PEDIATRICS

Chaychenko T.V., Makieva N.I., Koval V.A., Makieva E.A., Buginskaya N.R.

PECULIARITIES OF THE GENERAL HEALTH AND LIFESTYLE OF ADOLESCENTS FROM INDUSTRIAL CITY AND RURAL AREA

Kharkiv National Medical University, Ukraine

Abstract. *Anthropometry, vital functions and lifestyle of 9th-grade students from industrial city and beyond have been studied. There are predominant fat mass in body composition of boys from industrial area and higher blood pressure levels comparatively to rural residents. Sedentary style of life, tendency to fast food consuming, increased incidence of colds are typical for the industrial district inhabitants regardless of gender. Thus, the results indicate high probability for potential cardiovascular risk, which requires wide promotion of healthy lifestyle and nutrition with the involvement of all members of the family.*

Keywords: *adolescents, cardiovascular risk, anthropometric parameters, vital functions, lifestyle*

Actuality of the topic. Worsening of ecological situation and socio-economic state of considerable part of population, stress factors lead to progressive worsening of parameters of health of children. In spite of numerous studies in sector of ecopathology of children, detection of abnormalities of children dependent on ecology is still an important mission, because of both a considerable variety of effects of environmental factors on health of children and difficulties of finding of cause-effect relationships [1, 2, 3, 4]. Pollution of atmospheric air by industrial emissions, especially by ones of chemical plants and auto transport, is one of the most important problems of industrial city [5, 6, 7]. Heavy metals are main ecological pollutants, they decrease host defences opportunities in general, effecting on immunity and health state of children and teenagers.

According to official data (guideline ofMinistry of Public Healthof Ukraine [25], annual report of Ministry of Public Healthof Ukraine about health state of population of Kharkiv region and results of work of sanitary-and-epidemiologic institution, ecological atlas of Kharkiv region [17,18,19]), districts with good and satisfactory

ecological situation have been defined.While this distribution it was taken into account such parameters, as pollution of meals, pollution of atmospheric air, anthropogenic load of autotransport on atmospheric air, anthropogenic load of stationary sources on atmospheric air, accumulation and storage of wastes, emissions of pollutants.

Despite of presence of results of study of effects of environmental factors on health state, features of development of children haven't been revealed up to the present.

Purpose – to identify the features of anthropometric parameters, vital functions and lifestyle of 9th-grade students that live in the industrial city (urban) and beyond (rural).

Object and methods of studying.94 teenagers, students of 9th grade (43 boys and 51 girls) aged 14-15 years have been studied. Amongexaminedteenagerstherewere42 students from the city with areas with adverse environmental background (urban) and 52 students from districts of region with favourable environmental background (rural). Data on environmental background have been obtained from official statistical reports by region.The students of 9th grade have been chosen due to the fact that these persons of puberty age, who are preparingto enter high school or other educational institutions, so require monitoring of adaptive opportunities in connection with necessity for development of plans for prophylactic medical examination for entry in adulthood.

While carrying out anthropometry the following parameters have been taken into account: body mass in kilograms (M, kg); standing height in meters (H, m) (measurements have been held by device Seca-202); chest circumference in centimetres (ChC, cm); waist circumference in centimetres (WC, cm); hip circumference in centimetres (HC, cm); mid-arm circumference in centimetres (MAC, cm); thigh circumference in centimetres (ThC, cm); shin circumference in centimetres (ShC, cm); also body mass index (BMI) and body surface area (BSA) have been calculated by formulas. In addition skinfold thickness (mass of subcutaneous tissue) has been measured with a help of mechanical spring Lange Skinfold Caliper (Beta Technology, USA) (accuracy 1 mm) in standard positions:

under scapula (STS), over biceps (STB), over triceps (STT), in ileocecal region (STI)with following calculation of total skinfold thickness (TST) by algebraic sum.

Method for studying of body structure V.G.A. Durnin and others with standards for teenagers, assessment of percentage of fat in organism (% of fat) have been used for studying of body structure.

Following main vital functions have been studied: respiratory rate (RR), heart rate (HR), systolic blood pressure (SBP) and diastolic blood pressure (DBP), which has been measured by«Omron M-6» device.

Features of general life style have been studied by questioning with a help of specially compiling form, answers of which reflect features of diet, physical activity, sleep, presence of acute respiratory infections and chronic diseases.

