

Health status of the students from the sport lyceums

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Abstract. The development and growth period of the students from the sport lyceums is marked by an obvious worsening in their health status. This is caused not only by the socio-economic factors, but also by living, training and unfavorable lifestyle factors. *Objective.* Health status assessment of the students from sport lyceums of Chisinau municipality. *Method.* A descriptive, longitudinal study of the health status of the students from sports lyceums was conducted, for a period of 10 years (2007-2016). It was analyzed the incidence, prevalence and structure of general morbidity based on which the students were distributed by health groups. *Results.* The morbidity level in the students from Republican Sports Boarding Lyceum, in the study period is higher than in Municipal Sports Lyceum and republican average level. In the structure of their morbidity predominate the diseases of respiratory system, diseases of eye and its annexes, traumatic injuries, skin and subcutaneous cellular tissue diseases, which constitutes 82.1% out of all registered diseases. *Conclusions.* Although the adolescence period is considered a healthier stage of life compared to early childhood and advanced age, the morbidity in the students from general and sports lyceums mark's worrying trends. The healthy behaviors established during this period are important benefits for the long-term health of the population.

Key words: health status, students, sports lyceum, preventions measures.

Introduction

It is known that in the context of growth and development of the body, the adolescence period is one of the critical periods of individual development. It is considered one of the most sensitive stage in human life, with sexual and endocrine changes, with transition from childhood to adulthood, essential changes in the psycho-emotional sphere. The young population is exposed to multiple challenges carrying health risks.

Therefore, we consider particularly important to assess the health status and to highlight the determinant factors for young athletes for several reasons. In particular, the health problems of the young generation must be seen as interdependent with the social and economic environment; optimal environmental conditions and training. The inter-correlation of these aspects provides an optimal physical and mental state and a favorable dynamic ability to adapt to the continuous transformation of environment conditions.

Knowing the morpho-functional features of the growing body, proper training load, and in-depth medical surveillance are the guarantee to the harmonious physical and psychological development of the young athletes, their health maintenance, the prevention of atypical reactions to effort and the achievement of high sports results in the future (1, 2).

The purpose of the present study is to evaluate the health status of the students from sport lyceums of Chisinau municipality.

Material and method

A descriptive, longitudinal study of the health status of the students from Republican Sports Boarding Lyceum (RSBL) and Municipal Sports Lyceum (MSL) of Chisinau municipality was conducted.

The students' health status aged between 11-18 years old was evaluated based on the report of student's morbidity (statistic form F-12/e) submitted by the educational institutions at the National Agency for Public Health. The incidence, prevalence and structure of general morbidity were analyzed as well as the distribution of students by health status. The observation period was retrospectively from 2007 to 2016.

For a broader elucidation of the morbidity in the students from the sports educational institutions, we proceed with an in-depth comparison with the reference group (with the average level of morbidity in the students

from the Republic of Moldova). The assessment of general morbidity was conducted according to ICD, WHO 10th edition. The analysis of obtained results was carried out applying the statistical methods for the small random selections, using the software Microsoft Excel, EpiInfo – 3.5.4, EpiMax Table. Descriptive data (incidence, %) are presented.

The study is part of a research project approved by the Ethics Committee of the *Nicolae Testemitanu* State University of Medicine and Pharmacy from the Republic of Moldova.

Results

The descriptive data of students' morbidity from the Republican Sports Boarding Lyceum and Municipal Sports Lyceum do not fall within the general context of the republican average level in the students from general educational institutions (figure 1). The variable of morbidity registered in Municipal Sports Lyceum is closer to republican average level.

