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PHYSICAL WORK LOAD AND STATE OF HEALTH OF SCHOOL-AGED CHILDREN IN THE SOUTHERN PODLASIE REGION

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Abstract: Physical work adjusted to physical and mental capabilities of an adolescent is considered as a positive factor in the context of constructing health condition. The objective of the study was the determination of the relationship between self-reported health, the occurrence of injuries and the work load among rural school-aged children engaged in work tasks in the household and on a farm. The study covered 662 pupils aged 11, 13 and 15 from rural schools in the eastern region of Poland. The study was conducted by means of a survey with the use of two questionnaire forms: Health Behaviour in School-Aged Children (HBSC) - Cross-National Study and 'Children's work in the household and on the farm'. A relationship was observed between work load in the household and on the farm, measured by such indicators as: working time, heaviness of work activities performed and performance of hazardous and harmful work tasks, positive evaluation of own appearance and life satisfaction (in boys), and a higher incidence of injuries requiring medical care.

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Key words: rural youth, physical work load, health.

INTRODUCTION

Studies conducted at the Institute of Agricultural Medicine in Lublin since the mid-1990s indicate that in agricultural families the engagement of adolescents in work on own farms is a common phenomenon [2, 7]. From the educational point of view, work associated with running a farm and a household may be considered as right, provided that it is within the bounds of a child's capabilities. Excessive work load is manifested by general weakness and is conducive to various health disorders. This is also connected with the disturbance of the education process; tired adolescents acquire knowledge with greater difficulty and obtain lower marks, compared to their school mates. The common mechanization of fieldwork and frequent participation of adolescents in agricultural tasks is an important source of injuries and accidents

[1, 3, 10]. They are most often caused by the lack of practice and experience in operating machines or by an excessive 'recklessness' of adolescents [2, 5, 8, 9].

The aim of the presented study is the determination of the relationship between self-reported health, the occurrence of injuries, and work load among rural adolescents performing work activities on farm and in the household.

MATERIAL AND METHODS

The study was conducted in 1999 and covered 662 adolescents (330 boys and 332 girls) aged 11, 13 and 15 from rural schools in the Southern Podlasie Region (an

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eastern region of Poland). The studies were conducted by the method of a survey, with the use of two questionnaire forms. Based on a standard questionnaire form developed within international studies of health behaviour of school adolescents - Health Behaviour in School-Aged Children. A WHO Cross-National Study HBSC (1998) [4], information was obtained concerning: self-reported appearance, body structure and weight, general evaluation of health, physical efficiency, occurrence of chronic diseases, experiencing various health disorders and emotional states, as well as selected indicators of mental well-being. With respect to injuries suffered by adolescents which required medical care (hospitalization, ambulatory care by a doctor or a nurse), the respondents provided answers pertaining to the circumstances, place, type of one injury, type of the most serious injury suffered within the period of the last 12 months, and to the school absenteeism connected with it, as well as the type of care provided. In order to define the degree of physical work load, questions from the questionnaire form 'Children's work in the household and on the farm' [7] were used, which were later adopted as variables and concerned: (a) working time in the household and on the farm, (b) heaviness of work performed on the farm, and (c) performance of work tasks harmful and hazardous for health. In each variable, three categories were distinguished: category 1 - low work load, category 2 - mediocre work load, and category 3 - high work load. The values from 1–3 were assigned to each category, accordingly. The sum of all the indicators was then calculated for each adolescent in the study, thereby obtaining the 'work load' value for each person. For this value of 'work load', the mean value ($\bar{x}$) from the sample and standard deviation (SD) were calculated. The result of 'work load' was the criterion for the division of the sample into three categories according to the principle:

low work load: work load values within the range $\langle x_{min}, \bar{x} - SD)$

mediocre work load: work load values within the range $\langle \bar{x} - SD, \bar{x} + SD)$

high work load: work load values within the range $\langle \bar{x} + SD, x_{max} \rangle$

RESULTS AND DISCUSSION

Self-reported health and image of own body

Self-reported health. The majority of respondents, irrespective of gender and of degree of work load, considered themselves as healthy or very healthy. Every sixth girl was of the opinion that she was not completely healthy (Tab. 1). The lack of statistical relationship between the degree of engagement of the adolescents examined in hazardous or harmful work activities and self-reported health has also been reported by Lachowski [6]. However, results different from Lachowski [6] were obtained with respect to the relationship between the degree of engagement of adolescents in work at home or on a farm, and the percentage of rural children aged 12-14 attending schools (in the area of the previous regions of Lublin and Chełm), who perceived their health as poor; this percentage increased with the degree of engagement in work. A similar tendency was observed by the author of the presented study only among girls examined.

