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HEALTH LEVEL AND FITNESS OF SECONDARY SCHOOL PUPILS IN UKRAINE

Abstract

To clarify the importance of pupils' regular physical activity for improving their health, adopting healthy lifestyle, and preventing injurious habits is the burning question nowadays. The aim of the research was to investigate interrelations between pupils' health level and their physical and mental development indices; as well as pupils' lifestyle and their fitness. The worsening of schoolchildren's health which caused the growth of number of pupils who have joined the special medical groups during last ten years is confirmed. It was found out that the most common diseases pupils suffer from are those affecting organs of respiration, digestion, muscular-skeleton system, and eyesight impairment; such conditions as a bad posture, scoliosis, cardio-vascular and endocrine diseases have become more and more frequent among children of school age. The factors affecting pupils' health are as follows: kind of educational institution where a pupil is studying, his/her living area, and gender. It is revealed that the schoolchildren who belong to special medical groups are characterized by low and lower than average fitness indices, and by number of insufficient development of socially important mental and physical qualities. A lot of tobacco smokers are among such pupils and they are usually unsatisfied with their own health level and amount of their physical activities.

Key words

health, fitness, pupils, lifestyle, psychic and physical development.

Introduction

Health is one of the essential human's conditions for proper accomplishment of his/her social and professional duties. The alarming tendency of health level worsening and fitness decreasing among schoolchildren has aroused in modern society nowadays. The present youth's health level makes the real threat to the nation's gene pool and, therefore, Ukraine's security [1]. The society is especially worried by schoolchildren's fitness because every eighth child of preschool age is relatively healthy while after finishing school only one pupil of twenty can be considered as a fit (Bukhanovs'ka T. M., 2008). According to some other data only 1.1% of total number of children are practically healthy (Majdannyyk V. G., 2002).

Teenagers' health is an open issue for the whole nation and for physical education in particular since it is difficult to overestimate the value of pupils' daily physical activity in order to improve their health, to form healthy lifestyle, and to prevent injurious habits. Physical education, as an integral part of a person's education and

healthy lifestyle, influences greatly not only on improving his/her health and fitness but on the person's social behavior and adaptation as well as professional training.

Study of library resources confirms the steady tendency for health decreasing of Ukraine's population. Such a tendency has led towards the situation that the average lifetime of Ukrainians is 10 – 12 years shorter than those who live within the states of European Union. Practically all diseases are gradually spreading among children and teenagers in Ukraine. During the period of 1999 – 2004 the quantity of diseases per 10 thousand children increases from 14,314.9 to 15,799.5 cases, so the rate is 10.4% (Parkhomenko L. K., 2006). Sickness rate in the midst of schoolchildren has increased by 26.8% during last 10 years [13].

To achieve health effect with the help of physical education it is necessary to obtain some information on fitness and functional activity of schoolchildren with special needs. However, available special literature contains too little data needed to make it possible to differentiate pupils, directed to the special medical groups according to psychological and physical development, and wellness indices, from practically healthy ones.

The **aim** of the research is to study the interrelations between schoolchildren's health level and their physical and psychic development indices, physical fitness and lifestyle.

Tasks:

1. To define the key tendencies of schoolchildren morbidity indices in Ukraine in modern conditions.
2. To establish schoolchildren's physical fitness, lifestyle, their physical and psychic development indices, and their interrelations with pupils' health level.
3. To give characteristics to schoolchildren's physical fitness, psychic and physical development.

Material and methods:

integration of reviewing the special literature and data collection.