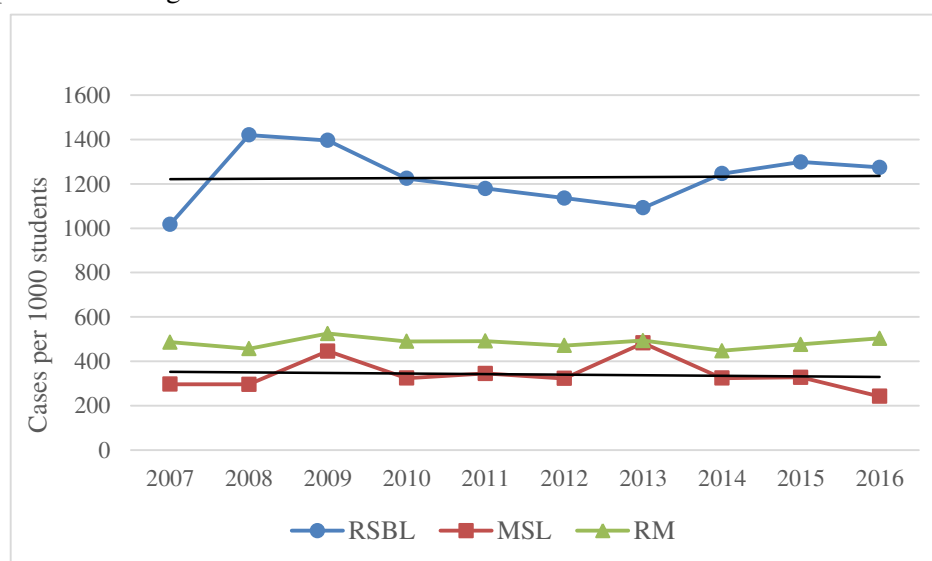


Figure 1. Prevalence of morbidity of students' sports lyceums during 2007-2016 (cases per 1000 students)
Note. RSBL- Republican Sports Boarding Lyceum; MSL - Municipal Sports Lyceum; RM – Republic of Moldova

In order to elucidate the specific morbidity in the segment of the students practicing the sport we carried out the comparative analysis of the morbidity registered in the Republican Sports Boarding Lyceum and Municipal Sports Lyceum. The structure of morbidity prevalence and incidence in sports students from sports educational institutions is shown in the figures 2 and 3.

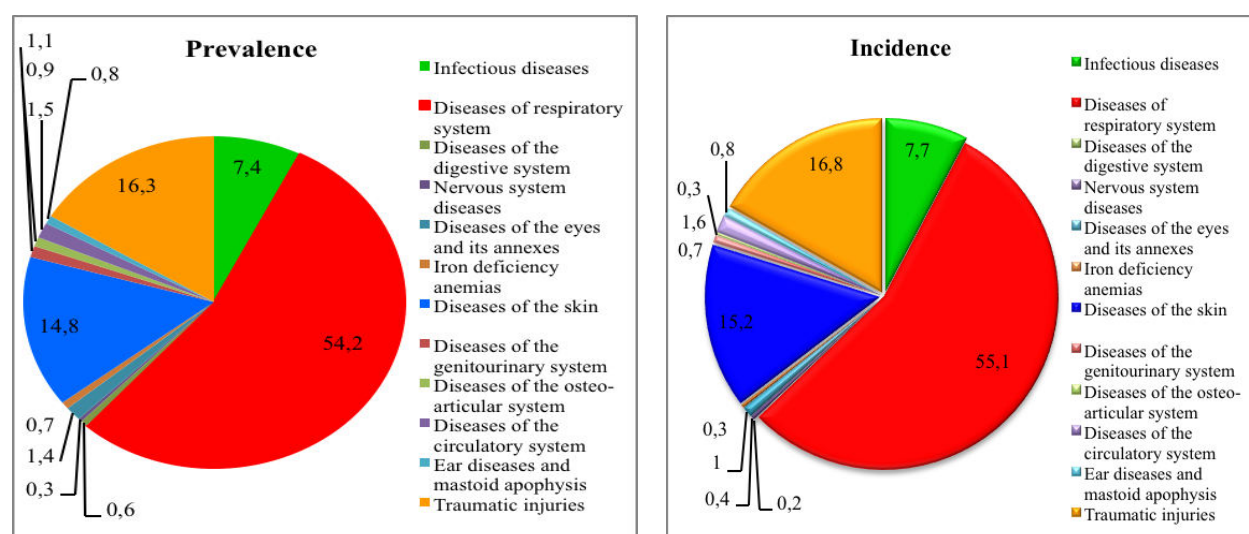


Figure 2. The comparative structure of prevalence and incidence registered in Republican Sports Boarding Lyceum

