

## STATE OF HEALTH OF ADOLESCENTS IN EASTERN REGIONS OF POLAND. PODLASIE REGION CHILD

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**Abstract:** The aim of the study was an attempt to evaluate the state of health of adolescents aged 15 years, living in Podlasie region near the border of Poland and Bielorus. Data from the Schoolchild Development and Health Investigation Charts covering 197 rural and 208 urban adolescents were analyzed. The significance of differences between the two populations were tested by  $\chi^2$  test at the level of  $p > 0.05$ .

The study showed that nearly 60% of rural and 70% of urban schoolchildren have health problems. The most common of these problems are associated with the body posture. The data on self-reported health indicated that the most often observed complaints in both populations (rural and urban) of adolescents were: headaches, difficulties with falling asleep and lack of appetite. In spite of the high incidence of health problems, the number of schoolchildren being attended by medical specialists in outpatient departments is relatively small, to the disadvantage of the rural population. The laryngology and ophthalmology departments were visited most frequently. The analysis of the results of the studies confirmed that the state of health of the children examined is unsatisfactory. An effective prevention of these negative phenomena requires the creation of efficient systemic mechanisms on the one hand, and on the other, a constant monitoring of objective and self-reported health.

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### INTRODUCTION

Health undoubtedly occupies one of the most important positions in the hierarchy of values adopted by the majority of contemporary people. Considering the dominant effect of the life environment on human behaviour, whether health promoting or detrimental to health, in many countries health policy programmes are formulated according to regional programmes [5, 19, 21, 22]. They are accompanied by adequate programmes of monitoring and reports concerning health situation.

Objective health of an individual is evaluated based on medical indicators; however, while making decisions

concerning own health behaviour, people tend to be guided by a subjective evaluation rather than the objective status with which, by the way, they are not always familiar. For these reasons, in own studies a high rank was ascribed to self-reported health, taking into account the recommendation by the World Health Organization concerning studies of the state of health of the population [6].

In Poland, there exist inequalities in the health of children and adolescents living in different standards of material conditions and environments [17], hence it seemed justifiable to evaluate an objective and subjective state of health of schoolchildren from rural areas of the Southern Podlasie Region, a region which is typical of the

eastern territories of our country, and to show the results in the context of data concerning urban adolescents.

The focus of the study was a group of adolescents aged 15 years, because, according to many researchers, the evaluation of the state of health at the age of puberty allows us not only to distinguish the groups at high risk, but also to develop current prevention and promotion programmes.

## MATERIAL AND METHODS

During the period 2002–2004, within Grant No. 150/02 obtained from the Academy of Physical Education, Warsaw, the Department of Hygiene and Health Promotion, Outside Faculty of Physical Education, Biała Podlaska, in cooperation with the Department of Sports Medicine, Grodno University, conducted comprehensive studies of health behaviours and health status of adolescents from the eastern frontier region of Poland. The presented report covers the analysis of the state of healthy of adolescents living in that region. The study covered 197 schoolchildren (94 boys and 103 girls) attending five rural schools selected at random in the area of the Southern Podlasie Region, and 208 adolescents (111 boys and 97 girls) from junior schools in Białystok (the largest city in the north-eastern part of Poland, population circa 290,000). The state of health was evaluated based on charts designed for the study of the development and health of schoolchildren [12]. Schoolchild Development and Health Investigation Charts [12] cover all aspects of child health and development, and are associated with the specificity of individual stages of development: an interview directly conducted by a school nurse with parents and child, information provided directly by parents, teacher in charge of the class and school nurse, up-to-date health documentation of a child and results of the last medical examination. The objective of the charts is to identify a child's health problems, identify social problems connected with the situation in a family and group of mates, reveal school problems, and the evaluation of selected health behaviour of a respondent. The charts were filled in by medical doctors from the respective school selected for the study. The above description concerns the data presented in Parts 1 and 2 of the Results. The data for Part 3 of the results (Complaints reported by schoolchildren) were acquired by the author herself by interviewing the same sample of adolescents as that studied with Schoolchild Development and Health Investigation Charts.

The significance of differences between groups (urban and rural) were determined by means of Chi-square test, the adopted level of significance being  $p < 0.05$ .