Table 1. Relationship between self-reported health, physical efficiency and image of own body, and chronic diseases and work load, by gender and work load (% of respondents).

Indicators	Boys (N=330)			Girls (N=332)		
	work load			work load		
	low	mediocre	high	low	mediocre	high
Self-reported health						
very healthy	0.0	40.9	31.8	28.6	23.1	33.3
healthy	100.0	54.5	68.2	57.1	61.5	50.0
not completely healthy	0.0	4.6	0.0	14.3	15.4	16.7
Attitude towards body mass						
I am too slim	100.0	20.0	22.2	33.3	8.0	13.6
I am just O.K.	0.0	75.0	66.7	16.7	44.0	37.8
I am too fat	0.0	5.0	11.1	50.0	48.0	48.6
Evaluation of physical appearance[1*]						
very good	0.0	25.0	19.0	16.7	28.0	21.6
good	50.0	60.0	66.7	33.3	28.0	29.7
average	0.0	15.0	14.3	33.3	32.0	35.1
unsatisfactory	50.0	0.0	0.0	16.7	12.0	13.6
Desire to change appearance:						
yes	50.0	36.4	40.9	57.1	73.1	66.7
no	50.0	63.6	59.1	42.9	26.9	33.3

Differences between categories of work load among [1]boys [*]$p<0.05$

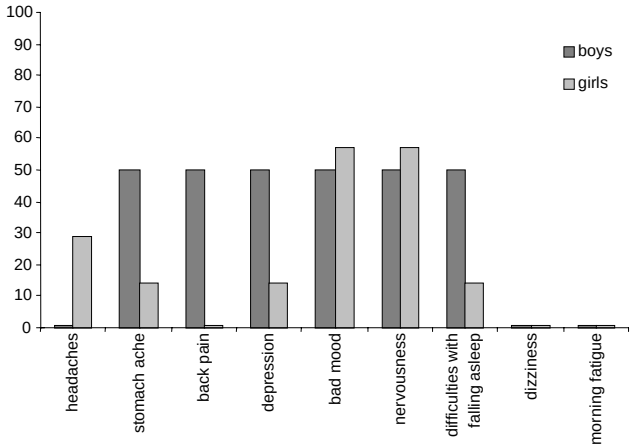

Figure 1. Relationship between experiencing various frequently occurring disorders (i.e. every week or more often) and morning fatigue and low work load, by gender and by work load (% of respondents). Differences between work load categories and boys and girls $p > 0.05$.

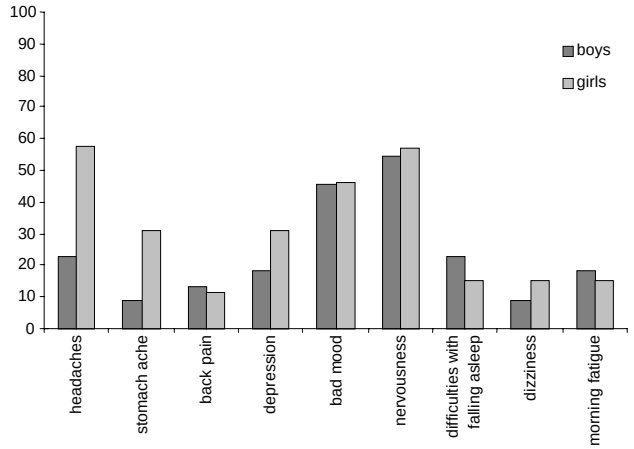

Figure 2. Relationship between experiencing various frequently occurring disorders (i.e. every week or more often) and morning fatigue and mean work load, by gender and by work load (% of respondents). Differences between work load categories and boys and girls $p > 0.05$.

Chronic diseases more frequently occurred in adolescents with a low work load (32%), more often among boys than girls. A similar tendency was also reported by Lachowski [6]. Children who were not engaged in any work at all suffered from chronic diseases or were seriously ill slightly more often than those who did perform work tasks, 30% of non-working children and 23% of children working for more than three hours daily aged 12-14 suffered from chronic diseases; the differences, however, were not statistically significant.

Evaluation of physical efficiency. With the increase in work load, the adolescents evaluated their physical efficiency in more negative terms. Over 33% of girls with

Table 2. Relationship between selected indicators of mental well-being among adolescents and work load, by gender and work load (% of respondents).

