

ENGAGEMENT OF CHILDREN IN AGRICULTURAL WORK ACTIVITIES – SCALE AND CONSEQUENCES OF THE PHENOMENON

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Abstract: The purpose of the study was investigate the scale and consequences of the engagement of children in agricultural work activities in Poland. The study covered 1,006 children aged 12–14, who completed an audience questionnaire form: ‘Engagement of children in household and farm activities’. As many as 258 children kept diaries, in which they registered all work and everyday activities performed for a period of 8 weeks during various seasons of the year (2 weeks during each season). One third of the children in the study (35.7%) devoted a considerable amount of time to farm work (1–2 hours daily), while every eighth child helped its parents exceptionally longer – more than 2 hours daily on average. The results of the studies show that the great majority of Polish children coming from agricultural families participate in farming activities not adjusted to their physical abilities, and devote an excessive amount of time to this work (approximately 15% of respondents). In addition, the majority of children were engaged in work activities dangerous for them and hazardous for health, while a half of this group performed these activities frequently. Every second child in the study lifted objects which they perceived as heavy (55.5%), and drove a tractor (52.3%), while every third child was engaged in the operation of a straw cutter, cultivation of soil with tractor machinery, and planting potatoes with a potato planter. A slightly smaller percentage of children helped their parents with the slaughtering of animals, threshing, wood cutting with power saws. The children in the study also participated in sowing mineral fertilizers (approx. 16%) and application of chemical plant protection products (about 10%). Every seventh child suffered an accident while performing work activities on farms or within the household, and every twelfth was poisoned by chemical agents. In the case of 1/3 of children who were victims of accidents (31.3%) the engagement in such work activities was evaluated as high.

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INTRODUCTION

The intensive development of industry at the beginning of the 20th century created new workplaces, while the endeavours of the owners of factories towards obtaining maximum income resulted in the demand for cheap manpower. The needs began to be satisfied by the employment of children, even in such difficult sectors as metallurgy or mining. Simultaneously, there occurred suppositions that heavy labour causes negative consequences for the development of children and their health. Following this argument, at the beginning of the 19th century in France, efforts

were undertaken to advocate the discontinuation of the engagement of children in hard labour. Actions in this direction were undertaken by secular and religious institutions, lawyers, medical specialists in hygiene, the military, and by parents themselves [5]. At first, their postulates were excessive because they demanded the prohibition of employment of children under 12 in factories, mines, metallurgic enterprises and hard labour workshops.

In the 20th century, the protection against engaging children in work activities threatening their health and life became the concern of international organizations. During the period 1919–1999, the International Labour Organization



issued 19 conventions concerning the work of children and adolescents [14]. Minimum Age Convention No. 138 of 1973, and Convention No. 182 concerning the Prohibition and immediate Action for Elimination of the Worst Forms of Child Labor, adopted in 1999 [6, 7], are important for the protection of children against being overused at work. The work of children and its consequences still remains an important issue in the activity of institutions and organizations dealing with the protection of those who are under-age, primarily against all forms of abuse, including negative consequences of their employment. The statistics kept by the ILO indicate that approximately 246 million of the underage population are engaged in hard labour – 171 million perform work in very risky conditions, while 8.4 million children are engaged in the hardest form of work [11]. According to the estimations by the ILO, in 2004, 190.7 million children aged 5–15 performed economic activity [10]. The majority of working children live in the African continent (approx. 61%) and in Asia (approx. 31%) [2]. Nearly a half of them work full time. It is estimated that among children of school age, about 1/3 of boys and 2/3 of girls carry out part time economic activity.

Despite undertaking many actions on behalf of the limitation of hard labour for children, it is estimated that approximately 250 mln children aged 5–14 worldwide are forced to perform such work [1]. Beyond the statistics, there remains the phenomenon of the engagement of children in unpaid work activities in the sphere of household services, in agriculture, and informal sectors of economy. UNICEF pays attention to the need for taking a greater interest in the situation of children working in agriculture, services and small-scale production, because in these sectors of economy the majority of those employed are children [25].

In Poland, the possibilities for the employment of children are regulated primarily by the Labour Code, Regulation by the Cabinet, and the ILO Conventions ratified by Poland. All the above-mentioned legal acts concern the possibilities of employing the under-aged as hired workers on employment contract or order contract basis. Therefore, children engaged by their parents in work on family farms or in other family workshops remain outside the sphere of legal protection. In these circumstances, it is primarily up to the parents if the endowment of children with the performance of various work activities positively affects the children's health and development, or just the opposite – creates risk for their health and development.

