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Healthy life-style: Students' personal behavioral models (the results of the sampling study in Siberian Federal University)

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Abstract

Here we represent the results of Siberian Federal University students' awareness of healthy life-style. We compared subjective evaluation of students' health with objective estimation of their physical condition. Connection between the physical condition level and behavioral models that lead to improvement or worsening of health was revealed. The results of the study specify and expand scientific ideas of personal behavioral models on which healthy life-style depends. They create opportunities for development in the university a set of control actions in the direction of students' healthy life-style formation.

Keywords: Healthy life-style; factors of healthy living; subjective health evaluation; physical condition level; automated information management system (AIMS).

Introduction

Timeliness of the topic is determined by social and economic significance of health which is the most important criterion of population life level. A lot of problems lie deep in social and economic situation, including regional aspects of living conditions. According to the experts of the World Health Organization, among numerous factors that determine a person's health healthy life-style occupies the first place. They estimate combined influence of heredity and medical assistance on health about 30%, whereas other 70% are given to healthy living that also includes ecological component [1]. So, it is important to understand which factors influence and determine healthy life-style and, consequently, can be objects of control action.

The purpose of our study was to reveal awareness of Siberian Federal University students (Krasnoyarsk city) of healthy life-style and comparison of their subjective evaluation of health with estimation of physical condition level.

It should be mentioned that health condition is an integral characteristic that reflects

the influence of a set of environmental factors, including upbringing, education, working, mode of life conditions. A number of studies [2-4] ascertain existence of groups of people who prefer healthy behavioral pattern as well as behavioral groups with risk for health. It is possible to increase the former pattern and redirect to it the people from the latter groups on the basis of formation of axiological and conative sphere of a person and leading a healthy life.

The youth are a social and age group of population that is still in the process of socialization. During this process they adopt values, norms, views. Higher educational institutions are the last stage in educational sphere where it is still possible to make educative impact on students and to form motivation to healthy living.

The works of scientists [5-10] stipulate that health of young students in the Russian Federation during the past 20 yrs has sharply become worse. Almost 80% school-leavers have limitations in their vocational choice due to health deviations. Such deviations in 65% cases are determined by chronic diseases and in 35% cases – by apparent functional disorders [11].

The increase of diseases of Russian students is explained not only by high information loads, intensive use of electronic and computer equipment but also by bad habits, hypodynamia, and absence of motivation to keep healthy and to strengthen health. At the same time, life plans of the youth (such as their vocational training, strive for social development, building a family and having children – the factors that predetermine the development of the whole country) depend on their health condition. The problem of exceptional importance of health of a modern person causes the necessity of the youth's involvement into solution of issues that are connected with strengthening and maintenance of health regardless of their vocational choice.

Methods

To reveal the students' awareness of healthy living, we used the questionnaire technique. That is a way of getting information through written anonymous responses of the respondents to a set of standardized questions. Questionnaire "Healthy live-style of a students" was developed by V.L. Arkhipova (Siberian Federal University), questionnaires "Students' Mode of Life" and "Nutrition" – by O.N. Moskovchenko (Krasnoyarsk State Pedagogical University named after V.P. Astafiev) [12].

We checked the differences between the two series of correlated changes with the help of Wilcoxon T-rank [13,14]. The smallest value is $W = n(n + 1)/2$ with n meaning the volume of the second series. The largest value is $W = n(n + 1)/2 + mn$ with n meaning the volume of the second series, m meaning the volume of the first series.

Students' physical condition was evaluated with the help of automated information management system (AIMS) "Physical Condition". The rightholder of the AIMS is O.N. Moskovchenko (State registration certificate of computer programs No. 2002610465, registered on March 29, 2002, Russian Federation). The automated system takes into account anthropometric data, morphofunctional parameters, and separate indexes of cardiorespiratory system during the examination. It withdraws estimate indicators and standard indicators that characterize physical condition and then generates reports about the level of physical condition in the form of "Health Certificate". This system allows

process the data and get examination results in the shortest possible time, thus freeing the researcher from labor taking routine operations. It increases the accuracy of results registration and helps avoid mistakes of initial data processing which are inevitable when calculations of outcome measures are done manually [15].