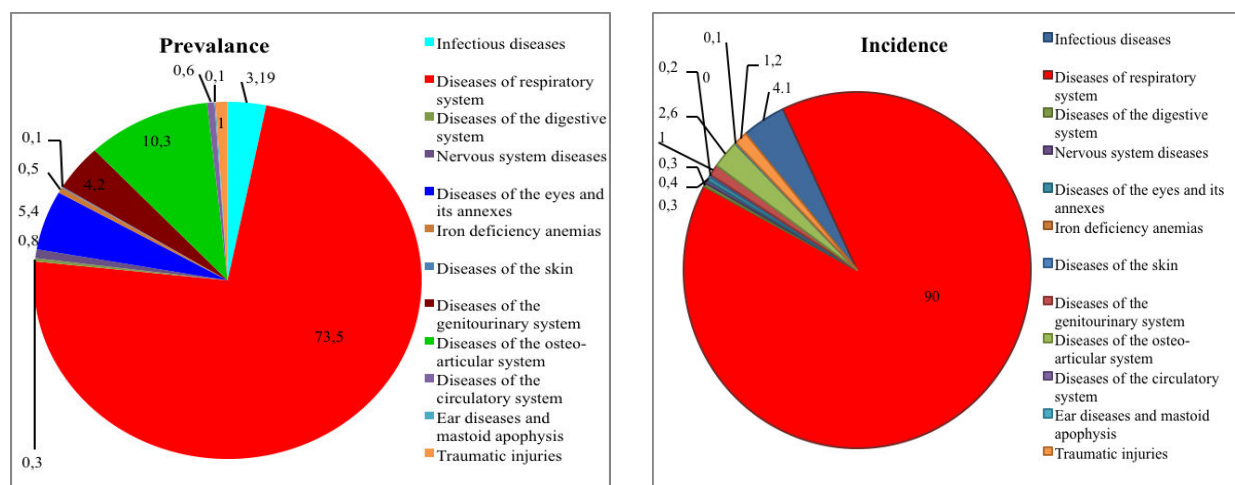


Figure 3. The comparative structure of prevalence and incidence registered in Municipal Sports Lyceum (%)

The comparative evaluation of the morbidity reveals the existence of differences in structure only at lyceum level. For these reasons, we considered it important to evaluate the structural characteristics of the morbidity indices registered in the sports and general educational institutions. The data obtained are shown in figure 4.

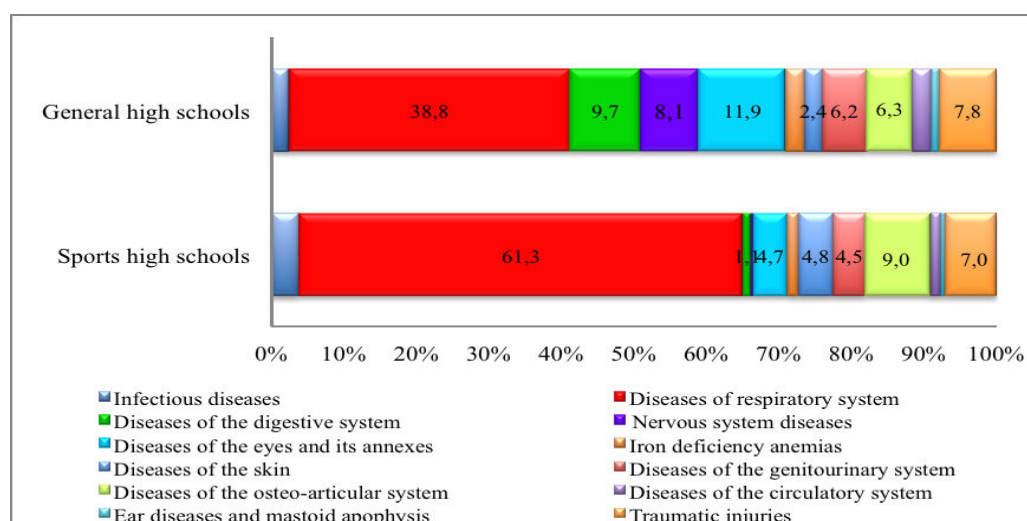


Figure 4. Comparative structure of morbidity of students in sports high schools and general profile (%)

