical apparatus allows: by measuring the characteristics of the student and applying methods of cluster analysis, group the contingent according to clusters of integrative individual characteristics; To differentiate the educational material according to various parameters; to build individual trajectories of training; take into account the dynamics and the possibility of changing the student's trajectory.

Intensive use of information and communication technologies in the educational process requires the search for new methods and means of teaching, the development of a unified information environment for educational institutions, the mathematical formalization of the learning process as a poorly formalized object with the goal of developing models and algorithms for optimal management of it. The development of new methods of management and modeling of the educational process is a demanded task of today. With scientifically grounded research, study and analysis of educational process objects using modern, unique neural network technologies, there are fundamentally new possibilities for finding methods and means for improving the educational process.

The use of neural models and neural network technologies in the objects of the educational

process creates the basis for new directions in universities to develop integrated intellectual systems of the educational institution. When administering an educational institution using neural network technologies, there will be no restrictions on the types and dimensions of the data being processed. The artificial neural network models at the logical level the activity of the nervous system of man and animals. Particularly interesting is the ability of neural networks to learn and remember information, which reminds people's thinking processes. That is why in the early work on the study of neural networks, the term "artificial intelligence" was often mentioned. This interest is understandable: since an artificial neural network is in fact a model of the natural nervous system, the creation and study of such networks allows one to learn a lot about the functioning of natural systems, in particular, educational systems.

Now, let us consider the problems of formalizing predicates for building a neural network in the study of the section "Algorithmization and Programming" of the course Informatics with the aim of increasing the effectiveness of the learning process [5-7].

We introduce the notation: A is the set of students of the group. A = {A1, A2, .., AN} = {Abdullah, Sadullah, Boltaboy, ...}.

Students in the practical lesson independently learn the "Algorithmization and Programming" section of the Informatics course.

The set of basic algorithms of the section "Algorithmization and programming" of the course Informatics will be denoted in the form of a set:

Here: SS – is an algorithm of strictly sequential computational process;

SB – algorithm of a simple branching computing process;

CB – algorithm of a complex branching computing process;

SC – the algorithm of a simple recurring (cyclic) computing process;

CC – algorithm of complex cyclic computational process;

BC – algorithm of branching with a cycle;

CB – is a cyclic process with branching.

Teaching staff of the department who gives consultations on the section "Algorithmization and programming" of the course Informatics will be denoted as sets:

B = {B1, B2, B3, …} = {dots.Yusupov, senior lecturer, Setmetov, Ass. Ruzmetov, …}.

Suppose, the group's headmaster, senor teacher Yusupov D. controls the process of studying the section "Algorithmization and programming" course Informatics by students and collects statistics of their ratings.

We formalize the goal of assessing the students' knowledge on this subject:

1. Bring excellent students to minimum of 10%;

2. Good students to increase the minimum of 25%;

3. Grades students satisfactory to minimum of 65%;

4. Grades students unsatisfactory to minimum of 0%.

The stated goal in terms of mathematics is formalized as follows, for 5 types of algorithms

C = {C1,C2,C3,C4,C5,} = {SS,SB,CB, SC,CC},

The ratings of each student on mastering the main algorithms of this section will be evaluated as follows:

R = {R1,R2,R3,R4, R5} = {excellent, good, satisfactory, almost satisfactory, unsatisfactory}.

The activity of the student, on the study of basic algorithms, is formalized in an abstract form, for example:

- {A1, B2, SB} – the student A1 came to the teacher B2 to get consultation on the SB algorithm, i.e. the student Abdullah came to the senior teacher Setmetov to get consultation on the SB algorithm of a simple branched computing process;
- {A2, B1, SC} – A2 student came to the teacher B1 to get consultation on the SC algorithm, i.e. student Sadulla came to dots. Yusupovu to get consultation on the algorithm SC – the algorithm of a simple recurring (cyclic) computing process;
- {A5, B2, C1,}, {A7, B3, C5,}, etc ..

Presented abstract records from the point of view of mathematical logic will be written as follows:

{A1, B2, C3} => A1 ^ B2 ^ C3;
{A2, B1, C4} => A2 ^ B1 ^ C4;
{A5, B2, C1} => A5 ^ B2 ^ C1;
{A7, B3, C5} => A7 ^ B3 ^ C5.

The process of studying the basic algorithms of the "Algorithmization and Programming" section can be abstracted as follows:

{A1,B1,B2,SS,SB,CB,SC,CC,} => A1 ^ (B1vB2) ^ (SSvSBvCBvSCvCC). Thus, the student A1 came to the teacher B1 or B2 to get consultation on the algorithm of the SS or SB or CB or SC or CC.

{A1,B2,SS,SB,SC,B1,SC,CC} => (A1 ^ B2 ^ (SSvSBvSC) v (A1 ^ B1 ^ (SCvCC)) – this means that the student A1 has come to the teacher B2 for getting consultations on the algorithm SS or SB or CB, or student A1 came to the teacher B1 for consultation on the algorithm SC or CC.

From the point of view of system analysis, the process of studying the basic algorithms by students of the group having considered all possible variants and analyzing the results, one can make a conclusion on the assessment of knowledge by students in the form of logical statements – in the form of a system of predicates:

$$\left.\begin{array}{llll} If & A1 \wedge B1 \wedge (C1 \vee C2 \vee C3 \vee C4 \vee C5) & then & R1: \\ If & A1 \wedge (B1 \vee D3) \wedge (C1 \vee C2 \vee C3) & then & R2; \\ If & A1 \wedge (B1 \vee B3) \wedge (C4 \vee C5) & then & R3; \\ If & A2 \wedge B3 \wedge (C1 \vee C2 \vee C3 \vee C4 \vee C5) & then & R4; \\ If & A2 \wedge (B1 \vee B2) \wedge (C1 \vee C2 \vee C3 \vee C4 \vee C5) & then & R5. \end{array}\right\} \quad (1)$$

According to formalization, the first and second predicates mean that:

If the student A1 has come to the teacher B1 to get consultation on the algorithm C1 or C2 or C3 or C4 or C5, then after receiving it, the teacher evaluates the student's knowledge of the R1 rating;

If the student A1 has come to the teacher B2 or B3 to get consultation on the algorithm C1 or C2 or C3, then after receiving it, the teacher evaluates the student's knowledge of the R2 rating, etc.

Thus, the predicate system (1) for studying the basic algorithms of the "Algorithmization and programming" section and assessing students 'knowledge will be the basis for building a neural network for assessing students' knowledge.

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