One hundred and ninety three students of the first and second year of three Institutes of Siberian Federal University participated in the investigation: (1) Institute of Physical Education, Sport, and Tourism; (2) Institute of Education, Psychology, and Sociology; (3) Law Institute, Social Work Department. It was supposed that students do not have consensus about healthy life-style and measure on its realizations. Students of Institute of Physical Education, Sport, and Tourism will be more aware and motivated to lead a healthy life than students of other departments.

Notion and Factors of Healthy Life-style

The notions "health" and "healthy living" are determined in different ways, depending on the science area and particular investigation purposes. The review of modern studies on the interpretation of healthy living and its components is given in a number of published works [16-18 and others]. In general, there is a "narrow" interpretation and a "wide" interpretation of healthy life-style. According to the former, healthy life-style is a way of vital activity that conforms to the genetic typological features of a particular person and to the conditions of life. This kind of activity is directed to formation, keeping, and strengthening of health as well as to productive completion of person's social and biological functions. The set of individual practices, norms, and personal behavioral affirmations that lead to health improvement includes positive emotions, sleep, balanced nutrition, absence of ill habits, training, optimal traction mode, efficient organization of labor and rest, personal hygiene activities. Extend interpretation of healthy living includes life and work conditions, ecological situation, etc. Consequently, "mode of life of a separate person depends not only on himself but also on the society in general and the state that represents his interests" [19]. Demographic factors are considered as the most evident determinants of healthy life-style. Among important factors of changes in mode of life there is also

education, social factors (the circle and density of communication, formation of social connections), family factors, urbanization, technological changes, income level, and working conditions.

The Results of Survey According to “Nutrition” Questionnaire

We performed a survey among students to reveal their norms and personal behavioral models that brought them to improvement of worsening of health.

One hundred and ninety three participants replied to Nutrition questionnaire.

31.7% of students replied the question “Which nutrition component prevails in your daily ration?” – “I don’t know” and “balanced”; 22% of students replied “protein”; 20% of students replied “carbohydrate”.

58.5% of students have 3-4 meals per day; 41.35% of students have meals twice a day.

48.84% of the respondents consider it important to take into account the health utility of the food they eat, 12.2% consider it the main factor, 31.74% do not think about it.

46.34% of students think that the main thing while having a meal is to get satiated, taste of food is important for 36.64% of students, 17.02% of students do not think about what is the main point in having a meal.

While being asked about preferable food to satisfy hunger quickly, 7.3% of the respondents preferred chips, 24.4% preferred a cake, 19.5% preferred a hot-dog.

The material of the questionnaire showed that only 29.3% of students always have breakfast in the morning; 58.7% occasionally eat in the morning; 7.0% never have breakfast.

Regarding E-index we received approximately percentage-wise equal responses: “informed” – 36%; “heard, but not informed” – 31.7%; “have not heard about it” – 33.3%.

73% of the respondents prefer traditional nutrition; 17% prefer occasional fast; 5% are vegetarians; 5% practice separate nutrition.

Nothing prevents 12% of students to keep nutrition regimen during the day; 78% of students mentioned lack of time; 10% mentioned lack of wish.

The materials of the questionnaire revealed the following area of issues that can be of students’ interest in various aspects of nutrition: How to gain on/lose weight without hurting

health? What should daily ration of a sportsman include not to gain on weight and stay fit and healthy? What is E-index?

The Results of Survey According to “Students’ Mode of Life” Questionnaire

One hundred and ninety three participants replied to “Students’ mode of life” questionnaire.

The questionnaire revealed the fact that 44.3% of students combine studies with work.

Sleep duration of 17% of students is up to 5 h, 67% of students sleep 6-7 h and only 23% of students sleep according to the standard (8-9 h).

41% of students have meals in cafeterias during the working day; 40% eat in snack bars; 6% have snacks, cold food; 13% do not have any meals.

Regarding smoking frequency we got the following responses: 74% “never” smoke; 12% smoke “very seldom”; 3% smoke “sometimes”; 13% smoke “every day”. To get rid of stress, 6% of students use alcohol and nicotine; 46% do sports; 48% communicate with friends or in social nets.

The question “Do you consider it important to live a healthy life? Are there suitable conditions for it in the higher educational institution?” received the following responses: “I consider it important, but there are no conditions for it” – 38.6%; “I consider it important and there are all conditions for it in the higher educational institution” – 24.34%; “I consider it important, but there is not enough educative work on organization of healthy life-style done” – 25.7%; “I cannot say” – 11.36%. It should be noted that 70% of students pointed out the difficulties that they have during the studies in higher educational institution. It proves low level of psychophysiological adaptation.

