



THE SPECIFICITY AND FOCUS OF PSYCHOLOGICAL ASSISTANCE TO ADOLESCENTS WITH SPINAL PATHOLOGIES

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Background. Among the most common diseases of the musculoskeletal system are pathologies of the spine, in particular scoliosis and vertebral compression fractures, most commonly found in adolescents. The psyche of such patients is negatively affected by the concomitant motor limitations, pain syndromes, cosmetic defects, long hospitalizations, the threat of surgical treatment, and disability. At the same time, there are practically no complex psychological studies of adolescents with spinal pathologies, which prevents the development of differentiated directions of psychological assistance necessary for their full rehabilitation.

Aim. This study aimed to determine the specificity and direction of psychological assistance for adolescents with spinal pathologies of various genesis on the basis of complex psychological research.

Materials and methods. The study sample consisted of 38 adolescents (15 boys and 23 girls) with dysplastic scoliosis of various severity (18 with mild severity (grade I–II) and 20 with high severity (grade III–IV)), 29 adolescents (14 boys and 15 girls) with vertebral compression fractures, and 34 adolescents (15–17 years old) without pathology of the musculoskeletal system (control group). As a method, psychological testing was used, aimed at studying the personal traits, world view, and lifestyle of adolescents.

Results. In the adolescents with scoliosis, negative reflections of various life spheres in the world view were demonstrated through a decrease in overall activity, internal restraint, disregard for one's needs, and a reduction in the time spent on learning activities. On the other hand, adolescents with vertebral compression fractures demonstrated negative ideas about the prospects for self-realization, a decreased interest in intellectual activity, along with increased time spent on passive leisure, and a tendency to risky behavior. The revealed features differ depending on the degree of severity, sex, and relation to medical rehabilitation. Differentiated directions of psychological assistance are defined on the basis of the results obtained.

Conclusion. A differentiated approach to psychological assistance requires considering the nature of the disease (congenital or acquired), severity and duration, frequency of hospitalizations, relationship to restorative treatment, and sex.

Keywords: psychological assistance; rehabilitation; adolescents; spinal pathologies; scoliosis; vertebral compression fracture.

СПЕЦИФИКА И НАПРАВЛЕННОСТЬ ПСИХОЛОГИЧЕСКОЙ ПОМОЩИ ПОДРОСТКАМ С ПАТОЛОГИЯМИ ПОЗВОНОЧНИКА

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Обоснование. Патологии позвоночника относятся к наиболее распространенным заболеваниям опорно-двигательного аппарата, из которых у подростков чаще всего встречаются сколиозы и компрессионные переломы позвоночника. Сопутствующие двигательные ограничения, болевые синдромы, косметические дефекты, длительные госпитализации, угроза оперативного лечения и инвалидизации негативно влияют на психику таких пациентов. При этом комплексные психологические исследования подростков с патологиями позвоночника на сегодняшний день практически отсутствуют, что не позволяет разработать дифференцированные направления психологической помощи, необходимой для их полноценной реабилитации.

Цель — на основе комплексного психологического исследования определить специфику и направленность психологической помощи подросткам с патологиями позвоночника различного генеза.

Материалы и методы. В исследование вошли 38 подростков с диспластическими сколиозами различной степени тяжести (18 — с легкой степенью (I–II степени), 20 — с тяжелой степенью (III–IV степени)), из них 15 мальчиков и 23 девочки; 29 подростков с компрессионными переломами позвоночника, из них 14 мальчиков и 15 девочек; 34 подростка без патологий опорно-двигательной системы (контрольная группа). Возраст подростков — 15–17 лет. Применяли психологическое тестирование, направленное на изучение личностных характеристик подростков, их картины мира, образа жизни.

Результаты. У подростков со сколиозами отмечены негативное отношение к различным сферам жизни, пониженная активность, замкнутость, игнорирование своих потребностей, сокращение времени, уделяемого учебной деятельности. У подростков с компрессионными переломами обнаружены негативные представления о перспективах самореализации, сниженный интерес к интеллектуальной деятельности наряду с увеличением времени, уделяемого пассивному досугу, склонность к рискованному поведению. Выявленные особенности по-разному проявляются в зависимости от степени тяжести заболевания, пола, частоты госпитализаций, отношения к медицинской реабилитации. На основе полученных результатов определены дифференцированные направления психологической помощи.