Results and discussion

Medical officers, teachers, instructors, and parents are badly worried with the fact that schoolchildren's health seriously has grown worse recently. The number of practically healthy first grade pupils has decreased from 40.3% to 23.6% during the last 10 years [3]. While studying at school pupils' health is getting worse and worse. Thus entering school about 10 – 20% of pupils has some health problems while at the end of the primary school course the percentage increases to 50 – 60% [5, 9]. The well-known fact is that children spend eleven the most intensive years of their development at school. During those years schoolchildren are engaged in the process of acquiring of enormous amount of information and at the same time they are limited in their physical activity (Kalynychnenko O., 2008). Therefore, alongside with the certificate school leavers receive number of diseases. It has been found out that morbidity of the schoolchildren who study at the modern schools, high schools or lyceums is higher (1251.12%) then at the traditional conservative schools (1017.17%) (Kalynychnenko O., 2008). Thus we have drawn a conclusion that enlarged curriculum

is accompanied with logical necessity of mastering larger information volume, educational and emotional overloading closely connected with examination and test stress-factors in terms of reduced physical activity, chronic undersleep, insufficient and irregular nutrition which cause poor fitness of youth.

The worsening of youth's health and fitness level has led to increasing number of schoolchildren who are directed to special groups and don't attend Physical Training lessons or they practice exercises according to special syllabus. In average about 48.3% of schoolchildren suffer from diseases of different stages and accordingly they train in health-related (38.3%) or special medical (8%) groups, besides 2% of schoolchildren who don't attend Physical Training lessons because of poor health [4, 5]. The number of pupils training in special medical groups tends to increase rapidly. At the beginning of the century their share ranged from 10 to 20-25% but it has been 40% recently (Bulkina N. P., 2008).

Since children's morbidity in terms of school education environment is increasing, the number of schoolchildren in special medical groups is changing according to their age. The number of schoolchildren directed to special medical group increases from 1.2% - 6.1% at the first grade to 4.0% - 9.3% at the ninth and 3,3% at the eleventh grade while the number of schoolchildren in the base medical group inversely decreases from 61.4% - 78.7% at the first grade to 47.2% - 64.5% at the fifth and 43.9% at the eleventh grade [4,7]. Although we have observed the total negative dynamics in children's health level, our research confirms the tendency towards the improvement of schoolchildren' fitness in the elevens grade in comparison with the ninth which probably occurs because of elimination of senior pupils from the final grades in connection with their poor progress in studies caused by their poor health (fig. 1).

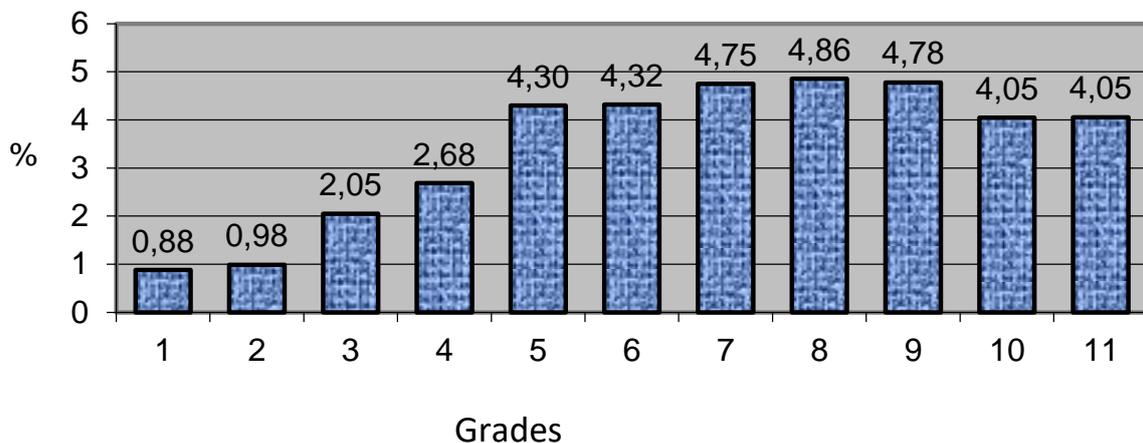


Fig. 1. Number (in % per grades) of L'viv secondary school pupils directed to special groups by medical officers.