Discussions and Conclusions

Overall, the multi-annual dynamics of morbidity registered in the Republican Sports Boarding Lyceum is characterized by two peaks of maximal incidence: in 2008 (1421 cases per 1000 students) and in 2009 (1396 cases per 1000 students). It is ascertained a decrease ($p < 0.05$) in the number of cases with sickness starting from 2010 to 2013 – from 1224 up to 1092 cases per 1000 students, which is followed by an unessential increase starting from 2014 to 2016 – from 1246 up to 1274 cases per 1000 sports students, respectively. At the same time, the morbidity registered at Municipal Sports Lyceum, compared to the Republican Sports Boarding Lyceum is characterized by lower prevalence and the appearance of two peaks of maximal incidence during the years 2009 and 2013 (446 and 482 cases per 1000 sports students). The average level of morbidity in the students from the Republican Sports Boarding Lyceum during the study period is 1228.5 cases per 1000 sports students, 2.5 times higher than the republican average level (484.5 cases per 1000 students).

The average level for the analyzed period registered in the Municipal Sports Lyceum is 340.6 cases per 1000 sports students, that is 3.6 times inferior the level registered in the Republican Sports Boarding Lyceum and 1.4 times the republican average level. The differences of the morbidity level registered in the sports educational institutions are veridical from statistical point of view ($p < 0,001$).

We consider that the superior level registered in the Republican Sports Boarding Lyceum can be explained, including by over-registering of morbidity cases, by summing up all cases of students appealing to medical counseling room of the institution. At the same time, we consider that the morbidity level registered in the Municipal Sports Lyceum is diminished, because as a rule the students appeal for medical care at territorial Public Medical Institution, without being reported in 100% of cases at the medical counseling room of the lyceum (depends on class master to motivate the absences).

When analyzing the dynamics of morbidity indices in relation to ICD-10, were proliferated evolutionary trends similar to the registered general level.

The highest values of morbidity prevalence in sports students from the Republican Sports Boarding Lyceum were registered for the diseases of respiratory system (J00-J99) – 796.9 cases per 1000 students, followed by traumatic injuries (T00-T98) – 190.3 cases, skin and subcutaneous cellular tissues diseases (L00-L99) – 148.3 cases, infectious diseases (A00-B99) – 76,5 cases, diseases of the genito-urinary system (N00-N99) – 54.4 cases and diseases of circulatory system (I00-I99) – 48.5 cases per 1000 students. Regarding the incidence, are noticed enhanced levels of the same disease classification as in the case of prevalence, but at a lower level within the limits of units. Thus, the incidence level of the diseases of respiratory system (J00-J99) represents – 704,1 cases, followed by traumatic injuries (T00-T98) – 203.8 cases, skin and subcutaneous cellular tissue diseases (L00-L99) – 150,4 cases, infectious diseases (A00-B99) – 57.9 cases per 1000 students.

In the Municipal Sports Lyceum, the highest rate for prevalence were respiratory system diseases (J00-J99) – 242.7 cases, followed by the diseases of the osteo-articular system, muscle and connective tissue diseases (M00-M99) – 52.9 cases, diseases of eyes and its annexes (H00-H59) – 26.5 cases, diseases of the genitourinary system (N00-N99) – 15.1 cases and infectious diseases (A00-B99) – 9.1 cases per 1000 students. The highest incidence level is characteristic for the diseases of respiratory system (J00-J99) – 241,9 cases, followed by the diseases of the osteo-articular system, muscle and connective tissue diseases (M00-M99) – 20.0 cases, infectious diseases (A00-B99) – 17.0 cases, diseases of genitourinary system (N00-N99) – 12.9 cases and diseases of eye and its annexes (H00-H59) – 11.8 cases per 1000 students.

According to the specialists in the field of sports medicine and public health, the assessment of the health status only by the intensive indices of morbidity is not complete and not always the registered manifestations can be related to the specific activity and influences exerted by the environmental factors. This dilemma is solved by analyzing the structure of morbidity. The comparative analysis of extensive indices of morbidity is also specified in the cases where intensive indices registered in two similar collectives show very big differences.

