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## **STATUS OF STUDENTS HEALTH: PROBLEMS AND THEIR SOLUTIONS**

*The health level of young people studying at different educational institutions under the educational process conditions in Ukraine, Russia, Belarus' has been analyzed. General tendencies of health state of students of the northwest to the Azov Sea regions have been systematized and their levels are studied. It has been found out that influence of unfavorable social-hygienic factors during the education period results in negative tendencies in students' health of different countries. Core factors of noninfectious diseases rate are over-nutrition, low physical activity, neuro-emotional stress, bad habits. The health status of students of the north-western Azov regions deteriorates. In particular there are up to 45% (of total number of cases) pathologies of the cardiovascular system, up to 26% - musculoskeletal system disorder. The increase of the nation health requires modern approach based on modern health paradigm. It implies design and implementation of state integrated public rehabilitation programs providing creation of conditions for leading a healthy lifestyle. The comprehensive rehabilitation program is proposed. It includes such components as units of diagnostic and organizational measures, informational and preventive measures, treatment and correctional activities, effectiveness evaluation of the taken actions. The program implementation will make it possible to improve the students health level, form firm healthy lifestyle motivation.*

*Key words: health, students, rehabilitation program.*

**Problem statement, analysis of last publications and experiments** The young generation health is one of today's global issues. It is integral to the human being matter, comes into existence together with a human being and modifies according to human culture motion [18]. Health is a state of complete physical, mental and social well-being, but not merely the absence of disease or infirmity. This definition is given in the Preamble to the Constitution of the World Health Organization. One of the most important indicators of health status is the level of human body major adaptive systems functional development [3]. Health is a process of preservation and development of

physiological, biological and mental functions of optimal labor and social activity within maximum duration of active creative life [5, 21].

*The maximum level of human health is the goal achievement of which should be provided to each member of the society by the modern state. However, it is not a secret that the modern system of health protection and medical science are mostly aimed at the design of the newest treatment technologies [15]. But the number of sick people doesn't decrease; on the contrary, the epidemic of chronic non-communicable diseases grows in the world moreover among the population of the most active age. These diseases are major causes of death. This situation is also observed in Ukraine and is a threat to the national security [1]. It is the youth medico-social status that will determine the quality of the labor, economic, reproductive and defense potential of the country in future.*

Today's formed notions about health person closely connected with harmonious overall developed personality. Healthy in all attitudes person can be named such as able to react adequately and to adapt to constantly changing conditions of ecological, biological and social environment; is able to self-improvement morally, to support highly personality capacity.

Ideas about health as the integrated system fulfils the main function of supporting vital and human life in the society generally can be used advisably on the present stage of research of health human problem. In this connection if it is the level of integrated health, the high level is characterized by functional balance of the organism with environment in the presence of condition of the physical, mental and social comfort.

Generalized analysis and systematization of scientific literature prove that the modern information paradigm of personal health of a healthy human is presented as the union of its components: physical, mental and social [5].

Health of a healthy human as informational problem consists, as minimum of three modules [3]:

- Module of informational knowledge field of basic subject spheres.
- Module of information technology research base.
- Module of information and organizational management tools.

*The Ukrainian youth health is characterized with the high incidence morbidity and prevalence of disease, disability and death. Morbidity of 17-18 years old students in the period from 2009 to 2011 increased by 1,6 times and reached 8521,4 cases per 10000 population. Prevalence of disease in this very period grew by 1,8 times that makes 14900 for every 10000 young people [4].*

The researchers note that study load increased, existing forms of physical education either are not applied or used inefficiently, there is widespread curtailment of the preventive direction due to lack of funding [9].

Various aspects of health of the students of different educational institutions have been subject of researchers' scrutiny [12, 14, 19]. Nevertheless nowadays there is a very small amount of comparative and generalizing works on the health status and self-preservational behavior of students of different countries. Investigation of the health status of students of the northwest to the Azov Sea regions hasn't been carried out.

*These statements explain the relevance of the research topic that is related to the need of the necessity of young people health improvement in Ukraine. That is of great theoretical and practical importance.*

The work is carried out according to the Melitopol State Pedagogical University named after Bohdan Khmelnytsky research work plan, the theme is: "Modern youth health-preserving technologies in an educational establishment by means of physical education and sports".