Girls make the majority of special group. Thus, 2.19% of girls and 1.79% of boys are directed to a special group [2]. This fact proves that the prior cause of children and adolescents' health worsening is decrease of physical activity (in particular owing to diseases) as it is well-known that girls' motor activity usually is less than boys'.

Specific weight of schoolchildren with poor health who make special medical group (SMG) is larger in cities (4.91+0.35%) and towns (3.75+0.41%) than in

countryside (Kalynychenko I. O., and others 2008; Spyryn V. K., 2002). A stable functional disorder of body happens more often among urban youth 41.7% than among rural boys 39.7% (Basanets L. M. 2008). So, the fact that urban pupils' lifestyle is less healthy than that of rural ones has been confirmed.

During the school years the number of children with chronic diseases multiplies in 1.5 – 2 times [Datsenko I. I., 2006; Berezin V. I., 2008]. The share of children with chronic diseases has grown from 44.6 to 70% during the last 10 years [3].

During the school years the number of pupils with “satisfactory” health is increasing due to the decreasing the number of pupils with “good” health [8]. Self-estimating of pupils' health is based on their appealing to medical officers and the frequency of diseases gained during school years as well as on subjective feelings: headache caused by intensive mental loadings, fatigue during educational process, and difficulty with waking up in the morning. These and some other symptoms of intermediary state (pre-disease state) give warning of possibility of neurological diseases in future under the conditions mentioned above. Thus, needless to say that according to some particular studies the most widespread diseases in school age are neurological and mental ones [12, 14]. The tendency of increasing number of mental disorders among young people threatens with degeneracy of nation's gene pool. That's why a child's mental health should be taken into consideration especially under present conditions.

Although the frequency of diseases among schoolchildren is different according to various sources, the range of diseases inherent to them is the same. The most widespread diseases are those of digestion system owing to gastritis and accompanying conditions; nervous system owing to visual impairments and vegetovascular dystonia; respiratory diseases owing to nose and throat pathologies. Diseases of endocrine and muscular-skeletal systems are among widespread ones too [<http://vidomosti-ua.com/newspaper/51313>].

However, the analyzed chronic pathology in age groups is changing. So, respiratory diseases prevail among pre-school children. Diseases of skeleton-muscular system and endocrine system increase according to the children's age (fig.2).

Recently, the number of respiratory infections has grown 7 times as large per year [13], diseases of digestion system in schoolchildren has increased 1.4 times as large [12, 13], and endocrine system diseases 2 times as large [12, 13].

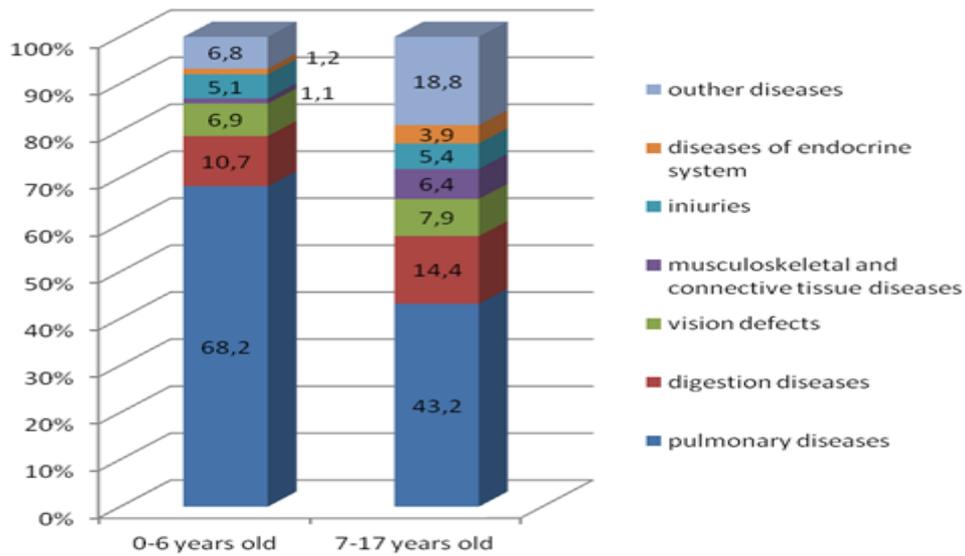


Fig. 2. Structure of disease prevalence with children, % (Zaleska V. V., [www3.health.kyev.ua/files/deti.ppt])