Studies conducted in highly developed countries (e.g. USA) confirm that the basic motivation for using children for work on family farms is the social development of the child [12]. Similar conclusions were drawn by Polish researchers who stated that a child in a rural family discontinued playing the role of cheap manpower [15], which does not mean that the phenomenon of the engagement of children in work on family farms does not exist. The majority of Polish children aged under 16 who live in rural

families participate in work activities on behalf of a farm [17]. Their help with the running of a farm is an important element in the tradition and culture of a rural family.

Irrespective of the motivation of endowing children with work activities on family farms, the performance of this work possesses, apart from educational-socialization advantages, also a material value. While participating in the process of agricultural production, children support their parents in performing their occupation and increasing the family income. The value of children's work is especially appreciated in the developing countries where children are cheap manpower, and economic reasons are decisive in the motivation of parents sending their children to work [27]. Problems experienced by many families concerning the satisfaction of the basic life needs are inclination for the supplementation of their budget with the income from children's work.

Despite evident benefits of the enrolment of children in work on behalf of a family farm, the work of children in agriculture creates many threats, and engaging them in work activities which are inappropriate for the child's capabilities has negative consequences for their health and development [3, 8, 9].

The objective of the presented study was the provision of an answer to the question whether the current scope of engagement of rural children in agricultural activities causes negative consequences for their state of health and development.

METHODS

The phenomenon of the engagement of children in work on family farms and its consequences is presented based on the results of studies conducted among children from rural families living in central-eastern Poland. The area where the study was conducted is a poorly industrialized region – typically agricultural, with the prevalence of small and medium-size farms. The group of children was sampled by stratification in the following order: 1) sampling of 30 communes in the region, 2) sampling one school in each commune, 3) in the selected schools studies were conducted among children aged 11–14 concerning their participation in work activities on behalf of the family, and among them, in each school, 10 children were selected for diary studies.

The study covered 1,006 children aged 12–14, who completed an audience questionnaire form: 'Engagement of children in household and farm activities'. As many as 258 children kept diaries, in which they registered all work and everyday activities performed for a period of 8 weeks during various seasons of the year (2 weeks during each season).

The group of children in the survey covered more girls than boys (515 – 51.8% and 502 – 48.2%, respectively). The number of older children (508) was nearly the same as the number of younger children (498). All schoolchildren



Table 1. Mean time of performing agricultural work by children according to gender.

Categories of working time	girls		boys		total	
	n	%	n	%	n	%
did not work	6	4.6	1	0.8	7	2.7
up to 0.5 h	43	32.8	18	14.5	61	23.9
from 0.5–1 h	36	27.5	29	23.4	65	25.5
from 1–2 h	37	28.2	54	43.5	91	35.7
over 2 h	9	6.9	22	17.7	31	12.2
total	131	100.0	124	100.0	255	100.0

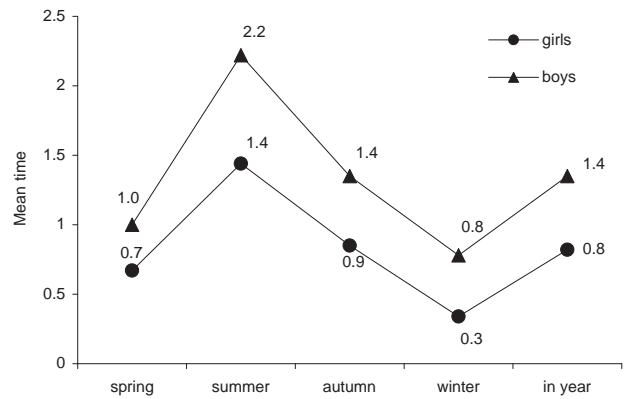
$\chi^2 = 27,454$; $p < 0.00$

in the study came from rural families living in the area of the Lublin Region. The greatest majority of these children had direct contact with farming because their parents possessed a farm. Parents of the remaining schoolchildren (12.2%) did not own a farm and were employed outside agriculture. For the majority of families possessing farms, work on own farm was the only occupation of family members (47.5%). The remaining families possessing farms were defined as performing a 'double-occupation' because, apart from agricultural work, parents performed non-agricultural occupations (40.3%). Considering socio-demographic traits, the group of schoolchildren keeping diaries was similar to the total group in the study, which means that the respondents were correctly selected for diary studies.