Indicators	Boys (N=330)			Girls (N=332)		
	work load			work load		
	low	mediocre	high	low	mediocre	high
Life satisfaction[1*]						
very satisfied	50,0	50,0	50,0	28,6	30,8	16,7
satisfied	00,0	45,0	45,5	42,8	42,3	66,6
not very satisfied or dissatisfied	50,0	5,0	4,5	28,6	26,9	16,7
Self-confident						
always or often	63,6	71,2	100,0	61,9	59,5	37,5
sometimes or rarely	31,8	23,7	0,0	33,3	37,1	62,5
never	4,6	5,1	0,0	4,8	3,4	0,0
Feeling of loneliness						
very often	0,0	0,0	9,1	28,6	26,9	50,0
sometimes or never	100,0	100,0	90,9	71,4	73,1	50,0
Feeling of helplessness						
often or always	4,5	5,1	0,0	14,3	14,6	16,1
rarely or sometimes	50,0	61,0	100,0	47,6	65,2	61,9
never	45,5	33,9	0,0	38,1	20,2	22,0
Feeling of leaving various things on the margin						
always or often	9,1	0,0	0,0	14,3	11,2	25,0
rarely or sometimes	54,5	61,0	50,0	38,1	55,1	75,0
never	36,4	39,0	50,0	47,6	33,7	0,0

Differences between work load categories in [1]boys [*]$p<0.05$

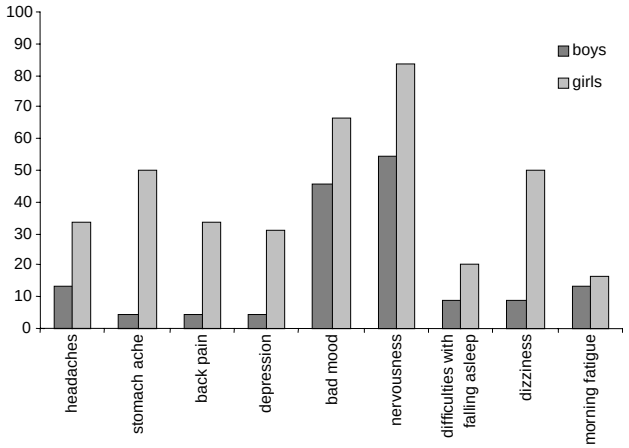

Figure 3. Relationship between experiencing various frequently occurring disorders (i.e. every week or more often) and morning fatigue and high work load, by gender and by work load (% of respondents). Differences between work load categories and boys and girls $p > 0.05$.

a high work load perceived their physical efficiency as poor or relatively good twice as often as boys with the same degree of work load (18%).

Attitude towards body mass and a physical appearance. Nearly 56% of adolescents with mediocre and high work loads were of the opinion that their body mass was adequate. All boys with a low work load mentioned that they were slim. Adolescents with high and mediocre work loads were more frequently satisfied with their physical appearance. The greatest percentage of respondents who did not like their appearance was noted among boys with a low work load (in boys the difference was statistically significant) and they also wanted to change it. Girls, irrespectively of the degree of work load, perceived their physical appearance in more negative terms and a greater percentage of them wanted to change it.

Experiencing various health disorders and emotional states

The incidence of various complaints and emotional states is an indicator of psychosomatic health. The results of studies confirmed the following:

- headaches, dizziness and morning fatigue were more often experienced by adolescents with a considerable work load (mediocre or high);
- the higher the work load the more frequently girls reported stomach and back pain;
- depression, nervousness and difficulties in falling asleep were more often experienced by girls with a considerable work load (Fig. 1-3).

As reported by Lachowski [6], an excessive work load in children aged 12-14 (long working time, performance of hazardous or harmful work tasks) was associated with more frequent occurrence of symptoms such as: headache, stomach ache, sore throat, and colds. A similar tendency was noted by the author of the presented study.

Selected indicators of mental well-being

Life satisfaction was more frequently expressed by boys considerably loaded with work (statistically significant differences), whereas in girls an opposite tendency was observed - every third girl in the study with a low work load was not very satisfied or dissatisfied with her life. Boys with a high work load were self-confident (100%), sometimes never experienced loneliness (91%), were rarely or only sometimes helpless (100%), and rarely or never (100%) had the feeling of leaving various matters unfulfilled. Girls with a high work load experienced a feeling of helplessness and leaving some things unfulfilled rarely or sometimes, 62% and 75% respectively (Tab. 2).