Sight pathology is a typical school problem [9]. For the years of schooling the vision of Ukrainian pupils deteriorates more than doubled (fig.3) [12, 14, www3.health.kyev.ua/files/deti.ppt]. The hereditary predisposition to short-sightedness (med. 'myopia') is one of its causes, while the main ones of acquired myopia are next: an increased visual strain; the absence of rotation of the visual work with the rest for the eyes; hypodynamia (lack of exercise); an improper position at the desk; a poor lighting; a lack of vitamins in food. The first half of unhealthy factors can be easily removed by means of physical education. However, an ongoing program of physical education for pupils of a special medical group has no means of the prevention and correction of schoolchildren disorders. The guidelines on the methodology of using corrective exercises are absent for physical education teachers as well as differentiated techniques that take into account the health state, the level of physical development and readiness of children. Nowadays, because of the lack of relevant practical recommendations and guides, the work on the prevention and correction of disorders of pupils' health state in secondary schools is in fact unrealized.

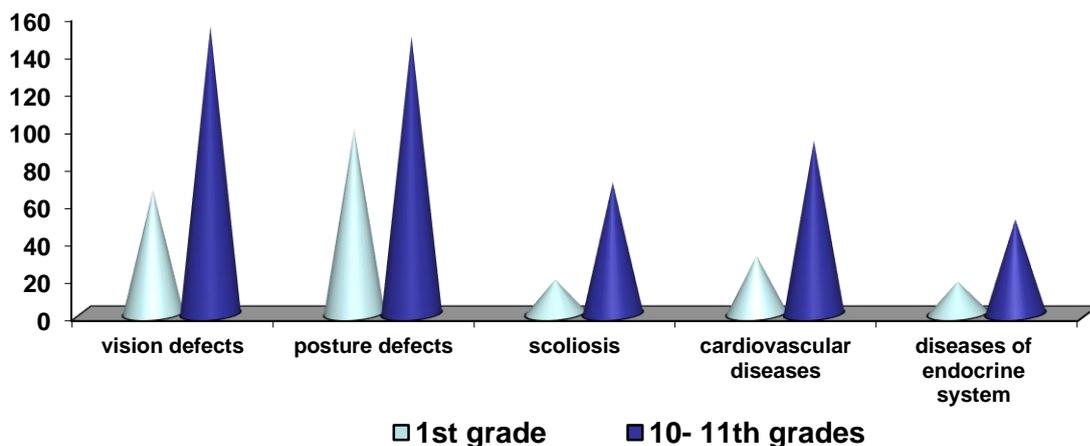


Fig. 3. Increase in the incidence with children for the years of schooling (Zaleska V. V., [www3.health.kyev.ua/files/deti.ppt])

The other leading pathology of schoolchildren is connected with the musculoskeletal system. Violations of posture occur with 70-90 % of pupils: namely, scoliosis and kyphotic posture. With each next year the incidence of musculoskeletal system increases –the degree of posture violations strengthens whereas the amount of children with disorders expands. The incidence rate of scoliosis in particular redoubles in 4-5 time during the years of study [12, 14]. There are 1,5% of 5th grade pupils with posture defects; 6th grade – 19,4%; 7th grade – 30,4%; , 10th grade – about 70% [6, 12, 13]. It has been proved that the largest number of posture violations, involving changes of the spine, is observed with 11-15 aged children [6].

