

## Unemployment in the Polish countryside and its effect on the development and rate of maturation of rural girls

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**ABSTRACT** The aim of this study is to assess the biological status of girls from landless rural families – daughters of working fathers, and those of unemployed fathers. The measures include age at menarche, body height and weight, and the body mass index (BMI). The study of rural girls was conducted in 2001; a total of 9599 girls aged 9-18 were examined. The material used in the present article only embraces girls from non-farming rural families (N = 4476). It was divided into daughters of working fathers (86.5%) and those of unemployed fathers (13.5%). Daughters of working fathers mature earlier than those of unemployed fathers. The difference in the age at menarche is 0.39 years and is statistically significant. The age at menarche of daughters of unemployed fathers approximates the menarchal age of daughters from farming families with many children (5 or more) in which both parents have elementary education. In groups similar in terms of the father's education and the number of children in the family, daughters of unemployed fathers display a later age at menarche and a lower body height and weight. These results support the statement that a father's lack of employment affects the biological status of his daughters.

**KEY WORDS:** age at menarche, biological development, socio-economic status

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The socio-economic structure of the rural population in Poland differs considerably from that in the more developed states of the European Union. Poland is considered an agricultural country. About 18% of the Polish rural population lives solely off agricultural incomes, compared with 2.7% in Germany, 4.3% in France, and 5% in Italy [FEDYSZAK-RADZIE-

JOWSKA 2003]. The differences between Poland and other EU countries include, among others, the incomes of the rural population – markedly lower in Poland, infrastructure, and unemployment rate. In addition, the educational level of the Polish rural population is lower than that in many EU states: nearly half the population living in the Polish countryside has

the lowest education level in Europe – a peculiarity on the European scale [FEDYSZAK-RADZIEJOWSKA 2002, 2003; PAŁUCHA 2003; *GUS data* 2001, 2002].

Rural people can be divided into three groups by the source of family livelihood:

- the farming population supported exclusively from work on its own farms,
- the farming-working population supported from work on its own farms and earning an income from work outside agriculture, and
- the non-farming population supported exclusively from a non-farming occupation and having no farm of its own.

This division was proposed by Łaska-Mierzejewska in 1967 when she began her research on the rate of development and maturation of rural girls [ŁASKA-MIERZEJEWSKA 1970, 1983, ŁASKA-MIERZEJEWSKA & OLSZEWSKA 2007]. Similar divisions were also made by other authors when addressing sociological and economic issues in the Polish countryside [MICHNA 1999, FRENKEL 1997, GORLACH 2000].

The non-farming (non-peasant) group embraces households in which no member runs a farm of 1 ha or more in an area [MICHNA 1999]. Households of the non-farming population constitute about 54% of all rural households. Michna distinguishes two groups of the non-farming population: people employed primarily in agriculture and running smallholdings which do not yield any substantial income, and those not running agricultural holdings who show low occupational activity and a high unemployment rate [MICHNA 1999]. He also recognises two types of agriculture: one that is the essential source of family livelihood and another that supplements the income, or

merely provides the family with food-stuffs [MICHNA 1999].

Unemployment is a problem in all countries of the world. In Poland unemployment was recognised as a detrimental social phenomenon after the political and economic changes of 1989. It affects people living in towns as well as the countryside. In the years 1990-2006 unemployment in Poland kept increasing. The transition from the socialist to a market economy left people jobless in many sectors. The restructuring of the particular branches and the need to reduce expenses in various sectors brought about many job lay-offs which swelled the ranks of the unemployed. This also affected the rural population, especially the segment working on State Farms before 1989. Their liquidation contributed to a rise in rural unemployment, reaching >30% in some regions. [*GUS data* 2001, ŁASKA-MIERZEJEWSKA & OLSZEWSKA 2003]. In 1998, landless and jobless country people accounted for nearly half the total unemployment (45.6%), with the figure declining slightly over the subsequent years, to 43.7% in 2000 and 42.7% in 2001. Such a substantial unemployment rate is largely a legacy of the previous system and the first period of the transformation [*GUS data* 2000, MICHNA 2001, KŁOS 2006].