Level of Students’ Physical Condition

We suggested that the respondents should estimate their health according to four-grade scale. The following replies were received (Table 1):

The data in the table prove that most students consider good health to be the most acute basic value. Subjective evaluation of health varies from 50% to 77%. But students of each group mentioned they had chronic illnesses.

Table 1: Subjective evaluation of students' health condition (accuracy according to Wilcoxon T-rank).

Students of the Institute	Health level evaluation, % ($\pm m$)				Have chronic illnesses
	Excellent	Good	Satisfactory	Bad	
Institute of Physical Education, Sport, and Tourism <i>n</i> = 20	25.0 \pm 2.4 <i>p</i> < 0.001	75.0 \pm 3.2 <i>p</i> < 0.05	-	-	15.0 \pm 0.01
Institute of Education, Psychology, and Sociology <i>n</i> = 20	25.0 \pm 2.4 <i>p</i> < 0.01	50.0 \pm 2.6 <i>p</i> < 0.05	25.0 \pm 2.4 <i>p</i> < 0.01	-	25.0 \pm 0.1
Law Institute <i>n</i> = 20	10.0 \pm 0.84 <i>p</i> < 0.001	65.0 \pm 1.9 <i>p</i> < 0.05	25.0 \pm 2.4 <i>p</i> < 0.01	-	35.0 \pm 0.8

The studies took into account that self-evaluation of health can only partially reflect real condition of the tested person and it bears subjective character. It depends strongly on the respondent's general state at the moment of polling, on the particular life situation, psychoemotional condition and it is not based on the results of medical examinations. To compare the subjective data with objective indicators, we performed an examination with the help of automated program "Physical condition". This program views physical condition as a state of regulatory systems of the body that show working efficiency and tolerance of organism to physical load. Estimation of physical condition level is based on the data of morphofunctional properties of the body, physical development and functional condition of cardiovascular system and is integrally measured. O.N. Moskovchenko singled out five levels of physical condition: (1) high level, (2) above the average level, (3) average level, (4) below the average level, and (5) low level [20].

High level of physical state is characterized by satisfactory adaptation, high level of regulatory systems, working efficiency and tolerance to physical load, excellent response of cardiovascular system to functional load, high resistance of immune system to cold-related diseases, the body's resistance to various impacts of the environment, as well as harmonious physical development. Physical state above average level is characterized by slightly lowered adaptive opportunities, inconsiderable strain of regulatory systems and lowered tolerance to physical load. It is also marked by quite high working efficiency,

good or average response of cardiovascular system to functional load, and high enough resistance of immune system to cold-related diseases. Physical state of average level is characterized by lowered adaption; considerable strain of regulatory systems, disturbance of cardiac cycle rhythm, average tolerance to physical load, average level of working efficiency, and lowered resistance of immune system to cold-related diseases.

Comparative analysis of students' physical state level is given in Table 2.

We can see from the table that the physical state level has a more real estimation and significantly differs from the respondents' subjective evaluation. But it is obvious that students with chronic diseases have a much lower level of physical state.

It was revealed that: (1) Students with high level of physical state and physical state above the average level make a cult of healthy living in 15% of cases, in 62% of cases students prefer lead a healthy life-style to be sound, to have opportunities for self-improvement, self-assertion, etc. (2) Students with average level of physical state place care of their health on the top position; they think that healthy living helps keep high working efficiency. 25% of the asked students live a healthy life all the time, 26% of the respondents do it occasionally, 56% of the students noted that healthy living helps them resist ill habits. (3) 80% of the students with low level of physical state say that it is necessary to live a healthy life because it helps strengthen health, but due to low motivation not more than 15% stick to healthy living.

Table 2: Estimation of students' physical state (accuracy according to Wilcoxon T-rank).

