

PREVENTIVE MEDICINE

UDC 369.8:159.99

Arrangement of social aid for children with orthopedic pathology considering their psychological constitution*G. V. Pyatakova^{1,2}, O. I. Kopytenkova^{1,3}, V. V. Umnov²*¹ St. Petersburg State University,

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For citation: Pyatakova G. V., Kopytenkova O. I., Umnov V. V. Arrangement of social aid for children with orthopedic pathology considering their psychological constitution. *Vestnik of Saint Petersburg University. Medicine*, 2019, vol. 14, issue 2, pp. 173–180. <https://doi.org/10.21638/spbu11.2019.209>

Modern society development is accompanied by increase of number of physically challenged individuals, including children. In Russia, about 15 million people are disabled. The social sphere is developing and improving, the priority direction of which is the creation of an optimal system of life support for children with disabilities. One of the most numerous handicapped children groups is a group with orthopedic pathology. Today information concerning number of handicapped children is coming from three different sources which are not harmonized internally. The work presents comparative analysis of statistical data form, containing information on handicapped children prevalence in relation to orthopedic pathology; dependence of handicapped children prevalence in relation to orthopedic pathology on the number of children with pathology, revealed for the first time. All the data concerning psychological particularities of handicapped children with orthopedic pathology was systematized. Directions of social aid improvement were justified.

Keywords: children, invalid, psychological feature, rehabilitation.

Introduction

Development of civilization is accompanied by increase of physically challenged population percent with. So, in Finland percent of disabled persons constitutes 32.2%, Great Britain — 27.2%, Netherlands — 25.4%, France — 24.6%, Sweden — 19.9%. In Russia, percentage of disabled persons in 20 constituted 9.3% (about 15 millions persons), ap-

proximately one in eleven resident citizens. Under present-day conditions of social and economical development of Russian society, special actuality attains development and improvement of social sphere. In this case creation of optimal life support system for handicapped children becomes a priority direction of activity. The needs of handicapped or physically challenged children, their families, social group pay the role of backbone factor.

Human needs, that is, poor conditions or shortage in something necessary for maintaining life-sustaining activity, human personality, social groups and society as a whole. In the given study the most suitable needs classification is classification of N. F. Reymers (1994) [1]. This classification distinguish the following main groups of human needs: biological (which provide survival and preserving existing health level); psychological (which provide inward peace, necessity in psychological and emotional contact); labor (which provide ecological, social and economical adaptation to conditions of natural and social-economical environment considering its individual peculiarities and inclinations); social (which provide social comfort of human being, moral standards of communication between people, capability to use cultural values, sense of urgency for society and for himself as well); economical (which provide material capabilities necessary to satisfy the whole complex of needs) [1]. As is known, quality of life is a subjective factor which significantly depends on psychological constitution of human being. Frequently specific kinds of health loss are accompanied by characteristic for it psychological constitution, which is necessary to consider in social aid arrangement.

Persistent tendency of handicapped children number increase is observed in Russia, as well as in the whole world, stipulated by inherent, hereditary or acquired diseases, consequences of injury, causing the need to provide social protection. Among diseases of childhood increasing attention attracts different pathological states, associated with inherent developmental defects of separate organs or organism systems. Numerous investigations of new-born children demonstrated, that inherent anomalies (defects) of development appeared with frequency from 0.3 % to 12–13 %. According to data obtained by M. V. Volkov, there exist over 1500 only hereditary diseases, wherein a halve of them — hereditary diseases of osteoarticular and neuromuscular systems. Hereditary diseases of locomotive system at childhood age constitute about 50 % of all pathologies of locomotive system at childhood age. Among hereditary diseases of locomotive system of new-born and infants dominate the following ones: dysplasia of the hip joint and congenital hip dislocation (from 30 % to 70 % of all children-registrants with pathology of locomotion system), torticollis (10–30 %) and talipes (1.3–34.4 %), as well as exostotic chondrodysplasia [2]. Thereby, children with pathology of locomotive apparatus present one of the most numerous groups of handicapped children.

One of the most numerous handicapped children groups is a group with orthopedic pathology. Accordingly, present study is devoted to determination of perspective directions of social aid improvement for handicapped children with locomotive apparatus pathology (LMA) taking into consideration psychological constitution.

