

Change of situation of a family with a child treated due to scoliosis

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Latański M, Kuzaka R, Fatyga M, Bylina J, Trzpis T, Jarosz MJ, Latańska M, Gregosiewicz A. Change of situation of a family with a child treated due to scoliosis. *Ann Agric Environ Med.* 2012; 19(4): 780-786.

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 concerns 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 rural areas and small towns, and 52.3% of inhabitants of medium-size and large cities. Respondents possessing university education provided their children a wider profile of health care; however, they neither supervised exercises at home nor paid attention to the maintenance of the normal body posture. The diagnosis of scoliosis in a child rarely affects the relationship between parents. The engagement of parents into rehabilitation treatment of their children is small.

Conclusions: There is a relationship between social variables and engagement in the treatment of a child with scoliosis. There is a need to create a system of education for parents concerning scoliosis and the consequences of its negligence. The enrolment of a psychologist into the treatment team should be considered, which would provide support for the parents of children suffering from scoliosis.

Key words

scoliosis, family, rehabilitation, etiology, psychosocial condition, socio-demographic factors

INTRODUCTION

The human spine performs a protective, supportive, motor and cushioning role. 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 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. The support for the ill child is provided primarily by family members, most often by the parents [1]. After diagnosing the defect in a child, the basic spheres of physical, psychological, social and emotional functioning are disturbed. This, in consequence, affects the general wellbeing of family member [2].

OBJECTIVE

In the presented study, problems are tackled concerning the change of the situation of a family with a child treated due to scoliosis after making the diagnosis. Secondly, the relationships are presented between an engagement in the process of treatment of the child, and selected demographic variables, including education level, material standard and place of residence.

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Received: 15 August 2012; accepted: 20 November 2012



MATERIAL AND METHOD

The study was conducted during the period from November 2010 – January 2012. Three centres in Eastern Poland were randomly selected 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.

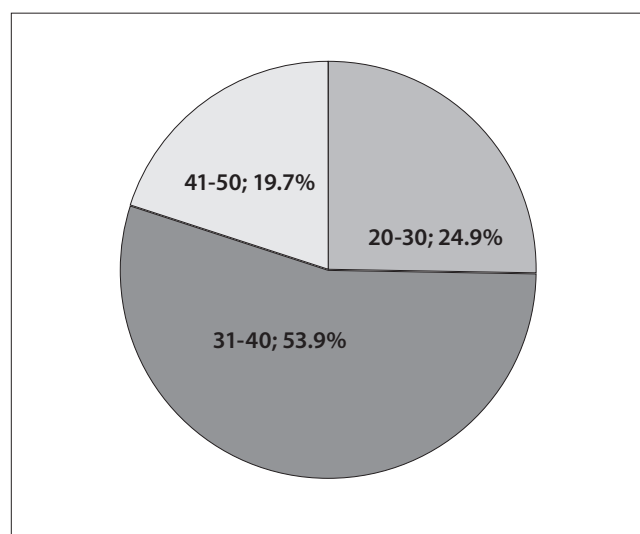


Figure 1. Respondents by age groups

Figure 1 presents the percentage contribution of respondents in specified age groups. Inhabitants of rural areas and small towns constituted 47.7%, while those living in medium-size and large cities – 52.3% of the population examined. Data concerning age, education, number of children and self-reported material standard were presented in the first section

of the study pertaining to socio-economic conditioning in the population sample examined [3].

In the presented study, the relationships were analysed between the most important socio-demographic variables, and the variables characterizing changes in the situation of a family with a child treated due to scoliosis.

Table 1 presents the relationships between age of the respondent who had completed the questionnaire and the supervision of performing recommendations by the child, paying attention to the normal body posture, use of a swimming pool and rehabilitation camps, self-reported deterioration of the material status, and the degree of engagement in treatment after the onset of child rehabilitation and change in daily routine.