Rural unemployment primarily affects people with a low educational status – elementary and vocational. It is more frequent among women (24.4%) than men (17.1%) [KŁOS 2006]. Two types of unemployment can be distinguished among the rural population: official, i.e., the kind registered by the Central Statistical Office, which varied from 9% to 25% in the years 2003-2005 depending on the region surveyed, and concealed

unemployment, which amounted to 13.8% in 1995 to rise to 19.6% a year later, according to some sources [GORLACH 2000, PARLIŃSKA 2003]. Concealed unemployment is overemployment in relation to the requirements of a manufacturing process or services rendered - BAEL (Study of the Population's Economic Activity [Internet report]). In international statistical terms, it refers to that group of workers who do not actively seek work, convinced that they have no chance of finding a job [KŁOS 2006]. Concealed rural unemployment primarily affects the individual sector of agriculture, i.e., peasant families.

An increase in rural unemployment is closely connected with the ineffectual economic restructuring of the country. The lack of new jobs in the various sectors of the economy greatly curbs the demand for labour and hence limits the migrations of the rural population to towns. An increase in unemployment in society worsens the economic situation of families, and this will affect the biological development of children and young people.

The aim of the study is to assess the biological condition of girls from landless rural families, i.e., the daughters of working fathers and those of unemployed fathers. Its measures are: age at menarche, body height and weight, and the body mass index (BMI).

### Materials and methods

The study of rural girls was conducted in 2001 in four different regions of Poland: Choszczno, Leszno, Suwałki, and Ostrów Mazowiecka. A total of 9,599 girls aged 9-18 were examined. In rural primary schools, all girls were included,

and in secondary schools (situated in towns) – only girls of rural origin. The regions chosen for the research differed in their level of wealth, as did the communes selected within each region.

The basic criterion of division of the material was the source of family livelihood. Three groups were distinguished. The farming group embraced families supported exclusively from work on their own farm; the farming-working group embraced those supported from work on their own farm and earning an income from work outside their own farm; and the non-farming group embraced people having no land of their own. The material used in the present study included only girls coming from non-farming rural families. This group comprised 4476 girls, or 46.6% of all those examined. It was divided into daughters of working fathers (86.5%, N = 3646) and those of unemployed fathers (13.5%, N = 567).

The unemployment rate in the regions under study differed. Table 1 shows the unemployment rates among the fathers of the group of girls in question, and for comparison the figure for the entire region [*GUS data*, 2001]. The unemployment rate in Poland was 17.4% in 2001.

The biological effects of rural unemployment were assessed on the basis of the girls' age at menarche as well as body height and weight. Apart from the source

**Table 1.** Unemployment rate UR [%] in the population studied and in the entire region in 2001

	UR - families under study	UR - entire region (2001)*
Choszczno	17.9	21.7
Ostrów Maz.	12.8	11.8
Leszno	6.0	13.2
Suwałki	21.7	14.3

\* data of Central Statistical Office

of family livelihood, the following social variables were recorded:

- education of the father
- number of children in the family (family size)
- material equipment of the household (water supply, warm water, gas, a freezer, a colour TV, a video, a washing machine, a car).

A status quo method was employed to examine age at menarche and the results were processed using probit analysis. Also calculated were normalised values of the body height and weight of girls in the groups of employed and unemployed fathers, taking into account the above social variables. The normalising group embraced all the girls from the non-farming group participating in the 2001 study.

## Results

### *Social structure in the families of working and unemployed fathers*

Unemployment was twice as frequent in fathers with primary education (27%) compared to those with secondary and higher education (14.6%). In both groups the frequency of fathers with vocational education was the same, 58%. Many children came from families of unemployed fathers, 20.4% while 12.9% came from families of working fathers. Working fathers had secondary and higher education in a frequency twice as much as the unemployed fathers (Table 2).

Table 3 presents consumer durables in the families. The families in which the father is unemployed are worse equipped in terms of household appliances and

**Table 2.** Size of families of employed and unemployed fathers by the level of their education

	Number of children in family						Father's education					
	1-2		3-4		5 and more		primary		vocational		secondary	
	N	%	N	%	N	%	N	%	N	%	N	%
Employed N = 3646	1478	40.5	1698	46.6	470	12.9	500	13.7	2117	58.1	1027	28.2
Unemployed N = 567	185	32.6	267	47.0	116	20.4	153	27.0	331	58.4	83	14.6