Methods of investigation

Comparative analysis of statistical forms, containing information about prevalence rate of children physical disability caused by locomotive apparatus pathology was carried out for gaining the aim of this work. Calculations of Spirmen rank-correlation test

for determination dependency of prevalence rate in case of children disability associated with locomotive apparatus pathology on the number of children with new-onset locomotive apparatus pathology were carried out. Estimation significance of correlation between variables was performed by Spirmen coefficient using Student t-test. Besides, all the data on psychological constitution of handicapped children with LMA pathology were systematized and used for justification of updating social aid system.

Results of investigation

According to Rosstat data [3], number of handicapped children in Russian Federation constitutes about 600 thousands. Approximately 12% from physically challenged children younger than 18 live in specialized boding schools [4]. In the period 2015–2016 in Russian Federation there were 133 specialized institutions for handicapped children. These institutions permanently accommodate 21 000 children.

In etiology of almost all the reasons of children disability important role play psycho-emotional traumas and stresses. For post-soviet period factors of primary children and teen-age diseases increased more that one and half times. Certainly, far from all the diseases lead to disability, but general tendency of Russian population health deterioration these data illustrates.

Information on number of handicapped children comes from three different departments and frequently they have contradictory character concerning its dynamics (Table 1, 2). Discrepancies in absolute values constitute 8 000 handicapped children.

Table 1. Number of handicapped children younger than 18 years, granted social pensions (Rosstat, 2017 [3])

Factor	Years							
	2000	2011	2012	2013	2014	2015	2016	2017
Total, thousands people	675	541	560	568	580	605	617	636
per 10 000 children	201.7	205.9	211.3	211.0	211.7	213.3	212.6	218

Table 2. Distribution of handicapped children by sex and age (thousands people) [5]

Number of disabled persons	2014			2015			2016			2017		
	Total	including		Total	including		Total	including		Total	including	
		Man	Woman		Man	Woman		Man	Woman		Man	Woman
Children younger than 18 years	582	331	251	590	334	256	613	347	265	628	357	271
including 0–7 years old	210	117	93	212	118	94	217	121	96	217	122	95
8–17 years old	372	214	158	378	216	162	396	226	169	411	235	176

Main forms of State statistical disabled people observation are the following: form No. 19 M3 “Data related to handicapped children”, form of Russian Pension Fund No. 94 (Pensions) “Data related to number of pensioners and sums of granted pensions”, forms MT SZ N 7-D (social security department) “Data related to medical and social expertise of children younger than 18 years”.

All the forms were developed for solving a department’s problems. Data contained is not sufficiently informative. Considered demographical characteristics are different and information as a result is not comparable. This, in turn, complicates planning the volumes of medical and social aid.

Group of handicapped children includes children with rather wide range of health deterioration, among which is locomotive apparatus pathology. Persons with locomotive apparatus pathology mainly include: children on wheelchairs disabled due to trauma, autoimmune or genetic diseases, interilioabdominal amputation; children with dyskinesia (cerebral spastic infantile paralysis) etc. One of the main locomotive apparatus pathology cause is cerebral spastic infantile paralysis. According to WHO, cerebral spastic infantile paralysis prevalence rate in the world constitutes 1–2 child per 1000 new-born children [6]. It is rather difficult to estimate possible scales of actual disabled number with such category. Common database accounting people with cerebral spastic infantile paralysis and its consequences is absent in our country. The only data available tells that in 2009–2010 there were 70.5 thousands children younger than 14 years, suffering from cerebral spastic infantile paralysis and 14 thousands children at age from 15 to 17 years [7]. In 2013 number of children with cerebral spastic infantile paralysis constitutes 3.15 per 1000, infants — 1.55 per 1000 children of respective age [8].

Number of disabled is affixed as a number of social benefits receivers, but not as disabled persons, because there is no common system of registration and accounting disabled persons, that is vulnerable link of statistics.

According to the modern treatment by UNO and WHO, full-value live of handicapped children is counteracted by poor health, associated with diseases and injuries, but also social, institutional and psychological barriers, complicating successful socialization and significant functions execution [9]. More over, insufficient level of information counteracts formation by body of state power guidance for justification policy, directed at elimination of such barriers.