**Research objective** is to analyze the level of health status of youth in different educational institutions of Ukraine, Russia, Belarus.

The following tasks were solved:

- to study literature and summarize data on students of higher education establishments of Ukraine, Russia and Belarus morbidity;
- to study levels and systematize general tendencies of health status of students of the northwest to the Azov Sea regions;
- to give scientific substantiation of comprehensive rehabilitation programme.

**Methods of investigation.** Theoretic-methodological basis comprises comprehensive use of scientific principles, systematic approach that caused the choice

of research methods: general scientific (analysis, synthesis, classification, generalization of scientific and methodical literature); interdisciplinary (analysis of medical records to determine diseases structure (class); empirical: survey (questionnaire "Self-Health"); methods of mathematical statistics. Scientific and special methods were used for solutions of scientific research (table 1).

Table 1

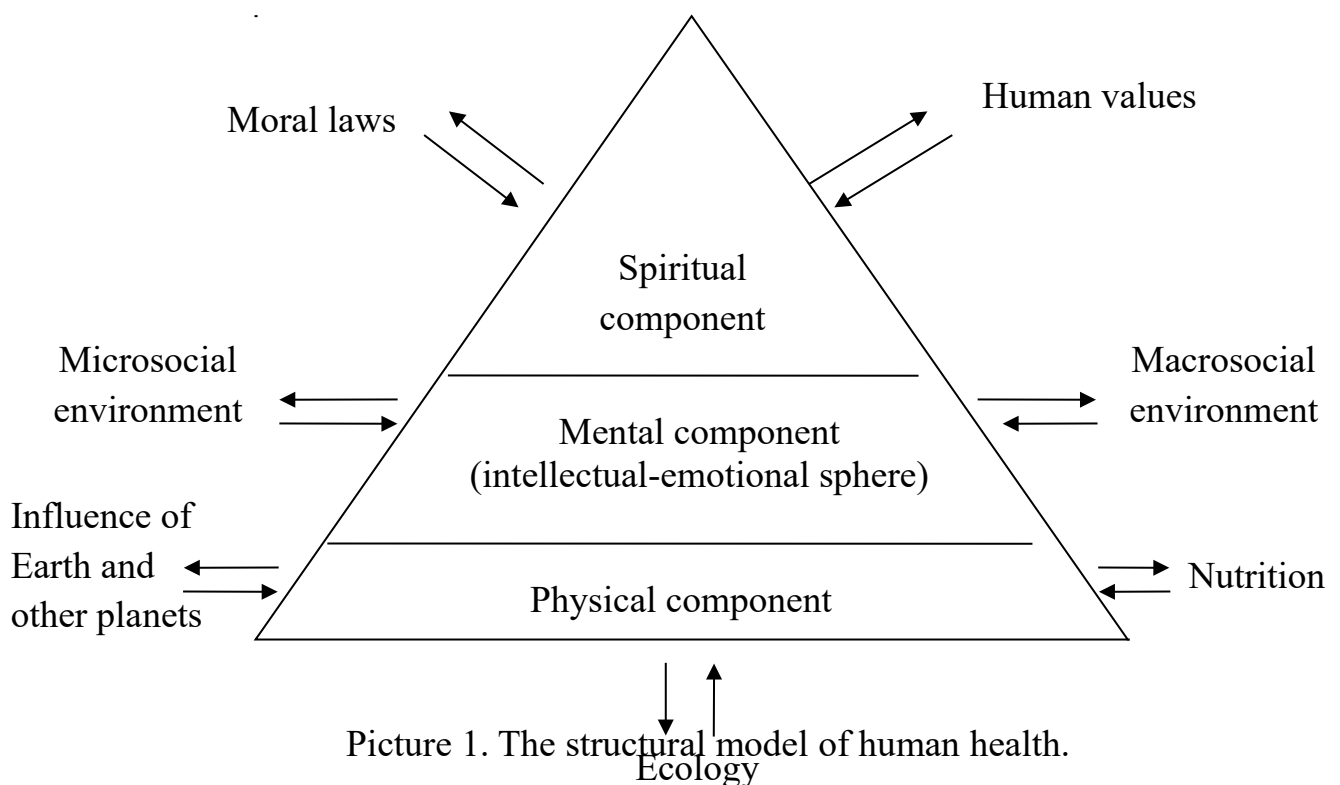
Stages and methods of Research

Stages of research	Methods of research	Resources of information
Study of morbidity and complex research of condition of students' health.	Proportional typological selection. Copying of data from initial medical documents. Comparative analysis.	Medical cards of ambulance patients.
Social hygienic characteristic of ways and conditions of students' life.	Questionnaire, methods of mathematical processing with using statistical programs.	Special devising questionnaires.
Study of students' behavior according to preservation and strengthening of health, the level of youth health.	Questionnaire, questioning, methods of mathematical statistics.	Questionnaire "Self – appraisal of health", estimation of the level of students' physical health according to G.L. Apanasenko's method.
Testing of the comprehensive rehabilitation program.	Experiment, dynamic observation, testing of the level of students' physical readiness, assessment of functional condition of the organism.	Cards of dynamic observation, results of testing of the level of the students' physical readiness and Assessment of functional condition of the organism.

40 first – year and second – year students of Natural – Geographical Department of Melitopol State Pedagogical University named by Bohdan Khmelnytsky took part in forming experiment. Two homogenous groups of twenty students in every one were formed, an average age amounted  $18,57 \pm 0,59$  years. Students of the control group (CG) studied according to general program "Physical Education" for students of Ukrainian

higher educational establishments of the III and IV levels of accreditation. The training methods of girls of Experimental Group (EG) included using of the comprehensive rehabilitation program; its peculiarity was the differentiation of physical workload according to functional characteristic of students' organisms in process of physical education by means of aerobics. This program was aimed to develop girls' strength endurance and flexibility.

