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Socio-economic conditionings of families with children treated due to scoliosis in Eastern Poland

Michał Latalski[2], Marek Fatyga[2], Reanta Kuzaka[1], Jerzy Bylina[3], Tadeusz Trzpis[4], Renata Kopytiuk[5], Mirosław Jerzy Jarosz[3,6], Małgorzata Latalska[7]

[1] *European Centre for Rehabilitation, Biała Podlaska, Poland*
[2] *Children's Orthopaedics Department, Medical University, Lublin, Poland*
[3] *Departament of Health Informatics and Statistics, Institute of Rural Health, Lublin, Poland*
[4] *Outpatient Clinic for Motor Organs Treatment 'GERONIMO', Tarnów, Poland*
[5] *Chair of Physioprophylaxis, Faculty of Physical Education and Sports, Józef Piłsudski University of Physical Education, Warsaw, with seat in Biała Podlaska, Poland*
[6] *Faculty of Pedagogy and Psychology, University of Economics and Innovation, Lublin, Poland*
[7] *Department of Retinal and Vitreous Surgery, Medical University, Lublin*

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Abstract

Introduction and objective: Scoliosis is a serious clinical problem which requires a systematic physical therapy and control of body balance – treatment from the moment of achieving skeletal maturity by a child. In the situation of neglect of such a management, the deformation of the spine often requires surgical intervention. The role of parents in the process of treatment of a child is undeniable. The study concerned the determination of socio-economic conditions and the engagement of parents with children treated due to scoliosis in Eastern Poland.

Material and methods: The study was conducted by means of a diagnostic survey. The study group consisted of 193 parents (148 females (76.7%) and 45 males (23.3%)) – a randomly selected sample of the parents of children who participated in scoliosis rehabilitation courses in rehabilitation centres in Eastern Poland.
The significance of the relationships between variables was investigated by means of chi-square test for independence. The differences between the empirical and theoretical sample distribution was examined by means of chi-square goodness-of-fit test. The significance level was set at $p=0.05$.

Results: The study group covered 47.7% of inhabitants of the rural areas and small towns, and 52.3% of inhabitants of medium-size and large cities. Respondents with a higher economic status were more engaged in the treatment of their child with scoliosis. A greater number of parents with university education level reported to a specialist; however the frequency of these visits, similar to incomplete families, was the lowest.

Conclusions: The accessibility to specialists is lower in the rural than urban areas.
1. There is a relationship between the economic standard of the family and engagement in the treatment of a child with scoliosis.
2. There is a need to develop a system of education of parents concerning scoliosis and the consequences of neglecting treatment.
3. The system of public health services is insufficient for satisfying health demands of patients with the diagnosis of scoliosis.

Key words
scoliosis, family, socio-economic conditioning, rehabilitation

INTRODUCTION

The human spine performs a protective, supportive, motor and cushioning role. It is the part of the motor system which cannot be replaced in any way. Disorders in its anatomical structure result in a number of changes also in the functions of other organs. Among these disorders is scoliosis, a three-dimensional deformity of the spine. This deformity has a greatly varied pathogenetic background, and leads not only to the development of a cosmetic deformity, but to a permanent biomechanical failure of the spine.

Awareness of this problem evokes fears in society. The diagnosis of scoliosis imposes new duties on the family which result from the necessity for a long-term organized care of the ill child. The effectiveness of treatment depends on the engagement of physicians of various specialities and physical therapists; however, the child's parents and caregivers are primarily responsible for the rehabilitation process outside health facilities.

Address for correspondence: Michał Latalski, Chodźki 2, 20-093 Lublin, Poland.
E-mail: michall1@o2.pl

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The illness is a new situation in which they find themselves and to which they must adapt. Then, the family is the main source of support – both social (providing the sense of safety) and psychological. However, this support is closely related with the family system, and its material, emotional, and functional resources, which are the basis of this system [1, 2].

OBJECTIVE

In the presented study, the following problems will be discussed: 1) revision of socio-economic conditionings of parents with children treated due to scoliosis; 2) relationships between engagement in the process of the child's treatment and selected demographic characteristics, including economic status, education level and place of residence.

MATERIAL AND METHODS

The study was conducted during the period from November 2010 – January 2012. Three from over 400 centres in Eastern Poland were selected randomly for the study, which carry out rehabilitation treatment for children with the diagnosis of scoliosis. Subsequently, a sample of parents was selected at random whose children received treatment in rehabilitation centres. The study group covered 193 respondents – 148 females (76.7%) and 45 males (23.3%).

The study was conducted by the method of a diagnostic survey. All respondents were interviewed by a physical therapist. The interview was based on a self-designed auditorium questionnaire evaluating demographic, social, and economic characteristics, as well as information concerning the treatment of the ill child. The replies of all the respondents were introduced into the calculation sheet during the interview. Completion of the questionnaire lasted approximately 10 minutes, on average. All information was covered by a confidentiality clause.