Заключение. При оказании психологической помощи подросткам с патологиями позвоночника необходимо учитывать характер заболевания (врожденное или приобретенное), степень его тяжести, частоту госпитализаций, отношение к медицинской реабилитации, половую принадлежность.

Ключевые слова: психологическая помощь; реабилитация; подростки; патологии позвоночника; сколиоз; компрессионный перелом позвоночника.

Background

Spinal pathologies (scoliosis, compression fracture (CF)) are the most common diseases of the musculoskeletal system in adolescents. The difficulties experienced by those with spinal pathologies include motor restrictions, pain syndrome, defects on the appearance, frequent and prolonged hospitalizations, risks of surgical treatment, and disability. These can reduce their quality of life and negatively affect their psyche, personality, and behavior [1–5].

Psychological assistance is an important component in the comprehensive rehabilitation of affected adolescents. Comprehensive psychological studies of this problem are limited, indicating that psychological assistance is currently not differentiated but is necessary for complete rehabilitation.

To address this deficit, we conducted a psychological study on adolescents with scoliosis and CF, taking into account the pathology severity, the frequency of hospitalizations, attitude toward rehabilitation treatment, and gender. One of the essential aspects of this study was the use of experimental psychosemantics methods to reconstruct the subjective picture of the world, including the unconscious level, which allowed a deeper analysis of the characteristics of the adolescents' psyche in congenital and acquired pathology [5].

This study aimed to evaluate the specificity and orientation of psychological assistance for adolescents with spinal pathologies of different origins based on a comprehensive psychological study.

Material and methods

This study included 38 adolescents (15 males and 23 females) with dysplastic scoliosis of varying severity (18 patients with a mild degree (I–II degree) and 20 with a severe degree (III–IV degree)) and hospitalization frequency (17 patients with less than 3 hospitalizations and 18 with 3–10 hospitalizations); 29 adolescents (14 males and 15 females) with backbone CF; and 34 adolescents (15 males and 19 females) who had no pathologies of the musculoskeletal system. The subjects were 15–17 years old. This study was conducted in the St. Petersburg children's rehabilitation center of orthopedics and traumatology "Ogonyok," where the subjects underwent conservative treatment (one hospitalization lasted for 1.5–3 months). The subjects with scoliosis of II–IV-degree severity used the Chenot's orthopedic body jacket. They periodically complained of discomfort, mainly during sleep, and pain syndromes. On the other hand, subjects with CF consequences were required to follow an orthopedic regime which prohibited them to

sit down and run. They complained mainly of psychological tension due to motor restrictions.

Methods of psychological research:

- 1) modified psychosemantic differential [5] for the study of the subjective picture of the world;
- 2) method of color metaphors [6] for studying the picture of the world at a deep level;
- 3) questionnaire on the formal and dynamic properties of an individual [7] to study the characteristics of activity and psychodynamics in general;
- 4) multifactor personality questionnaire (14pF) (adolescent option) [8] to study personality traits;
- 5) frustration reactions test [9] to study the patterns of response to frustration;
- 6) method "Lifestyle" (author's development) [5] to study the organization of daily activity.

Testing data were compared with the results from observation and conversations with teachers and adolescents and their parents.

This study was conducted using a single method in several stages. The subjects understood the instructions, willingly filled out the procedural forms, and had an interest to their results.

To assess the differences between the study groups, the Student's *t*-test, Mann-Whitney *U*-test, and single-factor analysis of variance were used. The data from the psychosemantic methods were analyzed using factor analysis (maximum likelihood method with varimax rotation) and cluster and frequency analysis. To identify relationships between the indicators, multiple regression analysis by step selection was used. The IBM SPSS Statistics 21 program was used for mathematical and statistical analysis.

This study was performed in accordance with the legislation and regulatory documents. All the study participants provided an informed consent.