RESULTS

Results of the studies conducted by means of diaries showed that during the period of observation (56 days), each child aged 12–14 was engaged in work activities on a farm for one hour a day, on average. This amount of time should be considered as relatively long, because the calculations of the mean value considered also holidays and winter days, when the production activity is smaller on almost every farm. The greatest amount of time – nearly 2 hours during the day, on average (1.8 h), the children devoted to agricultural activities in summer, during the period free from school duties, and simultaneously the time of intensified agricultural work (Fig. 1). A considerably shorter period of performing agricultural work was in autumn (1.1 h) and spring (0.8 h), while the shortest in winter (0.5 h). During all the seasons of the year, boys devoted more time to performing agricultural work compared to girls – by half an hour during the day, whereas in summer it was longer by almost 50 minutes (0.8 h). The differences observed are statistically significant.

Analysis of the time devoted to the performance of agricultural activities (during diary observations) calculated for each child showed that the situation of individual children greatly varied. The data obtained showed that only 2.7%

**Figure 1.** Mean time of children performing agricultural work activities in various seasons of the year.

of the children examined were not engaged in agricultural activities, and in nearly half of respondents (49.4%) the mean time of performing work activities on a farm did not exceed one hour daily, which should be considered as a not high level of engagement of these children. One third of the children in the study (35.7%) devoted a considerable amount of time to farm work (1–2 hours daily), while every eighth child helped its parents exceptionally longer – more than 2 hours daily, on average. It should be presumed that these children may experience fatigue and overtiredness caused by work, which is probably connected with negative consequences for their development and health (Tab. 1).

The occupation of a farmer is considered as one of the most dangerous, and a farmers' environment is characterised by the occurrence of various hazardous factors [22, 23]. Many work activities in farming create high risk for health and life, which is confirmed by high accident rates in agriculture [20, 21]. Compared to other sectors of the economy, the accident rate per 1,000 workers is twice as high in agriculture. If the performance of the occupation of a farmer is so dangerous for adults, it should be expected that agricultural work activities with which children are engaged create a still higher risk for their health and life [19].

Results of the studies showed that the majority of children aged 12–14 performed during their lives activities considered as dangerous or hazardous for a child's health, which were listed in the index of activities not recommended for children aged under 15¹. Every second child in the study lifted objects which they perceived as heavy (55.5%), and drove a tractor (52.3%), while every third child was engaged in the operation of a straw cutter, cultivation of soil with tractor machinery, and planting potatoes with a potato planter. A slightly smaller percentage of children helped their parents with the slaughtering of animals,

¹ The index of such work activities was developed at an initiative of the National Labour Inspectorate, in association with the Ministry of Health, Ministry of Agriculture, Agricultural Social Insurance Fund, and the Institute of Agricultural Medicine [24].

Table 2. Percentage of children who performed dangerous and hazardous work at least once in lifetime.

Type of work	Irrespective of method	Independently (without supervision or assistance from adults)	N ^{o,*}
Driving a tractor	52.3	16.9	1000
Cultivation of soil with tractor attached machines	30.6	8.8	996
Mowing with tractor mower	15.7	2.9	993
Mowing with self-propelled machines	8.4	0.8	994
Planting potatoes with tractor attached potato planter	29.1	2.9	999
Digging potatoes with potato combine harvester	16.6	1.8	999
Spreading fertilizers with fertilizer spreader	15.4	3.3	994
Spreading fertilizers manually	16.5	4.2	995
Application of chemical plant protection products	9.1	2.5	993
Slaughtering of animals, poultry	23.4	3.4	993
Cutting timber with circular saw	18.4	1.9	989
Cutting timber with chain saw	13.5	2.3	988
Cutting straw, hay in straw cutter	36.7	6.1	991
Lifting heavy objects	53.5	20.0	993

* Percentages were calculated from different numbers because the questionnaire forms with no answers were omitted.

threshing, and wood cutting with power saws. The children in the study also participated in sowing mineral fertilizers (approx. 16%) and application of chemical plant protection products (about 10%). These activities, even if sporadically performed by a child, create a high risk of health loss, danger of causing an accident, as well as danger of being exposed to negative effects of the working environment, the consequence of which may be perceived in the future (e.g. application of chemical agents) (Tab. 2).

The scale of risk associated with work activities is also conditioned by the degree of independence in performing dangerous activities. Unfortunately, a relatively high percentage of the children examined performed these activities totally independently, without any supervision by adults. Every sixth child drove a tractor without supervision (16.9%), and every ninth (8.8%) cultivated soil with tractor machinery. Some children independently undertook such activities as straw or hay cutting with cutters (6.1%), cutting timber with a power saw (3.5%), operating a tractor harvester, or applying pesticides (2.9%).