The tendency to posture defects growth, as it is noted, has the opposite direction to a reduction in sports minutes and breaks upon lessons in secondary schools. Well, 58,3% of 5th grade children marked that while conducting above-mentioned activities the exercises for posture correction were used, but there were 38,4% of such pupils in the 10th form. Sports minutes and breaks at lessons of the general cycle are realized only in every second school. Therefore we support the idea that not all preventive measures are used in order to avoid posture violations with children in the mode of a school day.

A critical level of children's health is the result of their physical activity reduction at the daily time-table together with an expanding static and psycho-emotional tension of the learning process, computer technologies' introduction in everyday life, the irrational nourishment, the tendency to harmful habits, unfavorable environmental conditions [4]. New risk factors for the health, which were of small importance in the past, have been identified recently, for example, the increase of life tempo and rhythm while reducing the response time, the rise of emotional stresses when reducing positive emotions, the formalization of interpersonal communications due to the communicative glut etc.. (Dutchak M., Blagiy O., 2012).

The irrational alimentation is one of the reasons of unsatisfactory health conditions of young people. The content of cereals, pasta and bread in schoolchildren diets exceeds the recommended values by 16, 5–25, 6% (Fedorenko V. and others, 2007; Kulchytska V. and others, 2004; Kostenko O. and others, 2004). However, the energy value of pupils' diet is lower than the physiological norm for 15%; protein deficiency is 29%; the shortage of animal protein makes up to 40%; the deficiency of fat forms 14%. The deficiency of animal proteins in child ration (especially within the first year of life) leads to lagging not only in physical, but also in the intellectual development, since protein synthesis plays a key role in transferring the information from the short-term to the long-term conservation form. In food packages the lack of meat, seafood, fish, fruit and vegetables is often detected (the deficit is 44,7-86,5%), practically there are no juices or milk (children receive less to 300-350 ml of milk daily) (Skaletska N., 2012). Such products as meat (or fish), milk, sour-milk cheese are considered mandatory in the daily use of children and adolescents, and especially needed during strenuous exercises.

Smoking contributes to the development of many chronic diseases; almost a half of tobacco products consumers die prematurely, which is why the spread of harmful habits among young people is of particular concern. Well, each fourth teenager smokes his/her first cigarette at age 10; almost 30% of boys and girls smoke being 13-15years old [1]. What is characteristic is that amongst the directed for health reasons to a special medical group only a small number of children abandoned this habit

(16,4%), whereas 36,7% of major medical group representatives do not smoke at all, which roughly corresponds to the number of non-smokers midst athletes (30%) (Pashin A., 2011).

Drinking alcohol among children and adolescents may lead to serious and irreversible health complications, such as: disorders of the brain development which causes constant problems with the memory, the attention stability and the reaction time; an increase of chances for liver injury; the violation of hormonal balance so required for the normal development of organs, muscles and bones – particularly during puberty. On-alcoholic and low-alcohol beverages contain large doses of synthetic caffeine, of natural tonic biologically active substances from medicinal plants. The abuse of these drinks causes overstrains with further exhaustion of the nervous system, disturbances of behavioral (euphoria, irritability) and cognitive functions (such as concentration and memorizing); the process of falling asleep complicates with children [7, 8]. The consumption of energy drinks that contain alcohol is considered especially dangerous for teenagers. It has been also proved that the consumption of such beverages affects the nature of alcohol intoxication, leads to the inadequate assessment of their own behavior, and increases the risk of alcoholism, substance abuse and drug addiction in adulthood (Pedan V., 2009).

The first attempt of alcoholic beverages most often occurs at the age of 13-15. The researches have shown that 3% of the young drink beer every day while 21% drink it at least once a week. 15% of Ukrainian respondents consume low- alcohol drinks at least once per month, whereas the situation with wine is nearly the same – 14%. Strong alcoholic beverages are consumed by 8% of students. Moreover, the frequency of alcohol consumption, particularly of strong ones, increases with age. If amongst the teenagers 80% do not use such alcohol drinks at all, then less than a third of young people over 25 years does [1]. The alcohol addiction rejuvenates and gets «feministic», too. The acute alcohol intoxication is being registered with 200 of 100 000 adolescents and with 4 of 100 000 children.