Students of the Institute	Health level evaluation, % ($\pm m$)				
	High	Above average	Average	Below average	Low
Institute of Physical Education, Sport, and Tourism <i>n</i> = 20	10.0 \pm 1.1 <i>p</i> < 0.01	60.0 \pm 5.4 <i>p</i> < 0.05	30.0 \pm 2.3 <i>p</i> < 0.05	–	–
Institute of Education, Psychology, and Sociology <i>n</i> = 20	–	15.0 \pm 0.5 <i>p</i> < 0.01	60.0 \pm 5.0 <i>p</i> < 0.05	20.0 \pm 1.8 <i>p</i> < 0.05	5.0 \pm 0.01 <i>p</i> < 0.001
Law Institute <i>n</i> = 20	–	25.0 \pm 2.4 <i>p</i> < 0.01	50.0 \pm 4.4 <i>p</i> < 0.05	15.0 \pm 0.5 <i>p</i> < 0.01	10.0 \pm 1.1 <i>p</i> < 0.001

The Results of Survey According to “Students’ Healthy Life-style” Questionnaire

Sixty participants replied to the questionnaire, equal parts from the three institutes.

Most of the students (91% from Institute of Physical Education, Sport, and Tourism; 88% from Institute of Education, Psychology, and Sociology; and 88.2% from Law Institute) hold the view that healthy living is obligatory. But only 85% of the students from Institute of Physical Education, Sport, and Tourism; 41.2% of the students from Institute of Education, Psychology, and Sociology; and 44% of the students from Law Institute replied positively the question “Do you think that your health depends on the mode of life you live?”

The survey results showed that students include into the notion “healthy life-style” in various meanings not more than five of the following factors: correct nutrition, positive attitude to life, sound sleep, physical training and

sports practice, absence of ill habits, encyclical self-realization of a person, active rest, following the day regimen and hygiene rules, cold training, daily morning exercises, diverse spiritual life, harmonious family relationships, and state of complete physical and social well-being.

No student marked reasonable regimen of work and rest. In our opinion, if one follows strictly correct regimen an accurate and proper rhythm of organism functioning can be developed. And this creates optimal conditions for work and rest, thus contributing to the strengthening of health.

Table 3 contains students’ replies to question “Where do you get information about healthy life-style from?” (one respondent could mark several sources of information).

Table 3 shows that 87.5% of the students from Institute of Education, Psychology, and Sociology; 37.5% of the students from Law Institute; and 32.0% of the students from Institute of Physical Education, Sport, and Tourism receive

Table 3: Students’ sources of healthy living information (in %).

Students of the Institute	Information source				
	Life experience	Internet	Educational subjects	Friends	Professional consultations
Institute of Physical Education, Sport, and Tourism <i>n</i> = 20	32.0	44.0	12.0	2.0	20.0
Institute of Education, Psychology, and Sociology <i>n</i> = 20	87.5	25.0	16.0	–	12.5
Law Institute <i>n</i> = 20	37.5	62.5	5.0	25.0	37.0

information about healthy life-style on their own, based on their life experience. Internet resources are used by 62.5% of the students from Law Institute; 44.0% of the students from Institute of Physical Education, Sport, and Tourism; and 25.0% of the students from Institute of Education, Psychology, and Sociology. Almost all the asked students consider that they have enough knowledge about the issues of healthy life-style. At the same time, 20.0% of the students from Institute of Physical Education, Sport, and Tourism; 12.5% of the students from Institute of Education, Psychology, and Sociology; and 37% of the students from Law Institute prefer consult specialists on these issues. Insignificant number of the respondents noted that they receive information from their parents, friends, or from course of lectures.

Inferences

The materials of studies showed the following:

- 1) Students are partially informed on healthy life-style and its components. They have complex ideas of health and healthy living, and a dual attitude to behavioral factors of support of healthy mode of life.
- 2) Mode of life of the most asked students excludes such healthy life-style components as balanced nutrition and reasonable regiment of work and rest.
- 3) Objective estimation of functional state of students is lower than their own (subjective) opinion on their health.
- 4) In general, students are motivated to live a healthy life. Their behavioral models are connected with the level of their physical state.

Conclusion

It is important that each person should realize that healthy mode of life is his personal success; that behavioral factors (habits and life-style) contribute to strengthening of physical, reproductive, and mental health of a student, or vice versa, make harm to him. The results of the surveys confirmed our assumption of the fact that the students of Institute of Physical Education, Sport, and Tourism are more motivated to healthy living. At the same time, we did not reveal

considerable difference of awareness of these students of healthy life-style from the awareness the students from other departments.

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