General Assembly of UNO accepted Convention on the Rights of Persons with Disabilities in 2006, which was ratified by Russia in 2012 [10]. Moreover, beginning from 2011 Russia implements State Program “Accessible environment”, prolonged till 2020. For implementation conception of this program and the program itself, Federal Law No. 419-FZ “About introduction changes into separate legislative acts of Russian Federation” related to social disabled protection in connection with ratification of disabled rights Convention [11], which introduces changes into 25 laws, regulating services provision for disabled persons in different spheres of its vital activity. Criterion of disability assignment undergoes the most considerable changes. Clinical and functional characteristics of permanent disability of body functions, decreasing subjective approach in medical-social expertise performance for disablement diagnosis were specified in Ministry of labor order No. 1024n [12]. Despite of disablement diagnosis principle change, up to date environmental factors classification, determining restrictions of disabled persons capabilities, are absent.

Among disabled since childhood persons the biggest number relates to persons with inherent central nervous system damage, which is accompanied by secondary affection of locomotive apparatus [13]. For implementation of regulatory-legislating database requirements, regulating creation accessible environment for handicapped children, it is necessary to be aware not only about the number of handicapped children with locomotive apparatus pathology at the recent time, but also on the nearest prospect. With this aim we performed statistical analysis between morbidity rate of children at age 0–14 years with diseases musculoskeletal system and inherent anomalies (development defects) and the number of handicapped children at age 0–17 in relation of these pathologies for the period from 2010 to 2016 with time lag of one year.

It was found out that Spearman correlation coefficient (ρ) equals 0.689. Relation between investigated attributes may be characterized as direct one. Binding force on Chedoke scale is noticeable. Dependence of attributes is statistically significant ($p = 0.059975$).

Equation of paired linear regression:

$$Y = 12.83762 + 0.01207 x,$$

where: Y — number of handicapped children at age 0–17 years in connection with musculoskeletal system diseases and inherent anomalies (defects of locomotive apparatus development);

x — illness of children at age 0–14 years by diseases of musculoskeletal system and inherent anomalies (defects of locomotive apparatus development);

Determination coefficient r^2 equals 0.474 (factorial attribute X determines 47.4 % of dependent attribute Y dispersion). Average approximation error characterizes adequacy of regression model and constitutes 3.9 %.

Obtained equation of paired linear regression permits to forecast number of handicapped children with being analyzed pathology for scheduling medical-social aid volumes.

Determination of advanced ways of development medical-social aid and its improvement of for handicapped children with LMA pathology promote the use not only determination of its amount, but also to consider psychological constitution at different disease courses.

To ascertain nature of the aid, need for handicapped children with LMA pathology, it is necessary to have perception concerning, how well-balanced is functioning child's intellect and his LMA. It is necessary to estimate the state of child's body as a whole. Whereby, psychological constitution of a child and his mental abilities are preferable over his physical affliction [14; 15].

According to data [16], in respect of mental abilities preservation, the following results were obtained: 60 % of children with cerebral spastic infantile paralysis possess preserved mental abilities; 30 % — partial deviations in mentality development; 10 % have considerable mental abnormalities.

Performed investigations evidenced, that combinations of motoric and mental abilities disorders are different [17–20]. In case of spastic diplegia, when upper limb girdle is damaged less than lower, handicapped children may maintain themselves, to write, possess labor skill. Those children possess sufficient level of verbal thinking with insufficient representation thinking. They badly remember spatial premises arrangement, may badly paint. It is known that children with spastic diplegia are often possess introvertive

temperamental attributes (fears, fear susceptibility, pursuance of increased attention to themselves). Alongside with that, such children are able to educate in comprehensive schools.

Hyperkinetic form of cerebral spastic infantile paralysis is characterized by impaired hearing and intellectual insufficiency. Those children, as a rule, have insufficient level of verbal thinking, caused by dysphrasia. Alongside with that, they usually possess representational thought. Children with hyperkinesia are often possess extraverted attributes (emotional instability, easy affectability, hot temper).

Hemiparetical form of cerebral spastic infantile paralysis often observed by impaired speech, calculation and mirror writing functions. Approximately one third of such children suffer from oligophrenia.