Results and discussion

In the scoliotic adolescents, the following psychological aspects were reported:

- 1) at the level of the picture of the world, a negative attitude toward oneself and various areas of life, including health, communication, professional prospects, and the present and future; these areas are mainly less stable and reliable in adolescents;

- 2) at the deep level, decreased significance of learning activities with increased tension associated with communication, assessment of own capabilities, and prospects;
- 3) at the level of personality, reduced overall activity, isolation, and decreased persistence with prolonged frustration; in adolescents with scoliosis, the leading personal factor affecting the attitude toward oneself and the world is emotional and volitional instability characterized by increased anxiety, uncertainty, excitability, irritability, and maladaptive reactions to frustration;
- 4) at the level of everyday activity, reduced time for learning activities with frequent changes in the types of activity, due to implementation of special health-improving measures in everyday life.

Adolescents with *severe scoliosis* assess most negatively their professional prospects and present the most remarkable decrease in all types of activity. Adolescents with a *mild degree of scoliosis* have a more negative attitude toward themselves and others because having to wear a body jacket and motor restrictions reduce their status among healthy peers in a mainstream school and in contrast to adolescents with a severe degree of scoliosis who generally study in specialized institutions. These results indicate that focusing on the clinical factor is insufficient to organize psychological work for these adolescents.

Adolescents with scoliosis with a *high hospitalization rate* assess themselves and their relationships with others more negatively. They are characterized by unsociability, limited social contacts, predominant self-accusatory reactions to frustration, increased asthenization, and devoting a lot of time with passive leisure with reduced emotionality and interest in intellectual activity. Based on observations, these adolescents prefer a solitary pastime and it is difficult to have them participate in social events, and they often complain of general weakness. Negative emotional background and increased frustration tension under new or unusual conditions of a hospital are common among scoliotic adolescents with *rare hospitalizations*. Extreme positions are often characteristic of such adolescents, either increased isolation, reservedness, or a public protest against the rules of the institution, which can be eliminated over time or exacerbated.

Unlike males, *females with scoliosis* react sensitively to noted abnormalities in their appearance, characterized by reduced self-esteem and increased anxiety. In targeted conversations, they reported that they tend to wear clothes that hide the defects and expressed dissatisfaction in wearing a body jacket. In scoliotic males, activity indicators are most reduced with increased caution, most likely due to the subject's lack of confidence in their physical capabilities and anxiety about their social status.

In contrast to healthy ones, *in adolescents with CF consequences*, the following psychological aspects were found:

- 1) at the level of the picture of the world, pronounced negative feelings and negative ideas about the prospects for self-actualizing;
- 2) at the deep level, increased emotional tension due to assessment of one's health and future;
- 3) at the level of personality, increased dominance, self-confidence, courage with a reduced interest in intellectual activity, and maladaptive reactions to frustration, which can predispose adolescents to risky behaviors that increase risk for injury [10–12]; the leading personality factor affecting the peculiarities of the worldview of adolescents with CF consequences is their increased frustration due to forced motor restrictions, manifested in emotional tension and maladaptive reactions to frustration;
- 4) at the level of daily activity, decreased time for learning activities and sleep with increased time for passive leisure and communication.

Negative experiences and increased anxiety are mainly common in *females with CF consequences*.

The attitude of adolescents with spinal pathologies toward medical rehabilitation is of particular importance in developing psychological assistance for them, which is repeated and prolonged,

especially in adolescents with scoliosis. This factor shows their motivation for treatment, compliance with the regimen and the doctor's recommendations, adaptation to the medical institution conditions, and mood and condition in general.

The analysis reported that hospitalized adolescents have difficulties due to the need to comply with the regime, restriction of contacts, and routine life activities in a rehabilitation center. The personal characteristics of adolescents with spinal pathologies were determined and were found to keep them from maintaining a positive attitude regarding medical rehabilitation; this includes increased anxiety, excitability, aggressiveness, exactingness, and avoiding responsibility (impunitive reactions) [5].