Table 1. Respondents' age and supervision of performing recommendations by the child, paying attention to the normal body posture, use of a swimming pool and rehabilitation camps, self-reported deterioration of material status, and degree of engagement in treatment after the onset of child rehabilitation and change in daily routine

		Respondent's age (row %)			chi-square	p
		20-30	31-40	41-50		
Supervises the child while performing exercises	Yes	27.9	29.5	42.6	40.88	0.000(*)
	No	10.6	77.3	12.1		
The child uses a swimming pool due to scoliosis	Yes	24.3	39.2	36.5	27.25	0.000(*)
	No	10.9	76.5	12.6		
While performing activities of daily life the respondent pays attention to the child's normal body posture	Yes	18.4	55.1	26.6	19.24	0.000(*)
	No	5.7	94.3	.0		
The child uses rehabilitation camps	Yes	32.1	22.6	45.3	48.60	0.000(*)
	No	10.0	77.1	12.9		
Material standard of the family decreased when rehabilitation began	Yes	10.7	67.9	21.4	1.81	0.403(-)
	No	18.2	59.9	21.9		
Engagement of the family in child rehabilitation	low	11.8	79.5	8.7	51.44	0.000(*)
	mediocre	24.2	28.8	47.0		
Diagnosis of scoliosis affected the to-date daily routine	Yes	25.0	29.4	45.6	50.73	0.000(*)
	No	11.2	80.0	8.8		

(*) – significant correlation, (-) – insignificant correlation

Table 2 presents the relationships between the respondent's education level and the frequency of visits, supervision of performing recommendations by the child, paying attention to the normal body posture, self-reported deterioration of material standard, degree of engagement in the treatment after the onset of child's rehabilitation, change in daily routine and meeting obligations.

Table 3 shows the relationships between self-reported material standard and supervision of performing recommendations by the child, use of rehabilitation camps, paying attention to the normal body posture, self-reported deterioration of the material standard, as well as the degree of engagement in treatment after beginning of rehabilitation by a child, change in daily routine, effect on family relations and meeting obligations.

Table 4 demonstrates the relationships between the place of residence and the subsequent variables describing changes in the situation of the family of a child treated due to scoliosis.

Table 2. Respondents' education level and frequency of visits, supervision of performing recommendations by the child, paying attention to the normal body posture, self-reported deterioration of material standard, degree of engagement in treatment after the onset of child's rehabilitation, change in daily routine and meeting obligations

		Respondents education level (row %)			chi-square	p
		elementary and secondary school	college	university		
How often the child performs exercises during the week	not at all	11.1	20.0	68.9	46.85	0.003(*)
	once a week	7.1	28.6	64.3		
	2-3x a week	51.0	8.2	40.8		
	4-7x a week	7.5	12.5	80.0		
Supervision of the child while performing exercises	Yes	31.1	11.5	57.4	9.06	0.011(*)
	No	13.6	20.5	65.9		
While performing activities of daily life the respondent pays attention to the child's normal body posture	Yes	19.0	18.4	62.7	0.32	0.849(-)
	No	20.0	14.3	65.7		
Material standard of the family decreased when rehabilitation began	Yes	25.0	16.1	58.9	1.73	0.420(-)
	No	16.8	18.2	65.0		
Scoliosis in a child affected family relations	No	17.6	17.6	64.8	12.61	0.013(*)
	Yes – arguments: cannot afford better treatment	40.0	25.0	35.0		
	Yes – arguments: who takes a child to rehabilitation	.0	.0	100.0		
Engagement of the family in child rehabilitation	low	12.6	17.3	70.1	11.16	0.004(*)
	mediocre	31.8	18.2	50.0		
Diagnosis of scoliosis affected the to-date daily routine	Yes	29.4	5.9	64.7	13.98	0.001(*)
	No	13.6	24.0	62.4		
Engagement in child rehabilitation hinders meeting household obligations	No	12.5	18.4	69.1	20.76	0.000(*)
	Yes	43.9	14.6	41.5		