## RESULTS

### Health problems of the schoolchildren in the study.

Health problems of the schoolchildren in the study, evaluated by the objective method, are enumerated in

**Table 1.** Percentage of schoolchildren in the study with health problems.

Health problems	Rural area (%)	Urban area (%)
Disorders in body posture*	26.9	37.5
Somatic development disorders	10.1	9.6
Defects and diseases of the organ of vision	5.1	6.5
Disorders in psychological development	5.1	3.4
Disorders of thyroid gland function	4.1	4.3
Dermal diseases and allergies	3.0	4.3
Chronic diseases of nasopharyngeal cavity	2.6	1.9
Cardiovascular, connective tissue and rheumatic diseases	2.5	1.4
Urinary system diseases	0.5	1.0
Total	59.9	69.9

\* differences rural areas/urban areas  $p < 0.05$

Table 1 and listed according to the decreasing frequency of the occurrence of the problems. The data for the adolescents living in rural areas are presented in the first column of the Table, while the data for the schoolchildren from the large city are given, for comparison, in the second column.

The results of statistical analysis have demonstrated that the frequency of occurrence of health problems is similar in rural areas and in the urban area, with the exception of body posture impairments, which were significantly more frequent in the sample from the urban population.

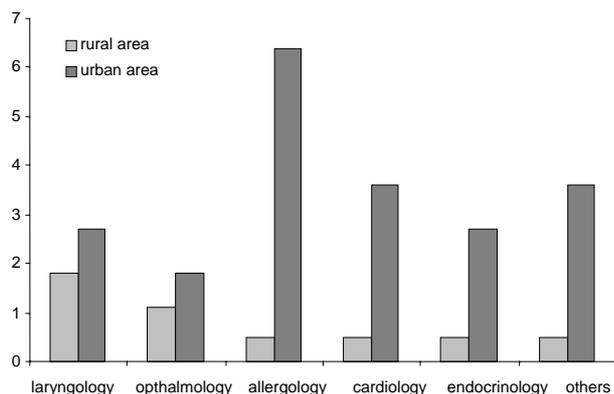
The greatest number of health problems concerned the body posture impairments (26.9% and 37.5% in rural adolescents and urban adolescence, respectively). The difference attained statistical significance ( $p < 0.5$ ).

Next in frequency were: somatic development disorders (10.1% and 9.6%, respectively), defects and diseases of the organ of vision (5.1% and 6.5%, respectively), and disorders in psychological development (5.1% and 3.4%, respectively).

Disorders of thyroid gland function occurred in frequency exceeding 4%; this relatively high value was characteristic of the region and will be commented on further in the Discussion.

Dermal diseases and allergies, chronic diseases of nasopharyngeal cavity, and cardiovascular, connective tissue and rheumatic diseases were health problems occurring with frequencies in the order of 4–2% (details in Tab. 1).

**Complaints reported by schoolchildren.** The most frequently observed complaints are: headache (rural area – 17.3%, urban area – 21.2%), difficulties in falling asleep (11.2% and 15.9% respectively), and lack of appetite (8.1% and 10.1%); the differences between populations in rural area versus urban area are not



**Figure 1.** Percentage of schoolchildren under medical attention of specialists in outpatient departments.

**Table 2.** Adolescents in the study with various complaints often observed 6 months prior to the study (i.e. nearly every day or more frequently than once a week)

Complaints	Rural areas (%)	Urban areas (%)
Headache	17.3	21.2
Difficulties with falling asleep	11.2	15.9
Lack of appetite	8.1	10.1
Excessive appetite*	7.1	15.4
Stomach ache	6.1	8.6
Dizziness	5.1	7.7
Constipation	4.1	5.8
Diarrhea*	1.0	4.8

differences rural areas/urban areas \* $p < 0.05$ .

statistically significant (Tab. 2). The only differences which attained statistical significance were: excessive appetite (rural area – 7.1%, urban area – 15.4%) and diarrhea (rural area – 1.0%, urban area – 4.8%).