Methods of psychological assistance

Psychological assistance is considered in adolescents with spinal pathologies as a complex system of psychological and rehabilitative influences aimed at showing all the potentials of their personality, maintaining and expanding interaction with the surrounding reality at the micro- and macro-social levels.

Psychological assistance for adolescents with spinal pathologies is a complex systemic and structural process (Fig. 1).

The components of the model are interconnected but differ in specific aspects. Due to chronic pathology, frequent and long-term hospitalizations, and various psychological problems, psychological support and psychocorrection are considerably recommended for adolescents with scoliosis, while adolescents with CF consequences require psychological counseling and psychological support due to acquired pathology and more local problems. In an inpatient hospital, working in groups (group

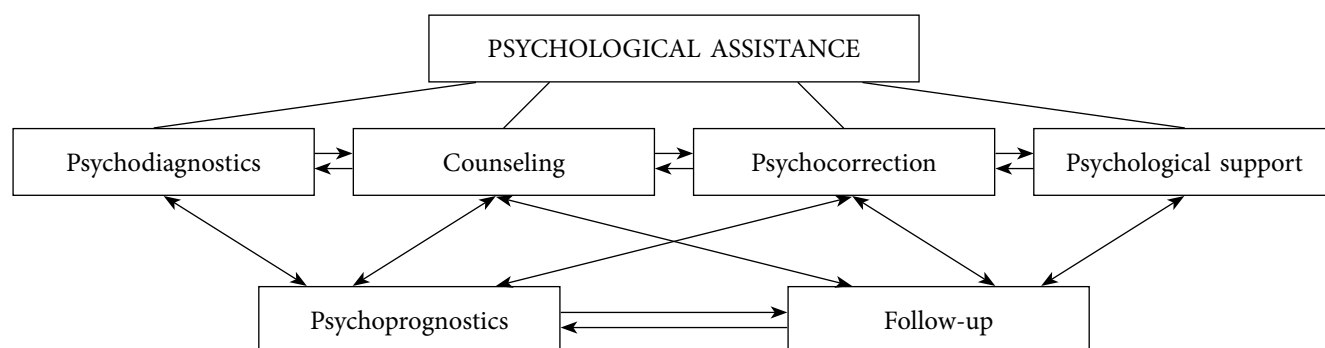


Fig. 1. Systemic and structural model of psychological assistance

Table 1

Tasks, forms, and methods of psychological assistance for adolescents with spinal pathologies