There is very little information in the literature on the indicators of children's physical and mental development or their physical readiness being referred to a special medical group, comparing with the children from a basic medical group. It significantly limits the ability to differentiate and individualize exercises at lessons of physical education with a special medical group.

Authentically significant differences ($P < 0,001$) of morphological, functional or neurodynamic parameters are observed midst pupils distributed to a basic and a special medical groups depending on children's health of different sex and age [11]. Schoolchildren of a special medical group more often have a low or below average *physical development* (Lewandowska O. and others, 2005). In the above-mentioned group, regardless of children gender and age, lower than average and the low physical development occurs three times more likely than in a basic medical group. The average, above average and high physical development is observed in 86% of a basic medical group's students, when there are only 45% of them in a special one. Whereas, according to the indices of Skubinski and Ruf'ye, no significant differences have been noted between pupils of the basic and preparatory groups, these parameters differ significantly among special and basic medical groups' schoolchildren [10]. Therefore, 45,4% of students of a basic group have the harmonic structure, when there is slightly

less of these children in the preparatory one (21,2%), and only 8% in a special medical group [10].

A significant difference in the satisfaction level of the own health and the amount of motor activity is being observed midst the students of special and basic medical groups. It is quite logically that no more than 42,1% of young people, who are actively involved in sport, are 'absolutely satisfied' with their health condition, when this index with a basic medical group is lower (26,3%), and there are just few 'satisfied' persons amid a special group (12,1%) (Sutula V., 2002). Hence, 45, 8% of boys and 35,4% of girls who train regularly are the most contented with their physical activity within all others. The special group contains persons unsatisfied with their level of motor activity and the number of those who are satisfied is minor (20,8% of boys and 18,6% of girls) (Hryban H.P., 2012).

Schoolchildren in special medical groups are inactive and apathetic during their trainings. Such psychic features as initiative, discipline, self-control, emotional stability, and firmness are insufficiently developed in the children (Dutov A.M., Marzaganov H.T., 1997; Murza V.P. 2005). They feel ashamed of their clumsiness and want to be unnoticed during the lessons. It leads to low activity at the PT lessons and during extra lesson activities.

Schoolchildren in special medical groups have much lower level of physical qualities [11]. In 25,3 – 41,8 % of schoolchildren in special medical groups physical qualities are developed insufficiently. From the total number of children special group of schoolchildren with low physical preparedness index is 13-23 per cents. Especially, low valuation of Shapovalova index indicates insufficient development of strength, speed and strength endurance in 20 % of special medical girls groups. [10]. All physical features, besides flexibility, remain behind in development. However, lagging becomes clearly apparent during physical loadings, which demand endurance.

Conclusions

During last 10 years negative dynamic of schoolchildren health is observed. The number of first year pupils reduced and quantity of special medical groups increased from 10 to 40 per cents, in each school grade the quantity of sicknesses also increased. Afterwards, number of special medical groups increases and pre-nosological symptoms also rises.

During school years the most spread are pulmonary and digestion diseases, vision and musculoskeletal dysfunctions. Vision disorders, posture defects, scoliosis, cardiovascular and endocrine system diseases grow more serious. Physical exercise is an effective preventive measure from these diseases. Also nourishment and allowance from bad habits are very important. However, today not all prevent measures are used.

The level of children's health depends on type of educational institution, as in new educational institution type sickness rate is higher, then in ordinary schools; sex, in special medical groups number of girls is higher. Feedback is noted, special medical groups contain more tobacco smokers then basic ones.

Children in special medical groups differ lower indexes from average. The number of schoolchildren with harmonic development is lower, social important aspects are developed insufficiently and low level of endurance is defined.

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