(*) – significant correlation, (-) - insignificant correlation

Table 3. Self-reported material standard and supervision of performing recommendations by the child, use of rehabilitation camps, paying attention to the normal body posture, self-reported deterioration of material standard, as well as degree of engagement in treatment after beginning of rehabilitation by a child, change in daily routine, effect on family relations and meeting obligations

		Material standard (row %)				chi-square	p
		poor	mediocre	good	very good		
Supervises the child while performing exercises	Yes	6.6	39.3	36.1	18.0	20.38	0.000(*)
	No	15.9	52.3	9.8	22.0		
The child uses a swimming pool due to scoliosis	Yes: once a week or once in two weeks	5.4	52.7	23.0	18.9	7.52	0.057(-)
	No	17.6	45.4	15.1	21.8		
While performing activities of daily life the respondent pays attention to the child's normal body posture	Yes	14.6	53.8	19.6	12.0	40.30	0.000(*)
	No	5.7	22.9	11.4	60.0		
The child uses rehabilitation camps	Yes	3.8	39.6	35.8	20.8	18.50	0.000(*)
	No	16.4	51.4	11.4	20.7		
Material standard of the family decreased when rehabilitation began	Yes	41.1	57.1	1.8	.0	77.44	0.000(*)
	No	1.5	44.5	24.8	29.2		
	No	13.9	40.6	21.2	24.2		
Scoliosis in a child affected family relations	Yes - arguments: cannot afford better treatment	.0	100.0	.0	.0	30.64	0.000(*)
	Yes – arguments: who takes the child to rehabilitation	25.0	75.0	.0	.0		
Engagement of the family in child rehabilitation	low	18.1	51.2	9.4	21.3	23.81	0.000(*)
	mediocre	3.0	42.4	34.8	19.7		
Diagnosis of scoliosis affected the to-date daily routine	Yes	8.8	50.0	23.5	17.6	3.61	0.319(-)
	No	15.2	47.2	15.2	22.4		

(*) – significant correlation, (-) - insignificant correlation



Table 4. Place of residence and frequency of exercises, supervision of performing recommendations by the child, private work with a physiotherapist, using a swimming pool and rehabilitation camps, paying attention to the normal body posture, degree of engagement in treatment after beginning of rehabilitation by the child and change in family relations

		Place of residence (row %)				chi-square	p
		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		
How often the child performs exercises during the week:	not at all	22.2	15.6	20.0	42.2	34.88	0.000(*)
	once a week	21.4	50.0	8.9	19.6		
	2-3x a week	14.3	12.2	10.2	63.3		
	4-7x a week	15.0	32.5	20.0	32.5		
Supervises the child while performing exercises	Yes	13.1	19.7	14.8	52.5	8.82	0.032(*)
	No	21.2	33.3	13.6	31.8		
How often the child uses the private services of a physiotherapist	once a week	24.1	11.1	20.4	44.4	37.53	0.000(*)
	once in two weeks	11.4	36.4	13.6	38.6		
	once a month or more rarely	4.9	58.5	2.4	34.1		
	No	29.6	18.5	16.7	35.2		
The child uses a swimming pool due to scoliosis	Yes: once a week or once in two weeks	10.8	18.9	16.2	54.1	16.32	0.001(*)
	No	23.5	35.3	12.6	28.6		
While performing activities of daily life the respondent pays attention to the child's normal body posture	Yes	21.5	21.5	17.1	39.9	27.22	0.000(*)
	No	5.7	62.9	.0	31.4		
The child uses rehabilitation camps	Yes	3.8	26.4	13.2	56.6	15.23	0.002(*)
	No	24.3	30.0	14.3	31.4		
Material standard of the family decreased when rehabilitation began	Yes	35.7	8.9	23.2	32.1	28.37	0.000(*)
	No	11.7	37.2	10.2	40.9		
Scoliosis in a child affected family relations	No	18.8	31.5	12.7	37.0	10.54	0.104(-)
	Yes-arguments: cannot afford better treatment	10.0	10.0	20.0	60.0		
	Yes-arguments: who takes the child to rehabilitation	37.5	25.0	25.0	12.5		
Engagement of the family in child rehabilitation	low	24.4	33.1	11.8	30.7	15.61	0.001(*)
	mediocre	7.6	21.2	18.2	53.0		

(*) – significant correlation, (-) – insignificant correlation

Table 5 demonstrates the relationships between the type of family and supervision of exercises, self-reported deterioration of material standard, and frequency of socializing.