**Basic material exposition.** Based on the modern health paradigm, we can say that health is a holistic multi-dimensional dynamical system having a definite structure. Health of the nation shows the level of life quality, determined by many parameters: physical, social, psychological and emotional, development of physical culture and sports. (picture 1).



*Recent year's scientific publications analysis clearly shows that the problem of youth health is in the field of view of many scientists. For example, Russian researchers [2] point out that the prevalence of diseases of secondary specialized educational institutions students aged 15-21 makes 1445,2‰ according to consulting doctors level in 2010. In the fourth year, compared to the first, there is a veracious increase in doctor*

*consulting level about diseases of the circulatory system by 2,4 times, the nervous system – 2,0 times, diseases of the digestive system – 1,8 times, the ear and mastoid process - 1, 5. Studying the college student's cardiovascular system the authors [10, 17] found out that during the three years of study the adolescents aged 15-17 show a tendency to tachycardia, development of hypotensive reactions, a decrease in muscle performance both at rest and during exercise. This is explained by the lack of material provision, low level of knowledge and skills in organizing their life, alternation of work and rest, rational organization of the daily routine and diet.*

*Similar tendencies in health and disease are also observed among students of Belarus [7, 12]. Despite the high level of overall life quality index of the main components (social and emotional functioning, life satisfaction, health) about 30% of Belarus high educational institutions students are in the dispensary register. Such diseases as chronic gastritis, asthma, duodenal ulcer dominate. The study of the morbidity incidence of the students of the Belarusian State Medical University has shown that the first place in the structure of morbidity take diseases of the respiratory system (33,4%), second - diseases of the nervous system and sensory organs (27,4%), the third –of the genitourinary system (10,3%). The share of diseases of the digestive, musculoskeletal systems and connective tissue makes for approximately 5,0 % per each.*

*It was found out [3, 6] that among university students in Ukraine the main factors contributing to the development of cardiovascular disease are over-nutrition, low physical activity, neuro-emotional stress, bad habits.*

The study of the morbidity dynamics of full-time students of Melitopol State Pedagogical University named after Bohdan Khmelnytsky (MSPU) for the last 6 years has shown that the number of young people studying PE in the main group and allowed not to attend the lessons due to medical reasons grows steadily: 2009 – 17,4 %, 2010 – 22,0 %, 2011 – 22,9 %, 2012 – 31,1 %; 2013 – 34,0 %; 2014 – 35,9 %. This increment occurs mainly due to the younger students.