ANALYSIS OF DATA

Statistical analyses were carried out by means of computer software Statistica v. 8. Significance of the relationships between the variables was investigated with the use of chi-square test for independence. The differences between the empirical and theoretical sample distribution was examined by means of chi-square goodness-of-fit test. In addition, the differences were tested between frequencies of replies in the tables. Due to the considerable number of tests, the Bonferroni correction was applied. The significance level was set at $p=0.05$.

RESULTS

The respondents were divided into three age groups. Graph 1 presents the percentage distribution of the respondents in individual age groups. The study group covered 47.7% of inhabitants of the rural areas and small towns, and 52.3% of inhabitants of medium-size towns and large cities. Graphs 1-4 present data concerning age, education level, number of children, and self-reported material standard.

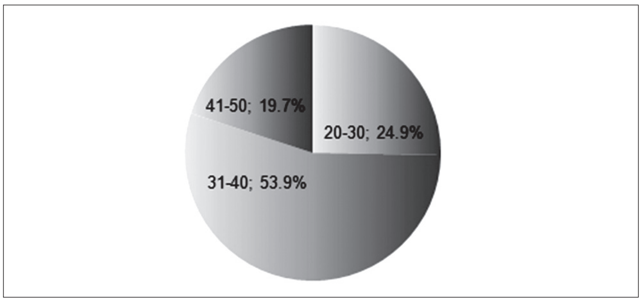

Figure 1. Respondents' age intervals

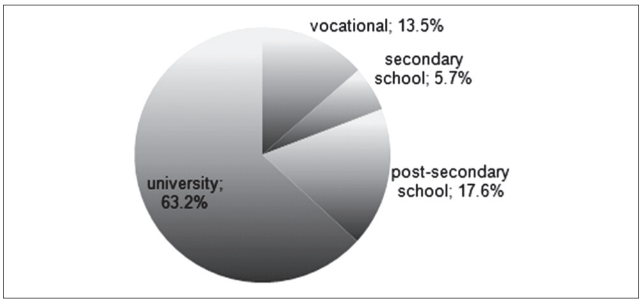

Figure 2. Respondents' education level

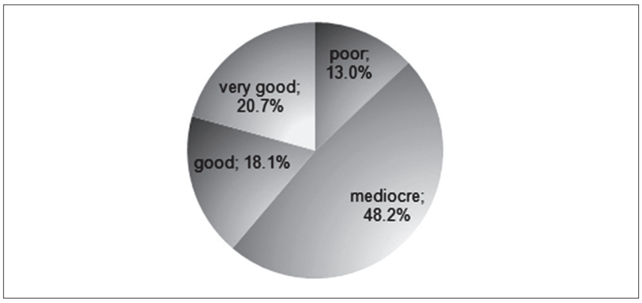

Figure 3. Self -evaluation of respondents' material status

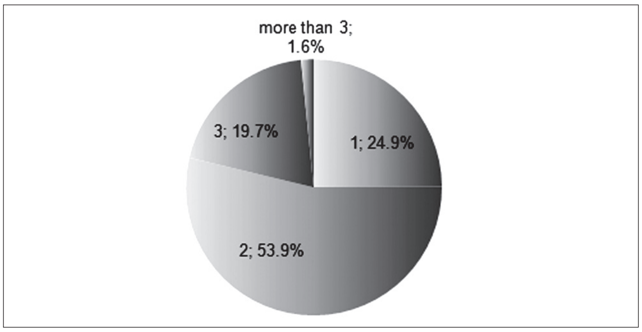

Figure 4. Number of children possessed by respondents

Relationships between individual variables were analyzed. Table 1 presents the dependences between the respondent's gender and age, education level, self-reported material standard and age of the ill child.

Table 2 presents the relationships between the respondent's age and education level, place of residence, self-reported material standard, family model, age of the ill child, duration of illness, and treatment applied.

Table 3 presents the relationships between respondent's education level and self-reported material standard, place of residence, family model and variables concerning the child's illness.

Table 1. Education level, self-reported material standard, respondent's age and age of the ill child, according to respondent's gender

		Who completed questionnair? (row %)			
		mother	father	chi-square	p
Education level	elementary and secondary school	89.2	10.8	4.187	.123(-)
	college	76.5	23.5		
	university	73.0	27.0		
Material standard	poor	76.0	24.0	17.387	.001(*)
	mediocre	84.9	15.1		
	good	82.9	17.1		
	very good	52.5	47.5		
Respondent's age	20-30	93.5	6.5	6.005	.050(*)
	31-40	74.2	25.8		
	41-50	71.4	28.6		
Age of child with scoliosis	4-7 years	100.0	0.0	10.787	.013(*)
	8-10	80.0	20.0		
	10-12	64.6	35.4		
	13-18	75.0	25.0		

Table 4 presents the relationships between self-reported material standard and place of residence, data concerning the child's caregivers, the place where the child reports to a medical specialist, form of financing, and frequency of visits. All dependencies shown in the table are highly statistically significant.