Table 6 shows the relationships between the number of children and supervision of performing recommendations by the child, paying attention to the normal body posture,

Table 5. Type of family and supervision of exercises, self-reported deterioration of material standard, and frequency of socializing

		Type of family (row %)			chi-square	p
		complete	incomplete			
Supervises the child while performing exercises	Yes	88.5	11.5	3.40	0.065(-)	
	No	77.3	22.7			
Material standard of the family decreased when rehabilitation began	Yes	76.8	23.2	0.83	0.362(-)	
	No	82.5	17.5			
Engagement in child rehabilitation hinders meeting household obligations	Yes	33.3	66.7	9.02	0.003(*)	
	No	82.4	17.6			

(*) – significant correlation, (-) - insignificant correlation

participation in rehabilitation camps, self-reported deterioration of the material standard, degree of engagement in treatment after beginning of rehabilitation by a child, and change in family relations.

Table 7 presents the relationships between age of the ill child and frequency of visits, supervision of exercises, paying attention to the normal body posture, and effect on family relations.

The study was carried out during rehabilitation classes for children. This group was not representative for the population; nevertheless, it constitutes individuals who reported the problem of illness in their children and were provided care by health services. The control group was not considered in the study because the objective of investigations was an evaluation of change in the situation of the family with a child suffering from scoliosis as a homogenous group.

The relationship was confirmed between the age of the mother at childbirth and the advancement of scoliosis [4]. However, there is a lack of reports concerning the age of parents on shaping health attitudes in children. In the presented study, respondents aged 31-40 did not pay attention to the normal body posture of their children and did not supervise them during the performance of exercises, but they did provided their children with both the use of a



Table 6. Number of children and supervision of performing recommendations by the child, paying attention to the normal body posture, participation in rehabilitation camps, self-reported deterioration of the material standard, degree of engagement in treatment after beginning of rehabilitation by a child, and change in family relations

		Number of children (row %)				chi-square	p
		1	2	3 and more			
Supervises the child while performing exercises	Yes	36.1	52.5	11.5	8.53	0.014(*)	
	No	19.7	54.5	25.8			
While performing activities of daily life the respondent pays attention to the child's normal body posture	Yes	25.3	48.7	25.9	13.44	0.001(*)	
	No	22.9	77.1	.0			
The child uses rehabilitation camps	Yes	39.6	52.8	7.5	12.86	0.002(*)	
	No	19.3	54.3	26.4			
Material standard of the family decreased when rehabilitation began	Yes	21.4	44.6	33.9	7.60	0.022(*)	
	No	26.3	57.7	16.1			
Scoliosis in a child affected family relations	No	27.9	51.5	20.6	14.09	0.007(*)	
	Yes-arguments: cannot afford better treatment	.0	85.0	15.0			
	Yes-arguments: who takes a child to rehabilitation	25.0	25.0	50.0			
Engagement of the family in child rehabilitation	low	17.3	56.7	26.0	12.97	0.002(*)	
	mediocre	39.4	48.5	12.1			

(*) – significant correlation

Table 7. Age of the ill child and frequency of visits, supervision of exercises, paying attention to the normal body posture, and effect on family relations