Mathematical data processing and statistical analysis have been held by personal computer with a help of statistical programs “EXCELL FOR WINDOWS” and “STATISTICA 7.0. FOR WINDOWS”.Both qualitative character (presence or absence of feature) and parametric character (age, height, mass, etc) have been assessed. Mean value (M), standard deviation (σ) have been used as group characteristics. Difference between parameters is considered statistically significant at $p < 0.05$.

Results of research and their discussion.

There were nosignificant changes in fraction of examined teenagers neither in sex(54.3% girls and 45.7% boys), nor in inhabitancy (44.7% inhabitants of city and 55.3% inhabitant of region).

The average age of the examined urban teenagers was 14,36 ± 0,58 years and of rural ones was14,23 ± 0,83 ($p> 0.05$). Significant differences among examined by age among girls and boys has been established ($p> 0.05$), indicating that the groups did not differ significantly from each other.

Comparative analysis of anthropomorphic measurements and parameters of both urban and rural boys and girls separately have been conducted. Results of analysis are submitted in tab. 1.

As it is seen from tab. 1, anthropomorphic measurements and parameters of rural girls and boyshave significant changes: girls have significantly lower such parameters as M, H, BSA, WC, WC/HC than boys, and respectively they have significantly larger STB, STT, STS, STI, TST, % of fat. So far as mentioned parameters don't have significant changes from normalized onesaccording to this age and sex, it maintains that obtained results reflect normal physiological sexual differences of physical development of children, which become significant in pubescence.

Table 1

Anthropomorphic measurements and parameters of boys and girls that live in the city (urban) districts of region (rural)

Parameter	Male		Female	
	Urban (n=26)	Rural (n=17)	Urban (n=16)	Rural (n=35)
	M±σ	M±σ	M±σ	M±σ
M, kg	58,59±8,98	61,50±8,48	52,81±14,47	53,07±8,41
H, m	1,69±0,05*	1,73±0,06*	1,60±0,08	1,63±0,06
BMI	20,54±2,55	20,65±3,16	20,42±4,61	19,98±2,81
BSA, sq m	1,65±0,14	1,71±0,13	1,52±0,21	1,55±0,13
ChC, cm	83,15±6,04	85,00±7,43	82,69±6,79	81,44±8,72
WC, cm	71,69±5,54	74,29±8,84	67,44±10,47	65,56±11,93
HC, cm	89,96±0,33	91,64±6,14	90,63±6,16	90,06±7,30
WC/HC	0,80±0,04	0,81±0,07	0,74±0,06	0,73±0,06
WC/H	0,43±0,02	0,43±0,05	0,42±0,06	0,40±0,04
ThC, cm	45,38±4,09	43,24±5,06	47,69±6,15	45,12±4,81
ShC, cm	31,38±3,58*	34,64±3,25*	32,56±3,86	33,18±2,69
MAC, cm	25,73±2,56	25,06±2,63	24,19±3,25	23,74±2,98
STB, mm	24,31±4,66*	11,47±7,55*	20,75±6,62	19,19±14,43
STT, mm	23,85±6,15*	12,11±6,46*	21,63±4,91	20,09±16,89
STS, mm	12,58±4,75	11,35±6,41	13,75±8,71	16,33±11,48
STI, mm	17,92±8,36	18,06±13,90	21,00±13,46	24,06±8,07
TST, mm	78,65±20,11*	53,00±31,96*	77,12±30,24	79,67±25,31
% of fat	33,29±2,93*	26,45±14,93*	32,83±3,52	32,96±13,35

*P **<0,05**

Other tendency has been found while comparing anthropomorphic measurements and parameters of urbanteenagers. According to data of tab. 4, boys have significantly largerH, BSA, WC/HC that can be explained by physiological sexual differences. At

the same time, male teenagers have statistically larger STB, and there are no sexual differences in such parameters as STT, STS, STI, TST, % of fat. Therefore, enlargement of body mass of boys is due to not muscular component (physiological type), but due to both muscular component and fat component with significant prevalence of the lastone.

On the next step of analysis anthropomorphic measurements and parameters dependent on inhabitancy have been comparing. Taking into account sexual physiological differences, analysis have been conductedseparately for girls and boys.

Obtained data (tab.1) illustrate absence of differences in all anthropomorphic measurements and parameters of girls with different inhabitancy. In addition, all studied anthropomorphic parameters don't significantly differ from normalized ones.