Table 5 presents the relationships between the place of residence and type of a medical specialist providing care, place and frequency of visits, means of transport, and form of financing treatment. Similar to previous table, all dependencies shown in the table are highly statistically significant.

Table 7 presents the relationships between the number of children, and the form of financing and frequency of visits.

The subsequent tables present relationships between further variables and, respectively, the patient's age (Tab. 8), duration of treatment (Tab. 9) and place of visits (Tab. 10).

Table 11 presents the relationships between the method of financing the visits and their frequency.

Table 2. Respondent's age, and education level, place of residence, self-reported material standard, family model, age of the ill child, duration of illness and treatment applied

		Respondent's age (row %)				
		20-30	31-40	41-50	chi-square	p
Education level	elementary and secondary school	35.1	29.7	35.1	30.883	.000(*)
	college	17.6	82.4	0.0		
	university	9.8	66.4	23.8		
Material standard	poor	16.0	72.0	12.0	25.301	.000(*)
	mediocre	24.7	61.3	14.0		
	good	11.4	45.7	42.9		
	very good	0.0	72.5	27.5		
Place of residence	rural area	13.9	61.1	25.0	12.204	.057(-)
	towns with a population below 50,000	8.9	76.8	14.3		
	towns with a population of over 50,000	14.8	70.4	14.8		
	towns with a population of over 100,000	23.0	48.6	28.4		
Type of family	complete	16.0	59.0	25.0	5.263	.071(-)
	incomplete	16.2	75.7	8.1		
Age of child with scoliosis	4-7 years	42.9	57.1	0.0	42.232	.000(*)
	8-10	20.0	68.3	11.7		
	10-12	6.3	79.2	14.6		
	13-18	10.9	45.3	43.8		
For how long the parent has known about the disease?	1-6 months	57.1	42.9	0.0	29.464	.001(*)
	7-11 months	30.8	35.9	33.3		
	12-18 months	11.8	73.5	14.7		
	1.5-2 year	8.2	69.4	22.4		
	2-3 years	16.7	70.0	13.3		
	over 3 years	5.9	67.6	26.5		
Health care provider	physical therapist	17.6	48.5	33.8	13.759	.032(*)
	rehabilitation physician + physical therapist	0.0	90.0	10.0		
	orthopaedist + physical therapist	17.2	64.1	18.8		
	rehabilitation physician + physical therapist + orthopaedist	15.7	72.5	11.8		

Table 3. Respondent's education level and self-reported material standard, place of residence, family model and variables concerning the child's illness

		Education level (row %)				
		elementary and secondary school	college	university	chi-square	p
Material standard	poor	20.0	16.0	64.0	26.159	.000(*)
	mediocre	28.0	19.4	52.7		
	good	17.1	28.6	54.3		
	very good	0.0	5.0	95.0		
Place of residence	rural area	22.2	13.9	63.9	33.767	.000(*)
	towns with a population below 50,000	1.8	14.3	83.9		
	towns with a population of over 50,000	11.1	40.7	48.1		
	towns with a population of over 100,000	33.8	13.5	52.7		
Type of family	complete	18.6	11.5	69.9	22.916	.000(*)
	incomplete	21.6	43.2	35.1		
Number of children	1	20.8	35.4	43.8	17.405	.002(*)
	2	21.2	12.5	66.3		
	3 and more	12.2	9.8	78.0		
Health care provider	physical therapist	23.5	8.8	67.6	31.206	.000(*)
	rehabilitation physician + physical therapist	0.0	20.0	80.0		
	orthopaedist + physical therapist	32.8	25.0	42.2		
	rehabilitation physician + physical therapist + orthopaedist	0.0	19.6	80.4		
Place of reporting to a specialist	at place of residence	16.2	21.9	61.9	3.533	.170(-)
	in the nearest cities	22.7	12.5	64.8		
Frequency of visits	every 1-3 months	39.5	9.3	51.2	23.093	.001(*)
	every 4-10 months	8.7	21.7	69.6		
	every 11-18 months	24.1	19.0	56.9		
	18-36 months	0.0	19.0	81.0		

Table 4. Self-reported material standard, and place of residence, data concerning the child's caregivers, the place where the child reports to a medical specialist, form of financing, and frequency of visits

		Material standard (row %)					
		poor	mediocre	good	very good	chi-square	p
Place of residence	rural area	36.1	61.1	0.0	2.8	106.893	.000(*)
	towns with a population below 50,000	5.4	21.4	12.5	60.7		
	towns with a population of over 50,000	14.8	63.0	18.5	3.7		
	towns with a population of over 100,000	6.8	56.8	31.1	5.4		
Health care provider	physical therapist	5.9	30.9	20.6	42.6	38.013	.000(*)
	rehabilitation physician + physical therapist	20.0	50.0	20.0	10.0		
	orthopaedist + physical therapist	20.3	53.1	17.2	9.4		
	rehabilitation physician + physical therapist + orthopaedist	11.8	64.7	15.7	7.8		
Place of reporting to a specialist	at place of residence	16.2	57.1	21.9	4.8	35.816	.000(*)
	in the nearest cities	9.1	37.5	13.6	39.8		
Financing of treatment	National Health Insurance	27.8	53.7	14.8	3.7	35.121	.000(*)
	private	4.5	77.3	4.5	13.6		
	National Health Insurance and private	7.7	40.2	22.2	29.9		
Frequency of visits	every 1-3 months	0.0	27.9	39.5	32.6	50.74	.000(*)
	every 4-10 months	10.1	44.9	13.0	31.9		
	every 11-18 months	20.7	69.0	8.6	1.7		
	18-36 months	19.0	47.6	19.0	14.3		