The results of the study allow to state that the prevalence of diseases among MSPU students during 2009–2014 was 585,9 ‰ The study of morbidity patterns depending on the year of study has shown that the major part of diseases among

freshmen is constituted by respiratory diseases, the second place is taken violations of the musculoskeletal system, followed by diseases of the digestive and nervous systems. Among the fifth-year students, on the contrary to first-year students, the first place is obtained by cardiovascular system diseases, the second - by violations of the musculoskeletal system, followed by excretory system diseases.

Generalized analysis of the nature of diseases among MSPU students for the last 6 years has shown that the first place is taken by the cardiovascular system pathologies: from 35 to 45 % (of the total number of cases). They are followed by changes in the musculoskeletal system (violation of posture, scoliosis, flat foot) which make 20–26 %. Almost at the same level over the years are excretory system (8–12 %), eyes (6-10 %) diseases. Incidence of other diseases fluctuates between 5–15 %. Morbidity incidence rises in the course of study process, and in the fourth year it is 1,4 times higher than in the first one.

The data obtained as a result of the study also indicate to the existence of negative dynamics in the health status of students of Melitopol State Pedagogical University from the first to the last year of study: 32,2 % of the first year and 22,6 % of the fifth year students are considered to be healthy. And if in the first year of study about one third of student suffer from chronic diseases, in the fifth year - more than one half. According to the MSPU students questionnaire their health self-assessment depends on the year of study. 56,5 % of the first-year students evaluated their health as good. Unlike junior students senior ones made more negative assessment: 38,0 % of respondents evaluated their health as bad, 5,9 % - as good.

Irrational daily routine, big study load, examination session stress along with such factors as poor nutrition, lack of physical activity, unhealthy habits are pointed out to be the main causes of students' bad health. Their nutrition is not considered to be rational and balanced by 51,8 % of the first year students and by 68,3 % of the fifth year students of MSPU in spite of the fact that lack of money was mentioned as a main obstacle of regular nutrition only by the quarter of the respondents.

The main constituents of university students recreation in their spare time are characterized by a predominance of passive forms, only 12,5 % of young people do

sports. However, 72,5 % of students noted that almost have no free time, and 88,2 % are not satisfied with the way of its spending. It should be recognized that students almost equally attributed their dissatisfaction as to the lack of money (40,3 %), as to their own laziness and lack of organization (33,5 %).

The major part of students (74,9 %) do sports only at PE classes. Among obstacles for more frequent physical exercise 77,6 % of recipients indicated lack of free time, 18,4 % - laziness and lack of organization. In the study of students physical activity it was found out that doing exercises on a daily basis is practiced by 9,5 % of the first year students and by 7,5 % of the fifth year students.

The most important feature characterizing attitude to health is having bad habits. The study of involvement into smoking has revealed that over 24,5 % of students smoke. Analysis of the smoking motives makes it possible to make a conclusion about significant contribution of psychological factors in the formation of bad habits. The majority of respondents are aware of the hazards of smoking to health (74, 8%). Approximately 4/5 of all respondents (from 75,5 % up to 82,0 %) are going to quit smoking in future. Among the reasons of readiness to quit smoking the following were called: "health problems", "the decision to become a parent", etc. Statistically significant differences in the prevalence of smoking in the years of study were identified: the proportion of non-smokers increases among senior students. The percentage of persons who had never tried smoking is 19,2 %.

High frequency of alcoholic beverages consumption by students has been registered. Alcoholic beverages are consumed by 87,1 % of the first year students and by 86,7 % of the fifth-year students. In the structure of types of beverages consumed by young people beer ranks first (about half of the students indicated to the use of it). It is followed by dry wines, champagne, alcoholic cocktails (they are consumed by 47,1 % of students), about a third of all respondents prefer hard liquors - vodka, cognac, fortified wines.

Analysis of the study results showed that in the contemporary socio-economic conditions students' health state is one of the most acute medical and social problems. Negative trends in health status are caused mainly by the behavior not contributing to its



preservation and strengthening. The authors state that only 4,5 % of Ukrainian students are in the zone of safe health level. Average Ukrainian student is 5-7 years older of his/her biological age - an aging of Ukrainians phenomenon [4].