Rural boys have statistically larger H ($p<0.05$) and ShC($p<0.05$). Meanwhile, there is no difference in M ($p>0.05$), boys from villagehave lower STB, STT, TST, % of fat (all$p<0.05$). This data indicate of the fact that urban boys have decreased muscular component of body mass and increased fat component. In addition, it can be proved by the fact that value of TST, % of fat of urban boys is significantly larger than normalized ones.

The data compared with the results obtained by Swedish scientists [34] that in assessing the anthropometric parameters have not obtained significant differences due to inhabitants. At the same time, they assessed only basic parameters (height, weight, BMI), while the thickness of skin folds and fat% have not been evaluated at all. At the same time these parameters allow you to find out the nature of enlargement of body mass, whether it is increased due to muscular component or fat component. The study of body structure provides more accurate assessment of the cardiovascular risk than measuring of only body weight and BMI.

During assessing parameters of vital functions of ruralboys and girls (tab.2), it has been found out that girls have more frequent HR ($p<0.05$). Differences in other parameters haven't been found (all $p>0.05$).

Other situation has been detected during comparing vital functions of urban teenagers (tab.2). Urban boys have statistically significant higher systolic blood pressure than girls ($p<0.05$). Other differences in vital functions haven't been found.

Table 2.

Parameters of vital functions of boys and girls that live in districts of region

Parameter	Female		Male	
	Urban (n=16)	Rural (n=35)	Urban(n=26)	Rural(n=17)
	M±σ	M±σ	M±σ	M±σ
HR, . beats per min	83,67±13,46	93,31±18,65	75,69±14,76	79,00±15,49
RR, breaths per min.	19,20±0,50	18,10±1,06	17,2±2,30	17,3±2,10
SBP mm Hg.	119,93±13,78	116,69±13,50	131,35±11,66*	120,59±16,53*
DBP mm Hg.	74,73±11,90	76,69±10,93	75,69±12,05*	69,29±7,28*

*P **<0,05**

While comparing vital functions of girls, significant differences dependent on inhabitancy haven't been found ($p>0.05$ for all) (tab.2). Urban boys have significantly higher SBP and DBP than both parameters of rural male teenagers and normalized ones.

This fact attract attention, if enlargement of % of fat of urban boys is also added. On one side, this relation is interdependent, on the other it marks out urban boys to risk group of formation of cardiovascular pathology.

Features of way of life of teenagers have been analyzed (tab.3). As it is seen from tab.3, urban teenagers (place with unsatisfactory general ecological assessment) eat fast food, suffer from respiratory diseases significantly more frequent and spend significantly more time at TV and computer (all $p<0.05$). They spend significantly less time on open air than rural teenagers of the same age ($p>0.05$).

Worldwide studies founded out that there is a correlation between main causes of overweight or obesity and inappropriate eating habits with lack of physicalactivity [37]. Ostrowska et al. [38] found that obese people ate moreoften between meals, had a night eating problem, did notcontrol the calorific value of meals, compared to people withnormal weight.

Scientists pay an increased attention for the differences of life style in rural and urban adolescent. Most of these results indicate dietary faults and a high risk of developing obesity in people living in rural areas. While analyzing school journeys and leisure activities in rural and urban adolescents Norway scientists have been found out that both rural and urban teenager spent more time on inactively, such as television and computer games, than on regular physical activity with no differences between the two groups. However this study also indicated that the median distance walked or cycled to school or bus stop of urban teenagers was three times greater than the same median distance of rural teenagers [39].

Table 3.

Features of general life styleof teenagers from the city (urban) and from districts of region (rural)

Feature	Urban teenagers, % (n=42)	Rural teenagers, % (n=52)
Training in sports group	28.6	28.8
Walking in the open air for more than 8 hours a week	26.2*	46.2*
Eating fast food for more than 3 times a week	64.3*	23.1*
Eating vegetables and fruits more than 5 time a week	69.0	71.2
Acute respiratory diseases more than 3 times a year	45.2*	15.4*
Sleep for more than 8 hours a day	80.9	84.6
Presence of chronic diseases	33.3	28.8
Time spend at computer, TV for more than 2 hours a day	83.3*	38.5*

*P**<0.05**

Some American authors have observed that rural youths are at greater risk than urban youths for obesity and physical inactivity [40, 41]. The study conducted in Ontario, Canada [42] found that the level of urbanization had an influence on increased body mass among teenagers, in which percentage of overweight and obesity from the rural area was significantly higher than in the urban area. Scientists from Croatia reported that rural teenagers eat more fast food and soft drinks than urban ones [43]. Also adolescents from rural area more often preferred fast food than fruit and vegetables.