The comparative analysis of morbidity structure of students from sports and general profile lyceums proved that the diseases of respiratory system 38.8% and 61.3% respectively rank in the first place. The diseases of eye and its annexes 11.9% in general profile lyceum and diseases of osteo-articular system, diseases of muscle and connective tissue 9% in sports profile lyceums rank in the second place.

The diseases of digestive system and diseases of nervous system, 9.7% and 8.1% respectively ranks in the third and fourth places in the morbidity structure of the students from general profile lyceums. In the morbidity structure of the students from sports profile lyceums, the traumatic injuries 7% and skin and subcutaneous cellular tissue diseases 4.8% rank on the third and fourth places.

It is of interest the comparative assessment of health status of the students by health groups, as it is a complex index with a higher degree of information compared only to particular indices of morbidity.

Thus, for both sports educational institutions it is ascertained the prevalence of students in health group I that represents on average $56.6 \pm 1.36\%$ and $92.4 \pm 0.36\%$ correspondingly in the Republican Sports Boarding Lyceum and Municipal Sports Lyceum. At the same time it is ascertained the diminution of the proportions of those from health group II and health group III.

It should be noted that evolution of the students from health groups in the educational institutions under observation is different: in Municipal Sports Lyceum is stable and in Republican Sports Boarding Lyceum is considerable increase.

Healthy behavior during the adolescence and health status of young people is important for the prevention of developing chronic diseases in adulthood, such as diabetes mellitus, high blood pressure and heart disease (3).

The study realized by Cebanu S. (2018) highlighted that beside of the unstable socio-economic situation of the Republic of Moldova, in the last two decades, have led to negative trends of the health status in children and adolescents from all age groups (4).

The main causes of worsening of the health status in young population are the social and economic instability of the society, the unsafe condition of the children' living environment, the unfavorable ecological situation, the reduced activity of education for their health, etc. (5-7).

Practicing sport imposes the growing body supplementary overloads that make it more vulnerable, compared to the peers, which do not practice sport (8, 9).

According to Batti Molla data (2005), evaluation of health status of junior athletes showed that only 5.4 cases per 1000 athletes there were no risk factors found. In majority of young athletes were registered hidden functional disorders (10).

The screening of children from sports schools in the Russian Federation in 2008 showed that 19.3% of junior athletes suffered from chronic diseases or needed additional investigations or treatment, 57.2% were at risk of developing diseases and needed some preventive measures, only 23.5% were absolutely healthy (11).

In the last decade, injury prevention benefited from an enhanced attention in sports medicine, and recently the international bodies, such as the International Olympic Committee, have declared the protection of athletes' health as one of the major objectives (12). Furthermore, it is very important to detect disorders, which are common and not sever from a health perspective but may influence sports performance of young athletes (13,14).

Among the factors that have a negative impact on the health status of young athletes, the sports physicians pay more attention to the training intensity, the psycho-emotional strain, the frequent change of the climatic zones in which the competitions take place, the factors of the training environment in the sports halls (climatic, mechanical, chemical, biological, etc.), nutrition (15-18). In addition, each athlete has individual (personal) biological and performance risk factors: age, gender, genetic predisposition, previously underwent diseases and their inappropriate treatment, training level, degree of adaptation, etc. (13,18-20).

Safety in sport and physical activity are important prerequisites for continuing sport, as well as for maintaining a physically active, healthy lifestyle (21,22). This indicates the role of behavior in injury prevention, which is quite high.

Multiple bibliographic sources have shown that those who practice sports have lower rates of non-communicable diseases and better physical fitness level, but our study reveals the high incidence and prevalence of pathological conditions among them.

The morbidity level in the students from Republican Sports Boarding Lyceum during the years 2007 – 2016 is higher than in the students from the Municipal Sports Lyceum and on the overall republican average level.

In the structure of the morbidity in students from sports lyceums, the diseases of respiratory system, diseases of eye and its annexes, traumatic injuries and skin and subcutaneous cellular tissue diseases are more prevalent, constituting together 82.1% out of all registered diseases.

It is very important to provide further surveillance and monitoring of health status and to carry out health promotion activities and education for health among the students from pre-university sports institutions.

Conflict of interest. There were no conflicts of interest.

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