		Age of child with scoliosis (row %)				chi-square	p
		4-7 years	8-10 years	10-12 years	13-18 years		
How often the child performs exercises during the week:	not at all	13.3	17.8	37.8	31.1	3.32	0.768(-)
	once a week	12.5	44.6	25.0	17.9		
	2-3x a week	6.1	40.8	20.4	32.7		
	4-7x a week	12.5	12.5	17.5	57.5		
Supervises the child while performing exercises	Yes	9.8	32.8	11.5	45.9	8.53	0.014(*)
	No	11.4	30.3	31.1	27.3		
While performing activities of daily life the respondent pays attention to the child's normal body posture	Yes	12.0	24.7	25.3	38.0	13.44	0.001(*)
	No	5.7	60.0	22.9	11.4		
Scoliosis in a child affects family relations	No	12.1	35.2	20.0	32.7	14.09	0.007(*)
	Yes-arguments: cannot afford better treatment	5.0	5.0	70.0	20.0		
	Yes-arguments who takes the child to rehabilitation	.0	12.5	12.5	75.0		

(*) – significant correlation, (-) – insignificant correlation

swimming pool and participation in rehabilitation camps. To the contrary, younger parents (20-30) and older parents (41-50) supervised both self-control of the silhouette and the adequate performance of exercises. They also reported that their engagement in treatment was mediocre, and the implementation of rehabilitation affected the daily routine. Possibly, sending a child to a swimming pool or rehabilitation camp dulled their vigilance or calmed their conscience, and for this reason they did not pay attention to a very important aspect of the maintenance of the normal body posture (Tab. 1).

As many as 65% of respondents possessed university education. Although the children of those parents performed exercises most frequently, the exercises were performed without supervision. These parents were of the opinion that their engagement in the process of treatment was insufficient. No statistically significant relationship was found between education level and change of material standard and paying attention by parents to the normal body posture in a child. The diagnosis of scoliosis in a child affected the daily routine

of respondents with the lowest and the highest education levels. However, engagement in the rehabilitation process hindered meeting household obligations only among those who had the lowest material standard (Tab. 2). This may possibly be related with better skills of organizing activities in the households of those who were better educated.

Only the parents who evaluated their material standard as good supervised rehabilitation exercises and expressed the opinion that the degree of their engagement in the process of rehabilitation was mediocre. In the remaining groups, this degree was evaluated as small. Parents with good, as well as those with poor and mediocre material standard, paid attention to the normal body posture of their children, whereas only those with the highest material standard did not. Children from families with good and very good material standard use rehabilitation camps, and their families did not experience the deterioration of material standard after diagnosing scoliosis. It is clearly observed that the occurrence of the disease in a family affects economically those with the lowest income. Costs related with, among other things,



commuting and participation in exercises are a great burden for the budgets of these households. Also, in these families it most often results in conflicts concerning the child's illness. In families with a mediocre and good material standard, the diagnosis of scoliosis exerted an effect on daily routine (Tab. 3).

DISCUSSION

According to Rivett et al., the quality of life of adolescents with idiopathic scoliosis is associated not so much with the physical deformation of the spine, but rather with the psychosocial mechanisms of coping with the problem [5]. Patients struggle with the feeling of uncertainty, lower self-esteem, fear related with the awareness of increasing body deformation, which contribute to reactions of anxiety or even depression [6, 7, 8]. In such a situation, the role of the family is undeniable. Its importance in exerting a calming effect and provision of support is emphasized by Saccomani et al. [9]. However, for the family, the illness is also a new situation with which it must cope. This may be accompanied by the occurrence of stress responses [10, 11, 12].

Therefore, studies were conducted to analyze relationships between the selected social characteristics of families with children treated due to scoliosis, including material standard, education level, type of family and place of residence, and family relations and engagement in the process of treatment of the child.

A clear difference is noted in access to health services and health awareness of parents according to the place of residence. Although the level of stress in children from rural and urban environments treated for scoliosis who used corset is similar, health behaviours of these children and their families varied [13]. Children living in the rural areas and small towns did not exercise, or exercised insufficiently. Children from medium and large size cities were more systematic, and their exercises were supervised by the parents. They more often used the assistance of a physiotherapist outside the social insurance system, and more often used a swimming pool and participated in rehabilitation camps. Parents of these children evaluated their engagement in the treatment as mediocre. Only the parents living in small towns did not pay attention to the normal body posture in their children, and similar to the parents living in the rural areas, considered their involvement in the treatment as small. No statistically significant relationship was observed between place of residence and change in family relations (Tab. 4).