**Table 3.** Durable goods in the households of employed and unemployed fathers

Durable goods	Employed		Unemployed	
	N	%	N	%
1. water supply	3435	94.2	504	88.9
2. warm water	3230	88.6	445	78.5
3. gas	3361	92.2	465	82.0
4. freezer	3386	92.9	503	88.7
5. colour TV	3615	99.1	550	97.0
6. video	2593	71.1	326	57.5
7. automatic washing machine	2964	81.3	283	49.9
8. car	2714	74.4	302	53.3
6+7+8 present	1919	52.6	179	31.6
6+7+8 absent	179	4.9	87	15.3

infrastructure than families in which the father is employed. The meagreness of equipment in families of unemployed fathers is evident especially when the possession of three goods simultaneously is compared. Families of working fathers are twice as likely to have a video, washing machine, and car at the same time (Table 3). These results show that the material status of families of the unemployed is inferior to those in which the father has a job, although the duration of the father's unemployment was not investigated.

#### ***Biological development of daughters of working and unemployed fathers***

The daughters of working fathers mature earlier than those of unemployed fathers (Table 4). The difference in the rate of maturation in the groups under study is 0.39 years and is statistically significant. The menarchal age of daughters of unemployed fathers is 13.51, which is later than that in all of the socio-occupational groups of rural girls examined in 2001 (farmers, farmers-workers, and non-farmers) [ŁASKA-MIERZEJEWSKA, OLSZEWSKA 2003]. The age at which the first menstruation period appears in daughters of unemployed fathers approximates the maturation age of daughters from farming families with many children (5 and more) in which both parents have primary education. The

menarchal age of daughters of unemployed fathers examined in 2001 is also later than the maturation age of girls from non-farming families in the 1977 and 1987 studies [ŁASKA-MIERZEJEWSKA, OLSZEWSKA 2003]. One may presume that the status of an unemployed father considerably impairs the rate of maturation of his daughters. Daughters of working fathers are taller and have a greater body weight than daughters of unemployed fathers. The differences are 0.16 and 0.13 SD, respectively (Table 4).

The above results raises the question as to whether the significantly later maturation and lower body height and weight of daughters of unemployed fathers are caused by their unemployment or by a less favourable education structure and a greater number of children in their families in comparison with girls of working fathers. The results presented below prove that within the same categories of family size and within the same categories of the father's education, his unemployment status affects the biological status of the girls.

Daughters of working fathers with 1-2 children in the family mature the earliest (at age 13.04), while those of unemployed fathers and families with many children, the latest (at 13.69). The differences between the daughters of employed and unemployed fathers, depending on the number of children in the family,

**Table 4.** Age at menarche and normalized values of the somatic features of girls from non-farming families – daughters of employed and unemployed fathers (normalization to the arithmetic mean and standard deviation of girls from the non-farming group)

Fathers	N	Age at menarche	Body height	Body weight	BMI
Employed	3646	13.12	0.03	0.02	0.01
Unemployed	567	13.51	-0.13	-0.11	-0.07
Difference	-	0.39*	0.16*	0.13*	0.08

\* p<0.05

amount to 0.34, 0.22 and 0.53 years, respectively, and are statistically significant (Table 5).

Daughters of working fathers in all the categories of education mature earlier than those of unemployed fathers. The differences are 0.15 years for the category of primary education and 0.41 years for the category of vocational education. Because of the size of the sample (N=83), it was impossible to calculate age at menarche of daughters of unemployed fathers with secondary and higher education (Table 6).

When assessing body height and weight, higher parameters of these features were recorded in daughters of working fathers in all the categories of family size. Also readily observable is the effect of the education of fathers in both the working and the unemployed group on body height and weight of their daughters. Both somatic features assumed lower values in daughters of unemployed fathers (Table 7).

The answer to the question posed earlier is unequivocal: in groups equal in terms of the father's education and

**Table 5.** Age at menarche of girls from landless rural families – daughters of employed and unemployed fathers, by the number of children in the family

	1-2 children			3-4 children			5 and more		
	N	x	SD	N	x	SD	N	x	SD
Employed	1478	13.04	1.53	1698	13.2	2.09	470	13.16	1.66
Unemployed	185	13.38	1.81	267	13.42	1.97	116	13.69	1.68
Difference	-	0.34*	-	-	0.22*	-	-	0.53*	-

\* p<0.05

**Table 6.** Age at menarche of girls from landless rural families in terms of education of employed and unemployed fathers

	Elementary			Vocational			Secondary		
	N	x	SD	N	x	SD	N	x	SD
Employed	500	13.31	1.46	2117	13.16	1.91	1027	12.99	1.38
Unemployed	153	13.46	1.85	331	13.57	1.58	83	-	-
Difference	-	0.15	-	-	0.41*	-	-	-	-