Formation of active personal attitude towards children with cerebral spastic infantile paralysis is influenced by motives, which are controlled by adults. Combinations (selectively) of inflated own health assessment with a tendency towards formation of extremely low level requirements as one of the forms of protective mechanism are observed. In case of cerebral spastic infantile paralysis in children very often motor impairment facilitate formation of pathological features by type of deficit, while organic pathologies are accompanied by impact of adverse social factors. As a result, child personality is formed pathologically [17; 18; 20].

Handicapped children with cerebral spastic infantile paralysis experienced a feeling of their own inferiority, that promotes appearance of somatic reactions. In this case hypercompensation is realized in passive or in aggressively-protective directions.

In case of pathological personality formation frequently asthenoneurotic variant is take place. Whereby, it is necessary to consider that such children are diffident, fearful, pettish and not confident in themselves. In number of cases pseudoautosomal variant is observed with reticence, unfriendliness and such children earlier than others perceive their defects and try to correct them. Besides, hysteroid variant may be observed, which is characterized by ostentation of behavior, egocentrism and early formation of sexual interests. For handicapped children with cycloid compensation variant the following attributes are typical: desire to change impressions, carelessness, suggestibility, hypoplasia in volitional regulation. The main manifestations in case of excitable are the following: spatial abnormalities, irritability, increase of primitive desires and instincts, addiction to affective outbursts, aggression [18–20].

It is necessary to consider, that psychological constitution of children with LMA pathology affects on surgical and orthopedics treatment [2]. Children, painfully fixing on their defect, easier tolerate postoperative period, but due to phobias, are retarded in motor activity restoration. Children with reactions by convict type, considerably worsen tolerate postoperative period, but more actively engage in rehabilitation measures. In children with increased activity in conflicts resolution, rapidly take place formation of new movement patterns, despite the fact, that in post operative period they require increased attention, that, finally, promote better social adaptation and acquisition of independence.

Above indicated psychological peculiarities must be considered at medical-social-psychological aid arrangement for handicapped children with LMA pathology. Along with that it is also necessary to consider attributes of social environment. So, “Levada Center” [21] in 2015 determined, that only three-quarters of parents (73%) consider possible that their child will attend school together with disabled pupils, 17% do not agree and one in

ten found difficulty in replying. It follows that social and educational environment not to a full extend ready to accept children with peculiarities in development.

Conclusion

Disability of Russian population continues to increase, health care system, system of social protection, social aid and medical-social expertise are continuously reforming, while criteria of health evaluation and disability recognition continuously changing. Status of disabled people, including handicapped children, is the most significant criterion of society's development level.

In 2019 our government became attended to status of physically challenged citizens, that's why a number of new laws concerning disability were accepted. The main changes will concern provision of pensions, employment assistance and procedures of a certain group determination. Acceptance of decisions should facilitate handicapped children livelihood, whose means of subsistence are limited, perspective to receive education and to be employed.

New legislation will provide an opportunity to obtain timeless diagnosis on the base of the rues change, using for determination severity health state and degree of social adaptation. New disability Act will permit patients with infantile cerebral paralysis to establish life-long status. This change was made not only from consideration of humanity, but also with the aim of budget saving.

Together with that, right to life acquires extra-mural expertise, which may be carried out on the base of medical documents as for pathology with persistent, but slow course of aggravation; medical-social commission need more detailed patient disease history rather than patient himself. This includes LMA pathology. Besides, increase of disability pension size is provided. Pension amount for handicapped children, independently from degree of their health deterioration, is higher than for other disability categories, because children, due to their age, even with correctable health deviations, can not by themselves perform required self-control (drug administration, restriction in meal, mode of physical loading etc.).

Success of social aid arrangement for handicapped children with LMA pathology is conditioned by adequacy of information on the number of such children in the whole and the number of children with specific psychological peculiarities.

At scheduling spectra and volume of social aid for children it is reasonable to perform not only deep medical, but also psychological examination of child and his (her) family. Medical and psychological child support must be strictly differentiated with account of his (her) psychological peculiarities. Parents and teachers should be informed, which peculiarities possesses or may possess handicapped child with LMA pathology at different stages of maturation. Psychological consulting for social adaptation handicapped children with LMA pathology must be regular.

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Received: May 22, 2019

Accepted: June 17, 2019

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