The family model is also of importance for the treatment procedure. In an incomplete family, an unfavourable effect on the development of a child was clearly noted [14]. In addition, the caregiver did not supervise the child's exercises, and the material standard of the family was lower, although this difference was insignificant statistically. Also, a single parent more rarely participated in social life, which, in consequence, decreased chances for the reconstitution of a complete family. This is consistent with the results of studies by Gałuszko et al. [2] (Tab. 5).

In the study, a relationship was clearly observed between the size of the family and its engagement in treatment. Children who had no siblings were more often supervised while performing exercises, maintaining self-control over silhouette, and more often used rehabilitation camps.

Their parents expressed the opinion that the diagnosis of scoliosis and implementation of rehabilitation did not affect the material status of the family, nor family relations. An opposite tendency occurred in the families possessing more than one child. Although according to the report by Derouin, chronically ill children usually obtained support from their siblings; however, negative reactions also occurred [15]. In the presented study, the disease exerted an unfavourable effect on the mutual relationships between parents and the economic standard of the household. Less attention was devoted to exercises and normal body posture. Parents admitted that their engagement in treatment was small. This is probably due to the necessity for sharing caregivers' attention among all children (Tab. 6).

An interested relationship was observed between the age of a child and variables concerning treatment. Children aged 4 – 12 did not perform exercises at home, or did not exercise systematically and without parents' supervision, while older children regularly exercised under the supervision of their caregiver. Probably, the perspective of termination of growth in a short time and obtaining skeletal maturity by a child, and associated with it awareness of further ineffectiveness of rehabilitation treatment made parents increase the treatment efforts. It is also probable that younger children less willingly work at home, rebelling against the performance of strenuous/troublesome exercises. In the families in which children had older parents, the parents more often paid attention to normal body posture; however, internal conflicts occurred more frequently (Tab. 7).

Despite differences in treatment, it seems that children – irrespective of age – similarly cope with chronic disease, such as cardiovascular disease [16].

Support from parents is indispensable for the normal development of a child [17]. It may be biased towards the enhancement of positive emotions, the way of perceiving and solving the problem, and takes emotional forms (love, care giving), instrumental (acting on behalf of an individual who needs support), as well as informative (leading to the finding of solutions to the problems), or evaluative (information affecting self-esteem).

The effect of the diagnosis on the change of situation within the family was clearly observed. Some parents coped with this problem more easily; nevertheless, for some of them it totally disorganized their lives and resulted in increasing conflicts within the family. Most frequently, parents rarely supervised the defect in their children. The majority of them did not take the children to a swimming pool nor enrolled them in sports classes, which would positively affect the body posture of the child. Even if the child did exercise, the majority of parents did not supervise the exercises, or did so carelessly and hastily. At the same time, parents were aware that the engagement of the family in their child's rehabilitation was small or mediocre. It seems that at the bottom of these behaviours there always lies the lack of understanding of the essence of the disease. Thus, knowledge concerning scoliosis is necessary, i.e. natural history of scoliosis and hazards resulting from the neglect to undertake adequate measures. Only through family support, assistance and mutual understanding between parents, and the therapeutic actions will there be a chance for success. Therefore, not only for the good of the child, but also for the entire family, the achievement of motional balance and assumption of a rational attitude towards the child's illness are extremely important.



Nevertheless, the capabilities of a family for such actions are closely related with its material, emotional, and functional resources [1, 18]. Thus, motivation, support and positive strengthening on the part of physicians, physiotherapists and psychologists may be necessary. Through this, parents will be able to provide for their children adequate care and medical assistance, as well as the proper didactic procedures [19, 20].

CONCLUSIONS

1. There is a relationship between social variables and engagement in the treatment of a child with scoliosis.
2. There is a need to create a system of parents' education concerning scoliosis and the consequences of neglecting its treatment.
3. There is a need for the enrolment of a psychologist into the therapeutic team who would provide support for the parents of children suffering from scoliosis.

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