Diary observations carried out in various seasons of the year indicated that every fifth child examined (19.6%) performed agricultural work every day or almost every day, therefore it should be admitted that assistance on a farm is their permanent duty. Considering the subjective feelings of children concerning the frequency of undertaking agricultural activities (survey) it is noted that they perceive performing agricultural work activities as their permanent duty considerably more often than reflected by diary observations. Such a character of duties on a farm was declared by more than a half of the children examined (53.7%). The discrepancies between the data from diary observations and the survey (self-reported frequency) do not show,

however, that the replies of a considerable part of the children are unreliable, because the survey shows the situation of children and their feelings concerning the period directly preceding the day of completing the form, while the diary observations refer to a longer period of time and various seasons of the year.

The presented characteristics of the engagement of children in agricultural work activities allows the presumption that some of them are excessively loaded with agricultural work, and engaged in dangerous activities which are hazardous for their health. It happens that the performance of these activities exceeds the physical or psychical capabilities of a child. It should be expected that such situations negatively affect the somatic, mental and social development of a child, and are also the cause of accidents – even those ending in death.

A direct, negative consequence of the engagement of children in agricultural work are the accidents annually registered by the Agricultural Social Insurance Fund. As many as 1,400 accidents associated with agricultural work were reported, the victims of which were children aged under 15; several of these accidents were fatal [26]. During the period 1999–2003, 26 children died in accidents while performing agricultural work.

The results of the studies showed that every seventh child examined at least once in its life was the victim of an accident while performing work activities on a farm or within a household, and every twelfth was poisoned by chemical agents. Children whose engagement in dangerous or hazardous activities was high or mediocre were considerably more often victims of accidents, compared to those who were engaged such activities to a small degree, or who did not perform such activities at all. In the case of

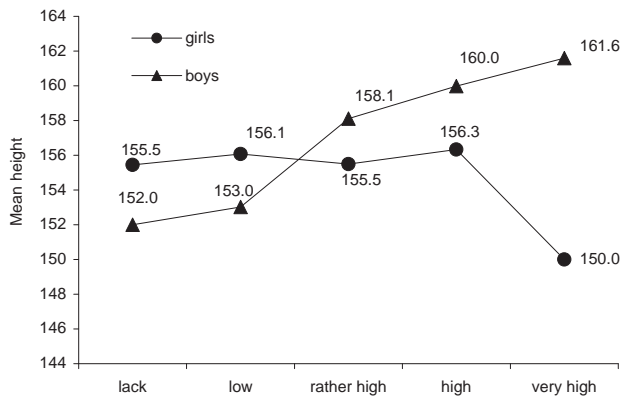


Figure 2. Mean height of children loaded with dangerous or hazardous agricultural work activities.

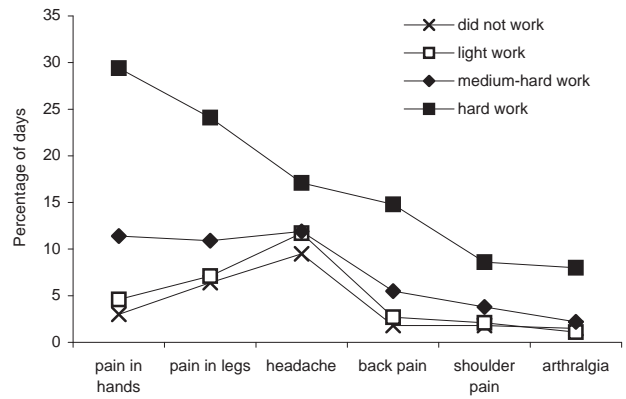


Figure 3. Percentage of days when children experienced physical complaints and severity of work activities performed.

1/3 of children who were victims of accidents (31.3%) the engagement in such work activities was evaluated as high, whereas children who never suffered accidents during high engagement in performing dangerous work activities occurred 3 times less frequently (12.6%). In addition, the study indicated that children who did not perform dangerous activities suffered accidents twice less often than those who were loaded with these activities to a high degree. Children who were engaged in regular duties were more exposed to accidents. Among children who were victims of accidents, the percentage of those possessing regular duties on farms was 76.6%, and was higher than among children who did not suffer accidents (60.8%).