Table 5. The place of residence, type of a medical specialist providing care, place and frequency of visits, means of transport, and form of financing treatment

		Place of residence (row %)					
		rural area	towns with a population below 50,000	towns with a population of over 50,000	towns with a population of over 100,000	chi-square	p
Health care provider	physical therapist	8.8	48.5	5.9	36.8	28.889	.001(*)
	rehabilitation physician + physical therapist	40.0	20.0	10.0	30.0		
	orthopaedist + physical therapist	23.4	14.1	17.2	45.3		
	rehabilitation physician + physical therapist + orthopaedist	21.6	23.5	21.6	33.3		
Place of reporting to a specialist	at place of residence	18.1	16.2	16.2	49.5	21.399	.000(*)
	in the nearest cities	19.3	44.3	11.4	25.0		
Means of transport	own car	16.3	34.6	16.3	32.7	19.255	.000(*)
	public means of transport	27.5	7.5	5.0	60.0		
Financing of treatment	National Health Insurance	29.6	18.5	16.7	35.2	20.387	.002(*)
	private	18.2	4.5	27.3	50.0		
	National Health Insurance and private	13.7	38.5	10.3	37.6		
Frequency of visits	every 1-3 months	0.0	37.2	2.3	60.5	46.792	.000(*)
	every 4-10 months	14.5	42.0	20.3	23.2		
	every 11-18 months	31.0	10.3	17.2	41.4		
	18-36 months	38.1	23.8	9.5	28.6		

Table 6. Relationships between the type of family and number of children in the household, form of financing, and frequency of visits

		Type of family (row %)			
		complete	incomplete	chi-square	p
Number of children	1	70.8	29.2	5.487	.064(-)
	2	86.5	13.5		
	3 and more	78.0	22.0		
Financing of treatment	National Health Insurance	83.3	16.7	7.576	.023(*)
	private	59.1	40.9		
	National Health Insurance and private	83.8	16.2		
Frequency of visits	every 1-3 months	93.0	7.0	10.065	.018(*)
	every 4-10 months	84.1	15.9		
	every 11-18 months	69.0	31.0		
	18-36 months	76.2	23.8		

Table 7. Number of children in relation to duration of illness, treatment applied, type of a medical specialist providing care, the form of financing and frequency of visits

		Number of children (row %)				
		1	2	3 and more	chi-square	p
For how long the parent has known about the disease?	1-6 months	42.9	42.9	14.3	40.954	.000(*)
	7-11 months	48.7	43.6	7.7		
	12-18 months	26.5	52.9	20.6		
	1.5-2 years	6.1	77.6	16.3		
	2-3 years	30.0	50.0	20.0		
	over 3 years	14.7	38.2	47.1		
Health care provider	physical therapist	27.9	69.1	2.9	35.197	.000(*)
	rehabilitation physician + physical therapist	10.0	60.0	30.0		
	orthopaedist + physical therapist	32.8	46.9	20.3		
	rehabilitation physician + physical therapist + orthopaedist	13.7	41.2	45.1		
Financing of treatment	National Health Insurance	16.7	48.1	35.2	10.097	.039(*)
	private	31.8	59.1	9.1		
	National Health Insurance and private	27.4	55.6	17.1		
Frequency of visits	every 1-3 months	41.9	58.1	0.0	24.277	.000(*)
	every 4-10 months	23.2	59.4	17.4		
	every 11-18 months	19.0	46.6	34.5		
	18-36 months	14.3	52.4	33.3		

Table 8. Type of a medical specialist providing care and place of reporting to a specialist, financing of treatment, and frequency of visits

		Health care provider					
		physical therapist	rehabilitation physician + physical therapist	orthopaedist + physical therapist	rehabilitation physician + physical therapist + orthopaedist	chi-square	p
Place of reporting to a specialist	at place of residence	28.6	6.7	29.5	35.2	11.568	.009(*)
	in the nearest cities	43.2	3.4	37.5	15.9		
Financing of treatment	National Health Insurance	7.4	9.3	35.2	48.1	41.41	.000(*)
	private	18.2	4.5	45.5	31.8		
	National Health Insurance and private	51.3	3.4	29.9	15.4		
Frequency of visits	every 1-3 months	83.7	0.0	11.6	4.7	67.431	.000(*)
	every 4-10 months	24.6	5.8	42.0	27.5		
	every 11-18 months	19.0	3.4	39.7	37.9		
	18-36 months	19.0	19.0	23.8	38.1		