Work-load and occurrence of injuries

While analysing the occurrence of injuries among the adolescents in the study, the following were observed:

- the incidence of injuries among boys and girls was higher in the case of mediocre or high work load; nearly every tenth boy with a high work load had suffered two or more injuries during the last 12 month requiring medical care;
- the site of accident among boys with a high work load was at home or in school, and among girls – on the street;
- the most frequent circumstance of the occurrence of injuries in boys with mediocre and high work loads was participation in household or agricultural activities (every third respondent suffered injury), riding a bicycle (mediocre work load), and in girls with high work load - riding a bicycle;
- boys and girls with a high work load were most frequently absent from school; the most frequent type of injuries among the respondents, irrespective of work load, were bone fractures, injuries of the skin, burns and bruises;
- the following types of care were not correlated with gender and work load: application of plaster (50–67%), and suturing of wounds (25–67%). Every third boy with a high work load and every third girl with a mediocre work load underwent surgical procedures (Tab. 3).

Studies by Lachowski [6] indicate that the engagement of children in hazardous or harmful work activities is conducive to injuries. The victims of accidents are primarily children whose engagement in this type of work tasks is high or mediocre. In every third child who had undergone injury, this engagement was evaluated as high, whereas among children who had not been victims of accidents, a high engagement in dangerous work activities occurred nearly three times less frequently (13%). The analysis of results, however, did not show a statistically significant correlation between the work load and the site and circumstance of injury, type of body injury and type of medical care provided.

Table 3. Relationship between occurrence of injuries and work load, by gender and work load (% of respondents).

	Boys (N=330)			Girls (N=332)		
	work load			work load		
	low	mediocre	high	low	mediocre	high
Injuries requiringmedical care [1* 2*]						
no injuries at all	100.0	78.9	66.7	40.0	81.8	80.0
once	0.0	20.0	23.8	60.0	13.6	18.0
twice or more	0.0	1.1	9.5	0.0	4.6	2.0
Place of injury						
home	0.0	83.3	50.0	0.0	50.0	0.0
school	0.0	0.0	37.5	33.3	25.0	0.0
sports centre	0.0	0.0	0.0	0.06	25.0	0.0
street	0.0	0.0	0.0	6.7	0.0	100.0
others	0.0	16.7	12.5	0.0	0.0	0.0
Circumstances of injuries						
exercises, training sports	0.0	0.0	0.0	33.3	25.0	0.0
riding a bicycle	0.0	50.0	0.0	0.0	0.0	100.0
travelling by car	0.0	0.0	25.0	0.0	0.0	0.0
walking, running	0.0	0.0	25.0	66.7	25.0	0.0
fighting	0.0	16.7	0.0	0.0	0.0	0.0
work activities	0.0	33.3	25.0	0.0	50.0	0.0
others	0.0	0.0	25.0	0.0	0.0	0.0
School absenteeism						
classes missed	0.0	50.0	71.4	33.3	25.0	100.0
classes not missed although it was school-year	0.0	25.0	0.0	33.3	25.0	0.0
classes not missed because there were holidays	0.0	25.0	28.6	33.4	50.0	0.0
Type of injury						
bone fracture	0.0	33.3	50.0	66.7	66.7	100.0
distortion of joint	0.0	0.0	12.5	0.0	0.0	0.0
injury of the skin	0.0	50.0	62.7	0.0	50.0	50.0
brain concussion	0.0	16.7	0.0	0.0	0.0	0.0
bruising	0.0	16.7	12.5	33.3	0.0	0.0
burns	0.0	16.7	12.5	33.3	0.0	0.0
poisonings	0.0	0.0	0.0	12.5	0.0	0.0
Type of care provided						
plaster applied	0.0	66.7	50.0	66.7	66.7	0.0
sutured wound	0.0	33.3	25.0	33.3	66.7	0.0
crutches or wheelchair	0.0	33.0	0.0	100.0	50.0	0.0
surgical procedure	0.0	0.0	37.5	0.0	33.3	0.0
hospitalization	0.0	0.0	25.0	0.0	33.3	0.0

Differences between work load categories in [1]boys, in [2]girls [*]$p<0.05$

A positive relationship was observed between the work load in the household and on the farm, measured by such indicators as: working time, heaviness of work activities performed, performance of hazardous and harmful work tasks, and self-reported appearance and life satisfaction (especially in boys), which may be associated with a positive effect of being outdoors, and physical activity of the respondents. The feeling of being useful is placed in a high position in a traditional rural system of values, and determines the place of an individual within a family and local community, therefore providing self-satisfaction. The relationship between evaluation of health in negative terms and low engagement in work tasks may therefore be interpreted as a manifestation of parents' care of children with low physical efficiency, and not the effect of loading them with work. Undoubtedly, loading with work unfavourably affects the occurrence of injuries requiring medical care, which suggests the necessity for the intensification of actions directed towards the observance of the principles of work safety on farms.

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