*Scientific literature analysis shows that at the beginning of the XXI century the main threat to health constitute chronic no communicable diseases, which are major causes of adult population disability and mortality in Ukraine [1].*

*A superb way out was developed, theoretically proved and experimentally tested by the group of scientists [3, 8, 11], who were the first to show the functional dependence of physical activity on the health of the population. This vicious cycle can be easily broken by doing physical exercises based on age, sex, fitness, physical development and health status.*

*Application of the holistic approach to the problem of students health preservation helped us to work out a comprehensive rehabilitation program, that embraced the following components: the unit of organizational and diagnostic procedures (clinical, laboratory, functional diagnostics of diseases of different nosological forms), the unit of information and preventive measures (development and implementation of system informational support of teachers and students on healthy lifestyles and safe behavior), unit of treatment and rehabilitative activities (active means of rehabilitation - physiotherapy, hydrokinesotherapy, occupational therapy, work and rest, tempering, food, sleep hygiene), the unit of evaluation of the measures effectiveness. This program will promote improvement of the students' health and formation of the healthy lifestyle stable motivation.*

Analyzing the results of division of students from the experimental and the control groups according to the level of physical health, the next facts were ascertained. The most numbers of students from the EG had the level of physical health – “below average”. The same situation was observed with girls from the CG.

General assessment of the health level of girls from the EG was matched as “low” level, and the CG – “below average”.

Students from both groups according to the body mass index were not identified reliable differences ( $p < 0,05$ ). This index among representatives from the EG amounted

375,65±0,30 conventional units (0 points), girls CG 377,31±0,33 conventional units (0 points).

Rates of life index among girls were not differed reliably ( $p<0,05$ ): among girls from the EG – 51,02±1,43 conventional units (4 points); at students from the CG – 52,48±1,00 conventional units (4 points). The health level to the ratio of the vital capacity of the lungs to body mass among students from both groups ( $p<0,05$ ) was matched as the assessment “above average”.

Indicators of power index at students from the EG were ranged on the level 40,02±1,74 conventional units (0 points); at girls from the CG – 52,05±1,54 conventional units (2 points); ( $p<0,05$ ). The ratio of dynamometry of the hand to body mass among girls from the EG were diagnosed the “low” level of health, and among girls from the CG – “below average”.

Robinson’s index at students from the EG was equaled to 96,32±2,04 conventional units (0 points) in average, and at girls from the CG – 98,15±2,01 conventional units (0 points); ( $p<0,05$ ) The level of health “below average” was defined according to the ratio of heart rate and systolic blood pressure, among girls of both research groups. The time for heart rate recovery at girls from the EG was amounted 140,49±6,66 seconds (1 point); and at the CG – 146,74±6,92 seconds (1 point). Among girls from both groups were diagnosed the level of physical health “below average” according to the speed of recovery of normal cardiovascular system functioning after minor physical workload.

General assessment of physical girls` health from the CG was amounted as 3,28±0,19 points (the “low” level), the EG – 4,12±0,21 points (the level –“below average”).

Reliable differences between rates of students of both groups were not noticed ( $p>0,05$ ) in test results which were got in the beginning of academic year. The average result in hold the squat position at girls of the CG was amounted – 17,92±2,25 seconds; the EG – 16,93±2,29 seconds. Low results of students from both groups were recorded in flexion – extension of hands from push – up. This rate at girls from the CG was amounted 5,14±0,94 times, the EG – 4,80±1,31 times. Clients retention of the push-up

position on forearms from the EG exceeded the girls' result from the CG ( $38,67 \pm 4,62$  and  $36,05 \pm 5,05$  seconds accordingly). Results of twisting the torso didn't have reliable differences between students' indicators of both groups. The best result turned out girls' results of the EG –  $16,75 \pm 2,95$  times and in the CG this parameter was equaled  $16,47 \pm 1,55$  times. The low results were fixed in hold the legs in position angle. Girls' result of the EG was lower ( $5,93 \pm 0,93$  seconds), than the result in the CG ( $16,22 \pm 0,65$  seconds) The best result in test “Tilt toward, standing with the back to the wall” belonged to the girls from the CG and totaled  $16,28 \pm 1,77$  centimeters, and girls' result of the EG was  $15,97 \pm 1,73$  centimeters. Girls' result from both research groups were no different in tests “Wikrut ago with grip tape” and “Bending forward from a standing position”.