Table 9. Duration of illness in relation to type and place of a medical specialist providing care and means of transport to specialist

		For how long the parent has known about the disease?							
		1-6 months	7-11 months	12-18 months	1.5-2 years	2-3 years	over 3 years	chi-square	p
Health care provider	physical therapist	1.5	32.4	7.4	47.1	7.4	4.4	62.416	.000(*)
	rehabilitation physician + physical therapist	0.0	10.0	10.0	10.0	40.0	30.0		
	orthopaedist + physical therapist	7.8	18.8	26.6	10.9	17.2	18.8		
	rehabilitation physician + physical therapist + orthopaedist	2.0	7.8	21.6	17.6	19.6	31.4		
Place of reporting to a specialist	at place of residence	2.9	21.9	17.1	12.4	21.9	23.8	27.088	.000(*)
	in the nearest cities	4.5	18.2	18.2	40.9	8.0	10.2		
Means of transport	own car	3.9	13.1	18.3	30.1	14.4	20.3	28.908	.000(*)
	public means of transport	2.5	47.5	15.0	7.5	20.0	7.5		

Table 10. Place of a medical specialist providing care and frequency of visits

		Place of reporting to a specialist			
		at place of residence	in the nearest cities	chi-square	p
Frequency of visits	every 1-3 months	46.5	53.5	11.704	.008(*)
	every 4-10 months	43.5	56.5		
	every 11-18 months	62.1	37.9		
	18-36 months	81.0	19.0		

Table 11. Methods of financing the visits and their frequency

		Financing of treatment				
		National Health Insurance	private	National Health Insurance and private	chi-square	p
Frequency of visits	every 1-3 months	2.3	2.3	95.3	30.089	.000(*)
	every 4-10 months	30.4	11.6	58.0		
	every 11-18 months	36.2	17.2	46.6		
	18-36 months	42.9	14.3	42.9		

DISCUSSION

The effect of socio-economic status on the development and health of a child has been widely described in literature [3, 4, 5]. This effect is mainly related with the occurrence of depression [6], use of stimulants [7], or cardiovascular diseases [8].

The studies describing socio-economic and environmental conditionings in children with scoliosis were conducted in Sweden, Denmark, and Russia [9, 10, 11]. In Poland, such studies of relationships were carried out in children with asthma [12], patients suffering from infertility [13], or women and children from rural environments [14, 15].

It is known that the diagnosis of scoliosis exerts an effect on the psychology of the child [16]. The effect of the environment on phenotypic expression of scoliosis is also undertaken [17, 18].

Goldberg et al. have suggested [19, 20] that scoliosis is not only an isolated illness, but a manifestation of developmental instability induced by genetic and environmental factors. These factors cover hormonal and nutritional effects, stimulants, viruses, narcotics, medicinal products, radiation, oxygen deficiency during labour and delivery [21], factors associated with population density **[22]**, lack of physical activity [23], or even the use in infancy of a heated indoor swimming pool [24].

The treatment of scoliosis is long-term and difficult. The necessity for a constant, systematic physical therapy and medical check-up conducted until the end of the child's growth is troublesome and time-consuming for the patients and their caregivers. The role of the child's parents in this process is undeniable. Therefore, studies were carried out which allowed the analysis of the relationships between selected demographic characteristics of the families of children treated due to scoliosis, including the evaluation of material standard, education level, place of residence, and the engagement of parents in the process of treatment of the child.

The studies were conducted during the rehabilitation course for the children. It was assumed that the parent who accompanied the child in rehabilitation is more engaged in the treatment process. This group is not representative for the population, nevertheless, it consists of parents who reported the problem of the child's illness and are provided with care by health services. In the study, the control group was not considered, which would possibly cover parents of healthy children, or those with scoliosis who are not provided care by the system of health services. However, the objective of the study was evaluation of the socio-economic situation of parents of children suffering from scoliosis as a uniform group. The results were referred to the population data.

The fact that mothers more frequently accompanied their children in rehabilitation seems understandable, because they most frequently take care of them. The women examined most often reported an education level not higher than secondary school, opposite to the fathers. Those fathers who accompanied their children in rehabilitation had a higher education level and higher material standard. This may be due to their higher awareness and willingness to participate in child care [25]. Also, a relatively large number of fathers who declared a poor material standard were engaged in the rehabilitation of their children. A relationship was also observed between the gender of the parent and age of the ill child. The largest number of fathers accompanied children aged 10-12 years, while those younger and older were mainly accompanied by mothers (Tab. 1).