**Medical attention by specialists in outpatient departments.** The percentage of rural adolescents being attended by medical specialists in outpatient departments was estimated as 0.7%. The distribution of rural patients between various specialists were as follows: laryngology (1.8%) and ophthalmology (1.1%) (Fig. 1). It is noteworthy that the percentage of the use of departments of cardiology was minimal, despite the fact that a substantial percentage of respondents had health problems concerning blood circulation and related diseases (Tab. 1). A striking difference was observed between the rural and urban population with respect to attention by allergologists (Fig. 1). Members of the urban population seek the advice of allergologists much often than their rural counterparts (the difference significantly different as tested by  $\chi^2$  test). When the total numbers of schoolchildren attended by all specialists were pooled together, the difference between the rural population (0.7%) and the urban population (3.5%) was statistically significant at  $p < 0.5$ .

## DISCUSSION

The Podlasie region of Poland is characterized by a low level of industrialization, a low level of education and a high indicator of child birth [15]. Among citizens of this region being employed in agriculture, only 10% graduated from high schools of agriculture. The population of this region is the focus of scientific studies by members of our faculty [7, 14]. Our studies concerned the biological development (physical development, physical fitness and tempo of sexual maturation), as well as the nutritional habits of children and youngsters from the region. Data characterizing the health status of schoolchildren living in rural areas of the region are sparse [14]. The data presented in the present article partially fill this gap in our knowledge.

Our results demonstrated that the most frequent health problem in the population studied concerned the body posture. It is neither a new problem, nor it is specific for the Podlasie region. A very large frequency of body posture defects (more than 40%) was reported by Kościuk *et al.* [8] for children in the city of Kraków, Poland. The data published by Momola and Cynarski [10], describing the health status of schoolchildren in Jarosław, Poland, showed that in the year 2001, 15.44% of this population had a pathological body posture, and that this index had a tendency to increase in the period of 1996-2001. This negative trend occurs despite the achievements in early diagnosis of defects in body posture, in the development of therapeutic methods, and the increase the number of obligatory lessons of physical education in schools. These positive factors are counterbalanced by the negative changes in the lifestyle of young people: they spent more time watching television and the Internet [23], which had harmful effects on the skeleton, joints and muscles.

Disorders of somatic development (including overweight and obesity) in the rural population described in the present paper, occupy the second position (10.1%) among important health problems. According to Health Behaviour in School-aged Children: A WHO Collaborative Cross-national Study [11], 8.5% of teenagers at the age of 15 years in Poland suffer from overweight or obesity; larger percentages for this conditions among European countries are found only in Malta (22.3%) and Greece (14.5%) [11].

The third in rank among health problems in the rural population studied by us were the defects and diseases of the organ of vision (5.1%). This figure is close to the respective percentage given by Mirkewicz *et al.* [9] for the children attending rural elementary schools in the south-east region of Poland.

We would like to direct attention to the relatively high incidence of thyroid disorders among the population studied (4.1%). This figure is higher than the corresponding figures from other regions of Poland (for example, the incidence of the thyroid pathology among schoolchildren in Upper Silesia was found to be about 1% [13]. A likely explanation for the high incidence of thyroid

diseases in the eastern regions of Poland may be contamination of the environment by radioactive isotopes as a result of the Chernobyl catastrophe [1, 4].

Headache is a frequent complaint reported by adolescents in many countries. The frequencies of this complaint among schoolchildren from 29 countries were listed in the Health Behaviour in School-aged Children (HBSC) study: international report [22]; according to this report, 16% of schoolchildren in the population of these countries headache almost every day or more often than once a week; the figures differ between countries, being considerably high in Russia (27%) and low in Denmark (10%). Thus, in the context of the above cited data, the percentage estimated by us for Podlasie region in Poland can be interpreted as average.

The percentage of adolescents suffering from difficulties in falling asleep, estimated by us for Podlasie region (19%, an average for rural and urban populations) can be interpreted as rather small when compared to the respective data for France (31%), USA (29%) or Canada (24%) [2].

Our study has demonstrated that the two indices of subjective health, namely an excessive appetite and a diarrhea, are significantly higher among the urban population than the rural population. In seeking for the possible explanations for this fact one has to consider the following: (a) young people living in cities are subjected to larger psychological stress as compared their mates living in a village, (b) the psychological stress increase the incidences of the subjective health complaints [18].