There is a similar research of the USA scientists [44] observed that school-age children in rural Mississippi were at a high risk of obesity caused by a prevalence of fat, salt and soft drinks and a low part of fruit and vegetables in their diet.

However in our study we received other data and according to them urban adolescents had more mistakes in lifestyle with inappropriate eating habits and lack of physical activity. It may be explained by different traditions and life style habits in our region.

Conclusions.

1. General anthropometric parameters of boys and girls who live in the industrial city and beyond don't significantly differ from normalized ones. The identified gender differences are physiological for teenagers. At the same time, urban boys has significantly higher fat component than muscle component of body composition.
2. Systolic and diastolic blood pressure of boys from the industrial city significantly exceeds normal levels as well as the value of boys from rural districts.
3. Sedentary lifestyle, tendency to consume fast-food and recurrent respiratory problems more typical for the urban adolescents.
4. Peculiarities of physical development, general health and lifestyle of 9th grade adolescents form industrial city, are potentially unfavourable for the cardiovascular risk development, which requires promotion of healthy lifestyle.

References.

1. Гнатейко О.З. Екогенетичні аспекти патології людини, спричиненої впливом шкідливих факторів зовнішнього середовища / О. З. Гнатейко, Н. С. Лук'яненко // Здоровье ребенка. – 2007. – № 6 (9). – С. 82–87.
2. Вплив мікросередовища на стан здоров'я дітей дошкільного та молодшого шкільного віку, які проживають в екологічно несприятливих районах / Ю. Г. Антипкін, Л. П.Арабська, С. І. Толкач [та ін.] // Перинатология и педиатрия. – 2005. – № 1/2 (23). – С. 92–95.
3. Антипкін Ю. Г. Стан здоров'я дітей в умовах дії різних екологічних чинників / Ю. Г. Антипкін // Мистецтво лікування. – 2007. – № 5. – С. 45–47.
4. Малоног К. П. Забруднення атмосферного повітря промислового міста як фактор ризику для здоров'я його мешканців / К. П. Малоног, В. В. Загородній // Довкілля та здоров'я. – 2009. – № 1. – С. 33–34.

5. Тимченко О. І. Загрози для здоров'я населення від впливу антропогенних чинників та можливості їх попередження / О. І. Тимченко. – К. : ІГМЕ АМН України, 2005. – 265 с.
6. Черниченко І. А. До питання оцінки стану забруднення атмосферного повітря і його безпеки для населення / І. А. Черниченко, Я. В. Першегуба, О. М. Литвиченко // Довкілля та здоров'я. – 2009. – № 3. – С. 19–22.
7. Агаджанян Н. А. Химические элементы в средеобитания и экологический портрет человека / Н. А. Агаджанян, А. В. Скальный. – М. : КМК, 2001. –83 с.
8. Резніченко Ю. Г. Медико-організаційні шляхи мінімізації негативного впливу проживання в промисловому місті на стан здоров'я дітей першого року життя / Ю. Г. Резніченко // Перинатологія та педіатрія. – 2004. – № 1. – С. 36–40.
9. Майданник В. Г. Перспективи розвитку клінічної педіатрії в XXI столітті / В. Г. Майданник // Педіатрія, акушерство та гінекологія. – 2002. – № 1. – С. 8–12.
10. Blakely T. A. Ecological effects in much level studies / T. A. Blakely, A. J. Wocdward // J. Epidemiol. Community Health. – 2000. – Vol. 54, №5. – P. 367–374.
11.Воронов М. В. Динаміка фізичного розвитку дітей шкільного віку, які мешкають в екологічно несприятливому регіоні / М. В. Воронов, С. Г. Петрова, Л. М. Осичнюк // Перинатология и педиатрия. – 2008. – № 2 (34). – С. 116–119.
12. Лук'янова О. М. Проблеми здоров'я здорової дитини та наукові аспекти профілактики його порушень / О. М. Лук'янова // Мистецтво лікування. – 2007. – № 9. – С. 42–47.
13.Фізичний розвиток новонароджених, матері яких мешкають в містах з різним рівнем техногенного навантаження / М. В. Воронов, С. Г. Петрова, Л. М. Осичнюк [та ін.] // Перинатология и педиатрия. – 2007. – № 3 (31). – С. 15–17.
14.Aron J. L. Ecosystem change and public health: a global perspective / J. L. Aron, J. Patz. – Meryland : JHU Press, 2001. – 488 p.
15. Martens W. J. M. Environmental change, climate and health / W. J. M. Martens, P. Martens, A. J. McMichael. – Cambridge : Cambridge University Press, 2002. – 338 p.
16.Кірсанова О. В. Гігієнічна оцінка впливу забруднення атмосферного повітря на стан здоров'я дітей в умовах промислового міста : автореф. дис. на здобуття наук. ступеня канд. мед. наук : спец. 14.02.01 "Гігієна" / О. В. Кірсанова. — К., 2006. — 20 с.
17.Доповідь про стан навколишнього природного середовища в Харківській області у 2004 році. – Х. : Державне управління екології та природних ресурсів в Харківській області, 2005. – 135 с.
18.Стан здоров'я населення Харківської області та результати діяльності санітарно-епідеміологічних закладів: щорічна доповідь – Х. : МОЗ України, 2008. – 178 с.
19. Екологічний атлас Харківської області / Є. Л. Макаровський, О.В. Соловйов, Г. Д. Коваленко [та ін.] – Х. : Державне управління екології та природних ресурсів в Харківській області, 2005. – 80 с.