Respondents aged 31-40 were better educated, while those younger and older had a lower education level. A lower education level among older respondents probably resulted from age, considering the fact that in recent years the number of people with university education is constantly increasing [26]. A similar situation was noted with respect to self-reported material standard. Respondents aged 20-30 evaluated their material standard as mediocre, followed by very good, while those who were the oldest – as good. While evaluating the relationship between age and family model, the number of incomplete families in the first and the second group was noteworthy. These were inhabitants of large cities (the first age group), and those living in small towns and rural areas (the second group). The oldest respondents lived in large cities. This is consistent with the studies by the Department for Demographic Studies at the Main Statistical Agency [26]. The relationship between the respondents' age and child's illness is as follows. According to expectations, the older the parents who completed the questionnaire the older the child with scoliosis; the oldest group of parents had known about the illness as late as the last 7-11 months; parents in the medium age group had been aware of their child's illness for more than a year, whereas the youngest parents had known about the disease for the shortest time – less than 6 months (Tab. 2).

As many as 65% of the total number of respondents possessed university education level. According to the Official Promotional Website of the Republic of Poland, this was 4.6-fold more (the differences highly significant statistically) than the mean number of the Polish population possessing university education. [27], This is consistent with the studies by Ryan et al. [28] who indicated that scoliosis more frequently occurs among the population with university education. It is unlikely that scoliosis affects children from families of the intelligentsia. Thus, it is possible that the health awareness of such parents is higher, and they more often report to a medical specialist for assistance. The better educated the parents, the higher the self reported material standard. The inhabitants of rural areas and small towns are best educated. A considerable number of them are former inhabitants of large cities who escaped to suburban agglomerations in search of rest. The respondents who possessed university education most often remained in complete families, while those who were worse educated more often formed an incomplete family. The respondents with higher education more often used the assistance of both a physical therapist, physician specialist in rehabilitation or, possibly, an orthopaedist, in the nearest towns or in the area of the whole of Poland. The respondents with the worse level of education chose a physical therapist and orthopaedist, and used assistance also in the area of the entire country (secondary school education), or in the place of residence (secondary school education).

The respondents with university education more often declared that they had at least three children. The frequency of visits decreased with an increase in education. This is associated with a greater independence, quicker learning of exercises constantly performed at home, and a higher self-discipline in families with university education (Tab. 3).

In our studies, 48% of parents declared that their family situation was mediocre, while 39% of respondents evaluated this situation as good or very good, while 13% considered their material standard as poor. This is close to the data by the Department for Living Conditions at the Main Statistical Agency [29], according to which more than a half of Polish households (approx. 55%) evaluated their material situation as mediocre, 30% perceived their situation as good and very good, whereas 18.5% as rather poor or poor. The material status was reported as poor in the rural areas, mediocre and good in towns with the population of over 50,000 inhabitants, and as very good in towns with a population below 50,000.

The higher the material status, the more frequently the treatment solely by a physical therapist was chosen, omitting medical specialists. The largest number of respondents who possessed a very good material standard used treatment outside the place of residence. The group of respondents who evaluated their material standard as poor received treatment for their children financed by the Social Health Insurance Agency, whereas those with a mediocre standard – most often on private, and those with good or very good standard – used both health insurance and private health services. In the latter case, the visits were most frequent (Tab. 4). A clear, statistically significant positive correlation was observed between material standard and the frequency of visits and engagement in treatment.

According to the Demographic Yearbook 2011, the distribution of parents of children with scoliosis, rural and urban inhabitants, is close to the mean for the Polish population [30]. Inhabitants of rural areas and small towns search for assistance from a physical therapist and rehabilitation physician, in the nearest cities in the area of the whole of Poland. In turn, access to an orthopaedist is declared only by the inhabitants of cities with a population of over 50,000 inhabitants, who also use health services in their place of residence. This seems typical of the lack of access to medical specialists in small towns and in rural areas. Inhabitants of small and medium-size towns more often preferred using their own car, while the respondents living in rural areas or large cities used public transport. The rural inhabitants were most often provided care covered by health insurance, while the respondents living in small towns used private medical services. The parents in the study who lived in medium-size towns and large cities mainly preferred private health services. The larger the city the family came from, the more frequent were the visits. In the rural areas, the visits were the most rare. Accessibility to specialist health care is considerably lower outside large cities, despite a constant increase in the number of health staff in Poland, according to the Statistical Yearbook 2011 [31] (Tab. 5).

The family model is important in the rearing and taking care of a child. An unfavourable effect of an incomplete family on the development of a child was reported by Sarsour et al. [32]. In the presented study, a complete family had at least two children, and the frequency of their reporting to a medical specialist was the highest (every 1-3 months), while parents from incomplete families declared that they had one child, and reported to a specialist considerably more rarely – every 11-18 months. Incomplete families most often used private medial services, whereas complete families additionally used public services, or only public health services. This may result from the easier sharing of duties in complete families, and adjustment to the dates of appointments within health insurance, while parents who reared children alone preferred private visits due to a shorter waiting time, and these visits were more rare, probably due to the costs (Tab. 6).

Families with several children selected visits within health insurance, while families with one child – private visits, and those with two children – private and both private and financed by health insurance. The larger the number of children in a family, the more rare were the visits, and those within health insurance were preferred. This may be explained by a lower income per family member in families with many children, which is associated with searching for savings, e.g. by **not** using private health services (Tab. 7).