Other factors, constituting a life style (physical activity, nutrition, etc.), may also contribute to the subjective health status [16, 17, 22].

A factor which also limits the level of health of an individual is access to the proper care and health services. Our results show that a considerably smaller percentage of rural adolescents use specialist services, compared to their urban counterparts, which may be the result of two factors: (a) the hindered access to specialist physicians in villages, and (b) the lack of awareness of such a need in this area. The studies by Wiśniewska and Oblacińska [20] demonstrated that rural children visit specialist physicians 2–3 times less frequently than their urban mates; this fact may be attributed to better access to physicians in urban areas, especially with respect to such specialties as ophthalmology, dermatology, allergology and endocrinology. In contrast to the situation in Poland, 18.1% of the children and adolescents under the age of 18 in USA had visited a specialist within a 12 month period (Health Care for Children and Youth in the United States: 2001 Annual Report on Access, Utilization, Quality and Expenditures [3]).

## CONCLUSIONS

1. Nearly 60% of rural schoolchildren in Podlasie Region have health problems. The most frequent problems are: body posture impairments, somatic develop-

ment disorders (overweight, obesity), defects and diseases of the organ of vision. The only significant difference between rural and urban populations concerns body posture impairments, in favour of the rural schoolchildren.

2. In the population of the rural schoolchildren in Podlasie Region, the most frequently observed complaints are: headache, difficulties in falling asleep, lack of appetite and excessive appetite. Less frequently reported complaints were stomach ache and dizziness. Excessive appetite and diarrhea are significantly more frequent complaints among urban schoolchildren compared to in their rural mates.

3. Despite a substantial percentage of respondents with health problems, the number of adolescents seeking medical advice in outpatient departments is relatively small. Characteristically, schoolchildren from the rural population seek medical advice less frequently than their urban counterparts.

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## REFERENCES

- Cardis E, Kesminiene A, Ivanov V, Malakhova I, Shibata Y, Khrouch V, Drozdovitch V, Maceika E, Zvonova I, Vlassov O, Bouville A, Goulko G, Hoshi M, Abrosimov A, Anoshko J, Astakhova L, Chekin S, Demidchik E, Galanti R, Ito M, Korobova E, Lushnikov E, Maksoutov M, Masyakin V, Nerovnia A, Parshin V, Parshkov E, Piliptsevich N, Pinchera A, Polyakov S, Shabeka N, Suonio E, Tenet V, Tsyb A, Yamashita S, Williams D: Risk of thyroid cancer after exposure to 131I in childhood. *J Natl Cancer Inst* 2005, **97**, 703-705.
- Currie C, Hurrelmann K, Settertobulte W, Smith R, Todd J: *Health and Health Behaviour Among Young People. WHO Policy Series Health Policy for Children and Adolescents (HEPCA)*. Issue 1. WHO, Copenhagen 2000.
- Elixhauser A, Machlin SR, Zodet MW, Chevarley FM, Patel N, McCormick MC, Simpson L: Health care for children and youth in the United States: 2001 annual report on access, utilization, quality, and expenditures. *Ambul Pediatr* 2002, **6**, 419-437.
- Gembicki M, Sowinski J, Ruchala M, Bednarek J: Influence of radioactive contamination and iodine prophylaxis after the Chernobyl disaster on thyroid morphology and function of the Poznań region. *Endokrynol Pol* 1991, **42**, 273-298.
- Goryński P, Wojtyniak B, Kuszewski K: *Monitoring Oczekiwanych Efektów Realizacji Narodowego Programu Zdrowia*. Ministerstwo Zdrowia, Warszawa 2004.
- Health Interview Survey. Towards Internationally Harmonization of Methods and Instruments*. WHO Regional Publications European Series, No. 58, Copenhagen 1996.
- Huk-Wieliczuk E: Physical work load and state of health of school-aged children in the southern Podlasie region. *Ann Agric Environ Med* 2005, **12**, 95-100.
- Kościuk T, Suder A, Pałosz J: Występowanie wad postawy wśród dziewcząt miasta Krakowa [Posture defects among girls in the city of Cracow]. *Ped Pol* 2004, **79**, 313-320.
- Mirkiewicz M, Bajorek W, Paś A: Stan zdrowia dzieci z regionu południowo-wschodniej Polski. In: Górnica K (Eds): *Korektywa i Kompensacja Zaburzeń w Rozwoju Fizycznym Dzieci i Młodzieży*, 85-90. AWF ZWWF, Biała Podlaska 2005.
- Momola I, Cynarski W: Stan zdrowia młodzieży szkół Jarosławia w latach 1996-2001. *Nowiny Lek* 2003, **72**, 143-153.