20. Національна доповідь про стан навколишнього природного середовища в Україні у 2002 році. – К. : Міністерство екології та природних ресурсів України, 2002. – 162 с.
21.Landrigan P. J. Chronic effect soft oxic environmental exposure son children's health / P. J. Landrigan, A. Garg // J. Toxicol. Clin. Toxicol. – 2002. – Vol. 40, № 4. – P. 449–456.
22.Mathien-Nolf M. Poisons in the air: A cause of chronic disease in children / M. Mathien-Nolf // J. Toxicol. Clin. Toxicol. – 2002. – Vol. 40, № 4. – P. 483–491.
23.Игнатова М. С. Соматические болезни у детей / М. С. Игнатова – Москва-Оренбург : Южный Урал, 2002. – 670 с.
24. Avenell A etal. Systematic review of the long-term effects and economic consequences of treatments for obesity and implications for health improvement. // HealthTechnology Assessment. - 2004.- Vol.8, №3, P.1–182.
25. Оцінка ризику для здоров'я населення від забруднення атмосферного повітря: методичні рекомендації. – К. : МОЗ України, 2007. – 39 с.
26. Katz D.L. et al. Public health strategies for preventing and controlling over weight and obesity in school and works it esettings: a report on recommendation sof the Task Force on Community Preventive Services. Mortalityand Morbidity WeeklyReport. – 2005.- Vol. 7.- P.1–12.
27.Brownell K. Exercise in the treatment of obesity. In: Brownell K., Fairburn C., eds. Eating disorders and obesity: a comprehensive handbook. NewYork: Guildford.- 1995.- P.473–478.
28.Flynn M.A. etal. Reducing obesity and related chronic disease risk in children and youth: a synthesis of evidence with "bestpractice" recommendations.- Obesity Reviews.- 2006.- Vol. 7, N. 1.- P.7–66.
29.The Fourth Report on the diagnosis, evaluation and treatment of high blood pressure in children and adolescents // Pediatrics. - 2004. – Vol. 114 (2). – P. 555-576.
30. US Preventive Services Task Force. Screening and interventions for overweightin children and adolescents: recommendation statement. // Pediatrics.- 2005.- Vol. 116(1).- P.205–209.
31. Сенаторова Г.С. Фізичний розвиток і антропометричні параметри підлітків міста Харкова / Г.С. Сенаторова, Т.В. Чайченко, О.Л. Онікієнко, І.О. Саніна, В.М. Цимбал // Лікарська справа – 2012. - № 1-2. – С. 95 - 101.
32. Чайченко Т.В. Психосоциальные аспекты нарушений пищевого поведения и физическойактивностишкольниковХарьковскогорегиона / Т.В.Чайченко // Міжнародний медичний журнал. – 2012. - № 2 (70). – С. 20-24.
33. ВОЗ. Ожирение и избыточный вес: Информационный бюлетень. - №°311.- 2012.
34. P. PagelsA repeated measurement study investigating theimpact of school outdoor environment uponphysical activity across ages and seasons in Swedish second, fifth and eighth graders / P. Pagels, A. Raustorp, A. P. De Leon, F. Mårtensson, M. Kylin, C.Boldemann// BMC Public Health. 2014 Aug 7;14:803
35. Reported prevalence of child and adolescent overweight and obesity. Appendix Obes Rev. 2004; 5(Suppl.1): 86.