According to expectations, the older the child the longer the period of treatment. Children at an early school age were only covered with care by a physical therapist, whereas both younger and older children were additionally provided care by a rehabilitation physician or orthopaedist. Also, the youngest and the oldest children were treated within the national health services. The greatest engagement in treatment – private and health insurance visits – was observed among parents of children at an early school age. The older the child, the more rare the visits. The highest frequency of visits was noted in children aged 8-10. This may possibly be related to the screening programme for scoliosis which is carried out at schools, which sensitizes parents and stimulates them to frequent check-ups. However, the question arises: why do children at this age remain solely under the care of a physical therapist? The lack of a physician in the process of treatment is an unfavourable phenomenon (Tab. 8).

The longer the parents had known about their child's illness, the more often treatment was provided at the place of residence. Possibly they were tired with going to the nearest cities and searching for medical specialists throughout the whole of Poland. A similar situation occurred concerning the financing of the visits. Parents who had known about the illness of their child for the shortest time choose private visits. On knowing the diagnosis they made an appointment to consult a specialist; unfortunately, the period of waiting for consultation is too long and they decide instead to use private services. Patients who had received treatment for the longest time chose visits only within health insurance. These visits are most are (every 18-36 months, on average) (Tab. 9). This may be related somewhat with the idea of getting used to the illness or its impact on the economic sphere of life. Patients treated at the place of residence mainly used the national health services. In this case, these visits were most rare (every 18-36 moths), opposite to visits outside the place of residence, which were more frequent and more often private (Tab. 10).

Visits within national health services were most rare (every 18-36 months), followed by private visits (every 11-18 months). The largest number of visits was noted when parents used both private and national health services (Tab. 12).

It seems that the parents felt lost and their behaviour was somewhat chaotic. They looked for specialists outside the place of residence, which may be explained by searching for the best specialists, and simultaneously chose to visit only a physiotherapist (Tab. 12), neglecting consultations with a rehabilitation physician or orthopaedist in the situation when the child was more exposed to the advancement of the illness. A child with the diagnosis of structural scoliosis should absolutely remain under the care of a physician whose task is the monitoring of treatment, not only with the use of a clinical, but also radiological examination.

More comprehensive studies should be conducted in order to evaluate this population group. It is an unfavourable phenomenon that only a part of patients is provided care by a medical specialist. Therefore, it is worthwhile developing screening studies in order to draw out the group which requires treatment, and to implement an information system which would make parents aware of this need. Due to an early implementation of treatment, the patients may regain their health as early as in childhood and, subsequently, after reaching the age of maturity and undertaking employment, care from health services would not be needed to such an extent. In turn, this will also have a positive impact on reducing the load on the health care system, both from the aspect of accessibility and the costs borne. Our study could be followed by a more in-depth research based on qualitative methods.

CONCLUSIONS

1. Accessibility to specialists is worse in the rural than urban areas.
2. There is a relationship between the material standard of a family and engagement in the treatment of a child with scoliosis.
3. There is a need for creating a system of education for parents concerning scoliosis and the consequences of neglecting its treatment.
4. The system of public health services is insufficient to cover the health demands of patients with the diagnosis of scoliosis.