11. Mulvihill C, Nemeth A, Verecken C: Body image, weight control and body weight. **In:** Curie *et al.*: *Young People's Health in Context. Health Behaviour in School-aged Children (HBSC) Study: International Report from 2001/2002 Survey*, 120-129. World Health Organization, Copenhagen 2004.
12. Oblacińska A, Woynarowska B: *Profilaktyczne Badania Lekarskie i Inne Zadania Lekarza w Opiece Zdrowotnej nad Uczniami*, 178-179. Instytut Matki i Dziecka, Warszawa 2002.
13. Różański P, Buchta K: Problemy zdrowotne dzieci wiejskich. *Wych Fiz i Zdr* 2000, **4**, 165-168.
14. Skład M (Eds): *Wybrane Wskaźniki Rozwoju Biologicznego Dziewcząt i Chłopców z Podlasia*. Instytut Wychowania Fizycznego i Sportu, Biała Podlaska 2000.
15. Skład M, Popławska H (Eds): *Dziecko Wiejskie Białkopodlaskie. Akademia Wychowania Fizycznego Józefa Piłsudskiego w Warszawie*. Zamiejscowy Wydział Wychowania Fizycznego w Białej Podlaskiej, Biała Podlaska 2004.
16. Suliga E, Adamczyk J: Zróżnicowanie Sposobu Żywienia i Cech Somatycznych Młodzieży ze Środowiska Miejskiego i Wiejskiego. **In:** Zagórski J, Popławska H, Skład M (Eds): *Uwarunkowania Rozwoju Dzieci i Młodzieży Wiejskiej*, 491-499. IMW, Lublin 2004.
17. Szymborski J, Szamotulska K, Sito A (Eds): *Zdrowie Naszych Dzieci. Zróżnicowanie Szans*, 113-124. Instytut Matki i Dziecka, Warszawa 2000.
18. Tabak I, Ostrega W, Biernacka B, Jodkowska M: Dolegliwości subiektywne a stres psychologiczny u młodzieży 15-19-letniej w Polsce. [Subjective health complaints and psychological distress in adolescents aged 15-19 years in Poland]. *Med Wieku Rozw* 2004, **8**, 585-594.
19. Weinreb L, Wehler Ch, Perloff J, Scott R, Hosmer D, Sagor L, Gundersen C: Hunger: its impact on children's health and mental health. *Pediatrics* 2002, **110**, e41.
20. Wiśniewska A, Oblacińska A: Usługi Medyczne dla Dzieci i Młodzieży. **In:** Szymborski J, Szamotulska K, Sito A (Eds): *Zdrowie Naszych Dzieci. Zróżnicowanie Szans*, 139-179. Instytut Matki i Dziecka, Warszawa 2000.
21. *World Health Report 2002, Reducing Risks, Promoting Healthy Life*. World Health Organization, Geneva 2002.
22. Woynarowska B, Mazur J: *Zachowania Zdrowotne i Zdrowie Młodzieży Szkolnej w Polsce i Innych Krajach. Tendencje Zmian w latach 1990-1998*. Katedra Biomedycznych Podstaw Rozwoju i Wychowania, Wydział Pedagogiczny Uniwersytetu Warszawskiego, Warszawa 2000.
23. Woynarowska B, Mazur J, Kołoto H, Małkowska A: *Zdrowie, Zachowania Zdrowotne i Środowisko Społeczne Młodzieży w Krajach Unii Europejskiej*. Katedra Biomedycznych Podstaw Rozwoju i Wychowania, Wydział Pedagogiczny Uniwersytetu Warszawskiego, Warszawa 2005.