\* p<0.05

**Table 7.** Normalized values of the somatic features of girls from non-farming families in terms of education of their fathers

Father's education	N	Body height	Body weight	BMI
<i>Employed fathers</i>				
Elementary	502	-0.100	-0.092	-0.069
Vocational	2117	0.003	0.031	0.037
Secondary	1027	0.146	0.058	-0.005
<i>Unemployed fathers</i>				
Elementary	153	-0.232	-0.190	-0.110
Vocational	331	-0.089	-0.089	-0.057
Secondary	83	-0.088	-0.070	-0.032

family size, daughters of unemployed fathers display a later age at menarche and a lower body height and weight. These results support the statement that the father's unemployment affects the biological status of his daughters. The effect is significantly greater on the rate of maturation than on body height and weight, which once again confirms the high eco-sensitivity of the age at menarche.

### Discussion

Differences in the biological development and rate of maturation of children and young people living in different socio-economic conditions are a generally known phenomenon, well-documented in Polish and foreign literature [LIESTOL 1982; ŁASKA-MIERZEJEWSKA 1983; BIELICKI *et al.* 1986, 1997, 2003; HULANICKA *et al.* 1990; CHARZEWSKI *et al.* 1991, 1998; GODINA 1994; BIELICKI & SZKLARSKA 1999; SKŁAD *et al.* 2002; ŁASKA-MIERZEJEWSKA & OLSZEWSKA 2003, 2004, 2007].

The socio-economic and political changes that take place in developing societies, including Poland, leads one to the conclusion that significantly different living conditions of various social groups will exert an influence on the biological status of the population for a considerable amount of time yet.

The socio-economic transformation in Poland after 1989 made it possible to distinguish the unemployed as a social group. At the start of the transformation, unemployment was a novelty; in the recent years it has become an integral part of socio-economic life. It affects the population irrespective of whether it resides in town or the country [MICHNA

1999, 2001; *GUS data* 2000, 2001, 2002; KŁOS 2006]. Sociologists and economists emphasise that unemployment is sometimes felt more acutely by the rural population than by town dwellers. The number of adults living in the country much exceeded the economic demand for a workforce in the rural environment [MICHNA 1999, GORLACH 2000]. The education status is inferior in the countryside, and the rural standard of living is lower than that of urban areas. Central Statistical Office data (*GUS data* 2000) show that per capita income for a farming family was about 150 zlotys lower than in the statistical Polish family. While a Polish household had 560.43 zlotys per person per month, in families supported from two sources – a farm and a job – the income was 438.37 zlotys per person, and among farmers, 411.37 zlotys [*GUS data* 2000]. This fact demonstrates the inferiority in economic situation of farming families.

In 2001 the rural unemployment rate varied between 9% and 25%, depending on the region. Unemployment of a father usually causes deterioration in the material condition of his family, hence this situation can be presumed to bring about such biological effects as retarded maturation and a lower body height and weight of his offspring in comparison with families deriving a steady income from a job.

The results of the study of rural girls carried out in 2001 showed daughters of unemployed fathers to mature the latest of all the occupational groups of the rural population. This age was 0.28 years later than in the total sample under study and 0.39 years later than in daughters of working fathers from the non-farming group. Daughters of un-

employed fathers also matured 0.19 years later than those of farmers. Presumably, the retarded maturation age of the daughters of unemployed fathers is caused by the inferior socio-economic conditions of their families. It should also be emphasised that the daughters of unemployed fathers examined in 2001 matured 0.11 years later than all the rural girls studied in 1977, (i.e. 24 years earlier), and 0.31 years later than girls from the non-farming group [ŁASKA-MIERZEJEWSKA & ŁUCZAK 1993]. The results of the comparison show that the farming group was less affected by the systemic transformation than the non-farming group that had lost employment. This involves primarily those inhabitants of the countryside whose workplaces connected with agricultural production have been liquidated. A research survey has shown country people to be of the opinion that the quality of their lives has deteriorated. According to the respondents, the change in the economic system – the transition to a market economy – has had a detrimental effect on the Polish countryside. However, results of studies of sociologists and economists show there to be an improvement in the status of the rural population, including farmers. Over the period 1990-1999 the level of possession of material goods in the countryside grew substantially [GORLACH 2000].