REFERENCES

1. Borański J. Piątkowski W. (Eds.) Zdrowie i choroba. Wybrane problemy socjologii medycznej, ATUT, Wrocław 2002, p. 110-113.
2. Tobiasz-Adamczyk B. Wybrane elementy socjologii zdrowia i choroby, Wyd. Uniwersytetu Jagiellońskiego, Kraków 2000, p. 170-175.
3. Sheridan MA, Sarsour K, Jutte D, D'Esposito M, Boyce WT. The impact of social disparity on prefrontal function in childhood. PLoS One. 2012; 7(4): e35744.
4. Cohen S, Doyle WJ, Turner RB, Alper CM, Skoner DP. Childhood socioeconomic status and host resistance to infectious illness in adulthood. Psychosom Med. 2004; 66(4): 553-8.
5. Melchior M, Moffitt TE, Milne BJ, Poulton R, Caspi A. Why do children from socioeconomically disadvantaged families suffer from poor health when they reach adulthood? A life-course study. Am J Epidemiol. 2007; 166(8): 966-74.
6. Gilman SE, Kawachi I, Fitzmaurice GM, Buka SL. Socioeconomic status in childhood and the lifetime risk of major depression. Int J Epidemiol. 2002; 31(2): 359-67.
7. Nordentoft M, Andersen AM. Osler M. Childhood social environment and risk of drug and alcohol abuse in a cohort of Danish men born in 1953. Am J Epidemiol. 2006; 163(7): 654-61.
8. Brunner E, Shipley MJ, Blane D, Smith GD, Marmot MG. When does cardiovascular risk start? Past and present socioeconomic circumstances and risk factors in adulthood. J Epidemiol Community Health. 1999; 53(12): 757-64.
9. Ryan MD, Nachemson A. Thoracic adolescent idiopathic scoliosis: perinatal and environmental aspects in a Swedish population and their relationship to curve severity. J Pediatr Orthop. 1987; 7(1): 72-7.
10. Saabye J, Christoffersen H, Lund K. Follow-up study of 46 patients with idiopathic adolescent scoliosis. Physiological, psychological and social aspects. Ugeskr Laeger. 1986; 148(20): 1230-1
11. Stokov LD. Follow-up social examination of the living conditions of scoliosis patients. Ortop Travmatol Protez. 1981; (6): 65-8.
12. Zejda JE, Brożek GM, Farnik M, Smółka I. Social and family-related correlates of medical care utilization by asthmatic children in Upper Silesia, Poland. Ann Agric Environ Med. 2012; 19(1): 141-5.
13. Łepecka-Klusek C, Wdowiak A, Pilewska-Kozak AB, Syty K, Jakiel G. The role of age, environmental and occupational factors on semen density. Ann Agric Environ Med. 2011; 18(2): 437-40.
14. Zagozdzon P, Kolarzyk E, Marcinkowski JT. Quality of life and rural place of residence in Polish women – population based study. Ann Agric Environ Med. 2011; 18(2): 429-32.
15. Kołłątaj W, Sygit K, Sygit M, Karwat ID, Kołłątaj B. Eating habits of children and adolescents from rural regions depending on gender, education, and economic status of parents. Ann Agric Environ Med. 2011; 18(2): 393-7.
16. Payne WK 3rd, Ogilvie JW, Resnick MD, Kane RL, Transfeldt EE, Blum RW. Does scoliosis have a psychological impact and does gender make a difference? Spine (Phila Pa 1976). 1997; 22(12): 1380-4.
17. Burwell GR, Dangerfield PH, Moulton A, Grivas TB. Adolescent idiopathic scoliosis (AIS), environment, exposome and epigenetics: a molecular perspective of postnatal normal spinal growth and the etiopathogenesis of AIS with consideration of a network approach and possible implications for medical therapy http://www.scoliosisjournal.com/content/6/1/26/(access 18.05.2012).
18. van Rhijn LW, Jansen EJ, Plasmans CM, Veraart BE. Curve characteristics in monozygotic twins with adolescent idiopathic scoliosis: 3 new twin pairs and a review of the literature. Acta Orthop Scand. 2001; 72(6): 621-5.
19. Goldberg CJ, Fogarty EE, Moore DP, Dowling FE. Scoliosis and developmental theory: adolescent idiopathic scoliosis. Spine 1997; 22(19): 2228-37.
20. Goldberg CJ. Symmetry control. In Etiology of Adolescent Idiopathic Scoliosis: Current Trends and Relevance to New Treatment Approaches, State of the Art Reviews: Spine. Volume 14. Edited by Burwell RG, Dangerfield PH, Lowe TG, Margulies JY. Philadelphia, Hanley & Belfus Inc; 2000: 327-8.
21. Burwell RG. Aetiology of idiopathic scoliosis: current concepts. Pediatr Rehabil. 2003; 6(3-4): 137-70.
22. Engesaeter LB. Increasing incidence of club foot: changes in the genes or the environment? Acta Orthop. 2006; 77(6): 837-838.
23. McMaster M, Lee AJ, Burwell RG. Physical activities of patients with adolescent idiopathic scoliosis (AIS) compared with a control group: implications for etiology and possible prevention [abstract]. J Bone Joint Surg Br. 2006; 88-B (Supp II): 225.
24. McMaster ME. Heated indoor swimming pools, infants, and the pathogenesis of adolescent idiopathic scoliosis: a neurogenic hypothesis. Environ Health. 2011; 10: 86.
25. Davies J. Why young dads matter...and how to reach them. Pract Midwife. 2011; 14(7): 22-4.
26. http://www.stat.gov.pl/cps/rde/xbcr/gus/PUBL_lu_podsta_info_o_rozwoju_demograf_polski_2000-2009.pdf (access 12.05.2012)
27. http://www.poland.gov.pl/struktura, wyksztalcenia, 45.html. (access 12.05.2012)
28. Ryan MD, Nachemson A. Thoracic adolescent idiopathic scoliosis: perinatal and environmental aspects in a Swedish population and their relationship to curve severity. J Pediatr Orthop. 1987; 7(1): 72-7.
29. http://www.stat.gov.pl/cps/rde/xbcr/gus/PUBL_wz_sytuacja_gosp_dom_2010.pdf (access 12.05.2012)
30. http://www.stat.gov.pl/cps/rde/xbcr/gus/PUBL_rs_rocznik_demograficzny_2011.pdf. (access 12.05.2012)
31. http://www.stat.gov.pl/cps/rde/xbcr/gus/PUBL_rs_rocznik_statystyczny_rp_2011.pdf. (access 12.05.2012)
32. Sarsour K, Sheridan M, Jutte D, Nuru-Jeter A, Hinshaw S, Boyce WT. Family socioeconomic status and child executive functions: the roles of language, home environment, and single parenthood. J Int Neuropsychol Soc. 2011; 17(1): 120-32.