36. Lobstein T, Frelut ML. Prevalence of overweight among children inEurope. Obes Rev. 2003; 4: 195
37. Piechaczek W, Eszyk J. Life style of people suffering from obesity – thepreliminary investigation. WiadLek. 2002; 55 Suppl 1(Pt 2) –P. 858-863
38. Ostrowska L, Karczewski J, Szwarc J. Dietary habits as an environmentalfactor of overweight and obesity. Rocz Panstw Zakl Hig. 2007; 58(1) – P.307-313.
39. Astrid N. Sjolie, FrodeThuenSchool journeys and leisure activities in rural and urban adolescents in NorwayThe Nordic School of Public Health, Göteborg, Sweden Health Promot. Int. (2002) 17 (1) - P.21-30.
40.Yousefian A, Ziller E, Swartz J, Hartley D. Active living for rural youth:addressing physical inactivity in rural communities. J Public Health Manag Pract. 2009; 15(3) p. 223-231.
41. Patterson P.D., Moore C.G., Probst J.C., Shinogle J.A. Obesity and physical inactivity in rural America. J Rural Health. 2004; 20(2) p.151-159.
42. Ismailov R.M., Leatherdale S.T. Rural-urban differences in overweight and obesity among a large sample of adolescents in Ontario. Int J PediatrObes. 2010; 5(4) p. 351-360.
43. Colic-Baric I., Kajfez R., Satalic Z., Cvjelic S. Comparison of dietary habitsin the urban and rural Croatian schoolchildren. Eur J Nutr. 2004; 43 p.169-174.
44. Davy B.M., Harrell K., Stewart J., King D.S. Body weight status, dietaryhabits, and physical activity levels of middle school-aged children inrural Mississippi. South Med J. 2004; 97(6) p. 571-577.

Чайченко Т.В., Макєєва Н.І., Коваль В.А., Макєєва Е.А., Бужинська Н.Р.

Особливості стану здоров'я та стилю життя підлітків, що мешкають в індустріальному місті та за його межами

Харківський національний медичний університет, Україна

Резюме. У роботі вивчалися основні особливості антропометричних параметрів, вітальних функцій та особливостей способу життя учнів 9-х класів, що мешкають в індустріальному місті та за його межами. Встановлено, що у хлопців, що мешкають в індустріальному районі міста перевагу має жировий компонент структури тіла, а також рівні артеріального тиску вищі, ніж у мешканців села. Для всіх мешканців індустріального району незалежно від статі типовими є статичний спосіб життя, схильність до споживання фаст-фуду, підвищена захворюваність на застуду. Отже, отримані результати свідчать про високі шанси потенційного формування кардіоваскулярного ризику, що потребує широкого впровадження соціальних програм щодо здорового способу життя та харчування із залученням всіх членів родини.

Ключові слова: підлітки, кардіоваскулярний ризик, антропометричні параметри, вітальні функції, спосіб життя

Чайченко Т.В., Макеева Н.И., Коваль В.А., Макеева Е.А., Бужинская Н.Р.

Особенности состояния здоровья и стиля жизни подростков, проживающих в индустриальном городе и за его пределами

Харьковский национальный медицинский университет, Украина

Резюме. В работе изучались основные особенности антропометрических параметров, витальных функций и особенностей образа жизни учащихся 9-х классов, проживающих в индустриальном городе и за егопределами. Установлено, что у мальчиков, проживающих в индустриальном районе города, жировой компонент структуры тела преобладает над мышечным, урони артериального давления выше, чем у жителей села. Для всех жителів индустриального района независимо от пола типичны статичный образ жизни, склонность к употреблению фастфуда, повышенная заболеваемость простудой. Таким образом, полученные результаты свидетельствуют о высоких шансах потенціального формирования кардиоваскулярного риска, что требует широкого внедрения социальных программ по здоровому образу жизни и питания с привлечением всех членов семьи.

Ключевые слова: подростки, кардиоваскулярный риск, антропометрические параметры, витальные функции, образ жизни

Received: 28.04.2015 *Accepted: 5.07.2015*