The results of the present rural studies show that in the years 1987-2001 possession of household equipment in the four regions under investigation improved markedly in each of the groups distinguished. The improvement could also be observed in those regions that are considered poor – Suwałki and Choszczno,

suffering a considerable unemployment rate as a result of the liquidation of State Farms in 1992. When analysing the material equipment of households in the groups of employed and unemployed fathers, it was found that families in which the father did not work were a little less likely to have an automatic washing machine, a video, or a car. The possession of a colour television did not differentiate the groups in question: about 99% of the families under study possessed one.

In groups of girls equivalent in terms of the father's education and family size, daughters of unemployed fathers were found to display a later age at menarche and a lower body height and weight in comparison with girls from families of working fathers. This is yet another piece of evidence that unemployment of fathers adversely affects the biological status of their daughters.

In research on British children it was found that employment status of the father differentiated the level of development of their offspring. Children of jobless fathers were about 1 cm shorter than their peers whose fathers worked. The differences were statistically significant when the fathers had been out of work for more than a year [RONA & CHINN 1984, 1991]. However, the effect of unemployment on the rate of development declined with time in years. The differences in body height between British children of employed and unemployed fathers were smaller in 1981 than in 1971 (RONA & CHINN 1984). One may presume that the status of an unemployed father improved in Great Britain over the 10 years which, in turn, had a beneficial effect on the development of their offspring.



In the present research the duration of the father's unemployment was left undetermined, but this did not alter the fact that maturation was much later in this group of girls.

The rural population makes up 38.2% of Poland's total population, but contributes 42.5% to total unemployment. This is an officially registered figure; actual unemployment is even higher. In recent years such adverse conditions of development and maturation in the countryside affect an increasing number of children and young people.

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## Streszczenie

W Polsce bezrobocie zostało dostrzeżone jako negatywne zjawisko społeczne po zmianach systemowych, jakie miały miejsce w 1989 roku. Wzrost bezrobocia powoduje pogorszenie sytuacji ekonomicznej rodzin, co może wpływać na rozwój biologiczny dzieci i młodzieży. Celem pracy jest ocena kondycji biologicznej dziewcząt z wiejskich rodzin bezrolnych, zróżnicowanych ze względu na status zatrudnienia ich ojców: córek ojców pracujących oraz bezrobotnych (tabela 1). W przedstawianej pracy za mierniki kondycji biologicznej przyjęto: wiek menarche, wysokość i masę ciała oraz wskaźnik masy ciała (BMI). Badania dziewcząt wiejskich zostały przeprowadzone w 2001 roku w czterech różnych rejonach kraju. Łącznie zbadano 9.599 dziewcząt w wieku 9 – 18 lat. Materiał niniejszego artykułu stanowią jedynie dziewczęta pochodzące z wiejskich rodzin nierolniczych. Liczebność tej grupy wynosiła 4.476 dziewcząt, co stanowi 46,6% ogółu zbadanych dziewcząt. Grupa ta została podzielona na córki ojców pracujących – 86,5% (N = 3.646) oraz bezrobotnych – 13,5% (N = 567). Strukturę rodzin tych dziewcząt przedstawia tabela 2, a ich sytuację materialną – tabela 3.

Córki ojców pracujących dojrzewają wcześniej niż córki ojców bezrobotnych. Różnica w tempie dojrzewania w badanych grupach wynosi 0,39 roku i jest istotna statystycznie. Wiek menarche córek ojców bezrobotnych wynosi 13,51 roku i jest wyższy niż we wszystkich wyróżnionych grupach społeczno-zawodowych dziewcząt wiejskich badanych w 2001 roku (rolnicza, rolniczo-robotnicza, nierolnicza). Wiek pojawienia się pierwszej miesiączki u córek ojców bezrobotnych jest zbliżony do wieku dojrzewania córek z rodzin rolniczych, wielodzietnych (5 i więcej dzieci), w których oboje rodzice posiadają wykształcenie podstawowe (tabele 4-6). W grupach wyrównanych pod względem wykształcenia ojca oraz dzietności rodzin córki ojców bezrobotnych odznaczają się wyższym wiekiem menarche oraz mniejszą wysokością i masą ciała (tabela 7). Przedstawione wyniki pozwalają stwierdzić, że bezrobocie ojca wpływa na stan biologiczny ich córek. Wpływ ten jest znacząco większy na tempo dojrzewania niż na wysokość i masę ciała.