Statistic processing of data according to Student's t-criterion showed the high level of the significance of differences between both groups after training according to the proposed rehabilitation program for girls of the EG (table 2). As the result of experiment we were fixed, that at the tend of the study the health level among girls of the experimental group was defined from “low” to “above average”. Among the representatives of this group revealed 10 % students with “low” general level of physical health, 15 % students with “below average” level; 50 % - with “average” and 25 % - “above average”, among girls of the control group these indicators were equaled accordingly – 20 %, 25 %, 40 % and 15 %.

Generally after the experiment the number of students of the experimental group with the level of health “low” and “below” decreased to 25 %, and with “average” and “above average” – increased to 75 %. In the control group changes were less severe: 45 and 55 % accordingly.

Table 2

Dynamics of the numbers of students (%) with different levels of physical health

The levels of physical health	low		below average		average		above average	
	before	after	before	after	before	after	before	after
Stages of the experiment	the introduction of the experimental factors							
The control group	$30 \pm 0,2$	$20 \pm 0,1$	$50 \pm 0,4$	$25 \pm 0,1$	$20 \pm 0,1$	$40 \pm 0,2$	0	$15 \pm 0,1$

The experimental group	35±0,2	10±0,1	45±0,3	15±0,1	20±0,2	50±0,3	0	25±0,2
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As the result of systematic aerobics practice the levels of indicators of the girls of the experimental group increased; the body mass index – from “average” to “above average”; Robinson`s index – from “below average” to “average”; power index – from “low” to “average”, recovery time of heart rate after 20 squats – from “below average” to “average”. In the end of research the significant increase of indexes of students from the EG was observed in all tests. The relative increase of parameters of girls of the control group amounted on average 29,3 %, and from the experimental group – 67,1 %.

Thus, the systemic approach, based on the modern paradigm of health is needed for increasing the health level of the nation. It assumes to develop, to adapt and to implement the comprehensive rehabilitation programs to be provided creation of conditions for realizing healthy way: fitness classes, malnutrition, hardening, giving up unhealthy habits, environmental protection from pollutions.

*Preventive role in this direction plays screening of the population with the identification of "at risk" groups among healthy people, formation and implementation of healthy lifestyle, improving of the environment, working and living conditions of people. However, many of these activities require significant expenditures, expensive equipment, personnel special training. At the same time, sufficient physical activity aimed at combating physical inactivity and hyperkinesias, the widespread introduction of physical culture in the everyday life of the population, as it is shown by numerous medical and biological research papers [13, 16, 20], promotes human health, improves resistance of the body to a variety of environmental factors (temperature, pressure, air pollution and water, infections, etc.), as well as health conservation and restoration, prevents the development of early fatigue and overwork, promotes correction of psycho-emotional overload during professional activity.*

### **Conclusions.**

1. *Exposure to adverse social and hygiene factors during the study leads to negative tendencies in health of students from different countries. The main factors of*

*students' morbidity with noninfectious diseases are over-nutrition, low physical activity, neuro-emotional overload, bad habits.*

2. *The health status of youth northwest of Azov regions deteriorates. In particular, up to 45 % (of the total number of diseases) constitutes pathologies of the cardiovascular system, up to 26 % - violation of the musculoskeletal system. By the end of training in high school, every second student obtains a chronic disease.*
3. The efficiency of the proposed rehabilitation technology of using individual physical activities according to functional characteristics of the organism and the level indicators of students' physical fitness in the process of physical education by means of aerobics was proved experimentally. In the final part of the experiment the significant increase of the level of the level of the functional indicators of girls' physical health and their physical fitness ( $p < 0,05$ ) was fixed. In the end of the research the significant increase of the indicators among the students' from the experimental group was observed in all the tests. The relative increase of parameters among girls of the control group equaled in average 29,3 %, but of the experimental group – 67,1 %.
4. *The nation's health improvement requires a modern approach based on the modern paradigm of health. It presupposes the development, adoption and implementation of comprehensive state rehabilitation programs that provide conditions for leading the healthy lifestyle: doing fitness, good nutrition, hardening, avoiding of bad habits, nature protection from pollution.*

**Further research prospective.** It is planned to develop computer programs for determining the health and physical development levels of youth northwest of Azov regions and to test and implement the comprehensive program of physical rehabilitation on the basis of a systematic approach.

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