The analysis of selected indicators of the state of health in the groups of children selected according to the amount of time devoted to performance of agricultural work did not confirm the presumption that a longer working time on a farm negatively affected children's state of health. In the subgroups of children engaged in work within various scopes of time, a similar percentage of children with chronic diseases, those suffering from other diseases, or with body posture defects was observed. Only self-reported health significantly differed among children who helped their parents within various periods of time. A total lack of duties co-existed with generally better self-reported health. Children who did not perform any work activities on family farms and those who worked for the longest time evaluated their health in more positive terms. Those who devoted a relatively large amount of time (2–3 hours) to work evaluated their health in significantly more negative terms.

Similar correlations were noted between the time devoted to the performance of work activities and an index of physical development of children (height and body weight). Better indices of development were noted among children who did not perform agricultural activities and those who worked for the longest time, whereas children who worked within a moderate or relatively great scope of working time were characterised by a slightly worse development. Therefore, it should be presumed that an excessive work load in children may cause a delay or disturbances in their

physical development. Simultaneously, the better physical development of children disposes parents to the endowment of children with a wider scope of duties (Fig. 2).

The physical development of children, to a greater degree, is connected with the type of agricultural work activities undertaken than the time of performance of these activities. The data obtained showed that the engagement of boys in activities which are dangerous and hazardous for health was closely associated with their physical development. This relationship was of a linear character – the taller the boys were, the wider the scope of their participation in this type of activities. A similar relationship was not observed in the group of girls who were loaded with agricultural work activities to the degree from very small to large: mean height of girls in each of these subgroups was the same. Only in the group of girls loaded with these activities to a very high degree was it noted that their height was significantly lower than the mean height of girls in the remaining subgroups (by 4 cm). The results of the presented analysis clearly indicate that girls engaged in dangerous or hazardous work activities, which are frequently hard, co-exists with worse indicators of their physical development.

Loading children with agricultural work activities exerted the strongest effect of experiencing physical or psychological complaints. Children who did not perform any agricultural work experienced various complaints to the least of extent. These complaints, to a similar degree, were experienced by children performing light work activities. In the group of children who were engaged in medium-hard work, the percentage of those who experienced almost all the complaints analysed clearly increased, and obtained the highest values in the group most loaded with agricultural work activities. The more severe the work performed, the more frequently children reported such complaints as: pain in hands and legs, great fatigue, back pain, and discouragement. For example, children performing hard physical agricultural activities experienced hand pains 10 times more frequently than those who did not perform such activities (Figs 3, 4).

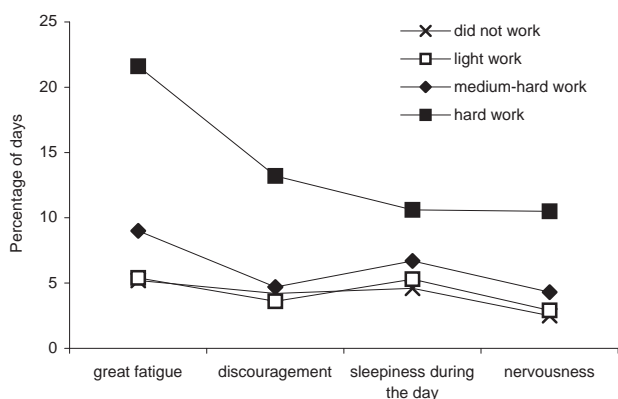


Figure 4. Percentage of days when children experienced the symptoms of fatigue and severity of work activities performed.

An excessive loading of children with agricultural work activities also exerts a negative effect on the child's education [18]. In the countries of low economic development, the majority of children do not undertake education even on the elementary school level [1, 2]. According to the ILO report, nearly a half of the total number of working children at school age simultaneously use school education [11]. The authors of the report emphasize that certain forms of work do not have to interfere with the education of children, although work undoubtedly affects the regularity of attending school classes and progress in education. In Poland, the education of children aged 6–16 is an obligation of both parents and the State, therefore the problem of not undertaking education by children due to employment does not exist. However, it happens that during the period of intensified field work children are absent from school to assist their parents.

The results of the study showed that a vast majority of children aged 12–14 did not miss school classes because of performing agricultural work on their parents' farm. Nearly every third child (30.5%) admitted that they were absent from school (at least once a year) for this reason. Missing school classes is the most frequent sporadic situation – from once to several times a year. Only 5.4% of the children examined miss school classes relatively regularly – once a week, on average (Fig. 5).

Absence from school in association with helping parents with agricultural work results in the fact that those children devote less time to education. The analysis of the relationship between working time and school marks indicated that the more time children devote to agricultural activities, the lower are the mean values of their marks at school (Fig. 5). The highest mean value ($\bar{x} = 4.25$) was obtained by children performing agricultural work activities for a time shorter than 0.5 hour daily. The mean of school marks systematically decreases in the sub-groups of children who devote the greatest amount of time to agricultural work, and is the lowest among children working longer than 2 hours daily ($\bar{x} = 3.64$). The differences between the mean of marks of children working for the shortest time (<0.5 h),

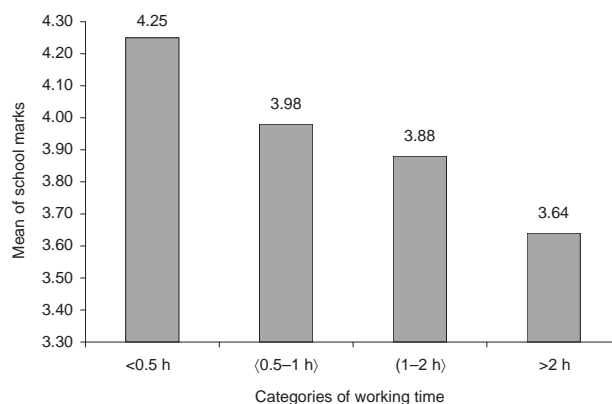


Figure 5. Mean of school marks of children devoting various amount of time to agricultural activities.

and the mean marks of children who work 1–2 hours, as well as those employed for over 2 hours, are statistically significant (Tukey HSD Test – $p < 0.05$ and $p < 0.01$, respectively).

DISCUSSION

The work of children on a family farm brings specific benefits to a family: higher income, efficient performance of urgent work activities. The skilful engagement of children in work also brings benefits for the children themselves. Positive effects of children's work are perceived primarily in the perspective of education and socialising. This aspect is underlined especially by parents who indicate that by taking part in agricultural work activities children learn responsibility, reliability, work ethics, new skills and coping with problems [4, 15].

The results of the studies show that the great majority of Polish children coming from agricultural families participate in farming activities not adjusted to their physical abilities, and devote an excessive amount of time to this work (approximately 15% of respondents). In addition, the majority of children are engaged in work activities dangerous for them and hazardous for health, while a half of this group perform these activities frequently. The data obtained indicates that the existing legal regulations do not protect children against the situation of excessive workload, which may result in negative consequences for their health and life. These consequences affected the children in the study because every seventh child suffered an accident while performing work activities on farms or within the household. Analysis of the data obtained showed that there is a relationship between the level of participation of children in dangerous or hazardous activities and accident rates. Children who are engaged in these types of activities to a high degree, are considerably more often victims of accidents than children who perform dangerous work to a lesser degree, or do not undertake these activities at all.

Each accident causes specified damage to a child's health. The unskilled engagement of children in agricultural

work may also have undesirable effects on their health and development, other than accidents. The results of the analysis of relationships between the level of workload with agricultural activities among the children examined and the selected indicators of their health and development do not allow the determination of a one-direction relationship. On the one hand, the data obtained allows the presumption that an excessive workload with agricultural activities, including primarily the endowment of children with dangerous activities, causes negative consequences for their physical development and state of health. This regularity concerns especially girls, in whom the excessive loading with dangerous and simultaneously heavy work co-occurs with worse indicators of physical development. At the same time, the data show that the good physical development of children and their good state of health may be the factor encouraging parents for endowing them with a greater scope of duties on farms.

The data analysed confirms that the performance of physical hard work by children causes an intensification of such complaints as: hand ache, pain in the legs, great fatigue, back pain, and discouragement. These are the symptoms of over-fatigue of an organism, which when repeated may lead to permanent disorders. Children who devote excessive time to agricultural work activities simultaneously achieve worse results in education.

The presented results of the study allow the presumption that a considerable percentage of agricultural families, while engaging their children in work activities on a farm, exposes them to negative health consequences, and in some cases, children actually experience these consequences. Other studies conducted in Poland [15, 16], as well as in the USA [13], explain that this type of attitude by the parents results not only from economic difficulties (insufficiencies), but also from the conviction about the necessity of educating children through work, and first of all about the low awareness of the risks associated with the endowment of children with work activities not adjusted to their abilities. This indicates the need for the education of farmers concerning the principles of endowing children with work on a farm.

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