Tasks	Fields and forms	Methods
1. Adolescents with scoliosis		
<ol style="list-style-type: none"> 1. Creation of a rational attitude to various spheres of life (health, relationships with family and peers, professional and life prospects), increase in the interest in life. 2. Creation of a rational attitude on the disease and the appearance defects, increase in motivation for treatment. 3. Normalization of psycho-emotional tone, stimulation of activity, and initiative. 4. The development of communication skills, increase in social activity. 5. Increase in the level of emotional-volitional stability, self-regulation and self-control 	<ol style="list-style-type: none"> a) Protective and stimulating regime aimed at the optimal combination of loads and relaxation, considering the mental and physical condition of the adolescent; b) organization of leisure activities, taking into account the interests and capabilities of an adolescent (simulation of a success situation); c) psychocorrection aimed at developing the emotional-volitional and communicative spheres of the personality; d) psychological counseling on the issues of health, self-esteem, and choice of profession; e) career guidance based on a balance of interests and opportunities of an adolescent <p>For adolescents with <i>severe scoliosis</i>, clauses "a," "b," and "d" are especially important, and clauses "c" and "d" are important for those with <i>mild scoliosis</i>. <i>Females with scoliosis</i> deserve special attention due to their sensitive reaction on appearance defects</p>	<p>Cognitive and behavioral therapy aimed at changing maladaptive thoughts and beliefs. Psychoregulatory training aimed at normalizing the psycho-emotional tone and the development of self-regulation and self-control. Social and psychological training aimed at development of communication skills. Psychodramatic games aimed at stimulating creative activity and relieving emotional stress</p>
2. Adolescents with spinal compression fractures		
<ol style="list-style-type: none"> 1. Creation of a rational attitude to the injury; normalization of the psycho-emotional condition. 2. Correction of professional and life plans (if necessary), decrease of fear and uncertainty about the future. 3. Increased resistance to frustration due to motor restrictions. 4. Development of motivation to comply with the treatment regimen to prevent secondary complications. 5. Prevention of repeated injuries 	<ol style="list-style-type: none"> a) Preventive discussions aimed at preventing risky behavior, preventing life-threatening situations; b) involvement in constructive activities to direct the activity in a socially useful direction (organization of educational and leisure activities, performance of significant assignments, etc.); c) group lessons of a competitive nature in order to implement the communicative and leadership potential; d) career guidance organized based on a balance of interests and opportunities of an adolescent <p>Clauses "b" and "c" are especially important for adolescents with <i>long-term injuries</i></p>	<p>Cognitive and behavioral therapy aimed at the formation of rational ideas about the trauma received, awareness of the causes of dangerous situations. Art therapy aimed at relieving emotional stress. Psychoregulatory training aimed at normalization of the psycho-emotional state, the development of self-regulation and self-control. Special trainings aimed at the creation of prognostic estimates of own behavior in extreme and conflict situations. Role-playing games aimed at creation of adequate behavior in extreme situations</p>
3. Adolescents with frequent hospitalizations		
<ol style="list-style-type: none"> 1. Creation of a rational attitude toward oneself and own disease. 2. Stimulation of cognitive and physical activity. 3. Development of communication skills. 4. Formation of a positive attitude toward treatment and its results 	<ol style="list-style-type: none"> a) Organization of psychological and pedagogical support; b) the psychologist maintains constant contact with teachers, medical staff, and parents, focusing them on the creation of a positive self-esteem in an adolescent; c) organization of active leisure, considering the interests and abilities of the adolescent; d) involvement of adolescents in social activities 	<p>Drawing up a plan of psychological support for an adolescent in a rehabilitation center. Social and psychological training aimed at developing communication potential. Organization of special trainings aimed at increasing cognitive activity and self-esteem</p>

End of table 1

Tasks	Fields and forms	Methods
4. Adolescents with rare and primary hospitalizations		
<ol style="list-style-type: none"> 1. Formation of adequate emotional reactions to hospitalization. 2. Reduction of negative feelings due to separation with the family and the surrounding community. 3. Improving stress resistance and resistance to frustration. 4. Formation of a positive emotional state, increasing confidence 	<ol style="list-style-type: none"> a) Information sessions and excursions in the hospital at the initial stage of hospitalization; b) familiarization of adolescents and parents with the rules of the regime and behavior in the institution, providing with all the information of interest in a friendly manner and taking into account the aspects of the disease; c) thoughtful organization of leisure activities of the adolescent, taking into account his interests and the experience extent; d) orientation of the adolescent on the positive results of treatment in the process of psychological counseling; e) systematic psychological and pedagogical follow-up of an adolescent in the process of communication with peers; f) regular sessions with a psychologist, including elements of psychodiagnostics, psychocorrection, and psychoprophylaxis; g) friendly, democratic style of communication with adolescents on the part of the institution employees 	<p>Social and psychological training aimed at consolidation and developing communication. Psychoregulatory training aimed at correcting negative emotional experiences.</p> <p>Targeted conversations with an adolescent in order to normalize his emotional state.</p> <p>The use of psychodynamic methods of psychological correction (free associations, analysis of night dreams, and products of activity)</p>
5. Adolescents with negative attitude on rehabilitation		
<ol style="list-style-type: none"> 1. Creation of a positive emotional condition, stimulation of cognitive interest. 2. Formation of motivation for treatment with a focus on achieving a positive effect. 3. Promoting the successful adaptation of an adolescent in a peer group. 4. Overcoming interpersonal conflicts. 5. Improving stress resistance and resistance to frustration 	<ol style="list-style-type: none"> a) Clear instruction with clarification of the rehabilitation tasks, justification of the regime, and structure of the institution; b) the organization of cultural and leisure activities with a focus on interactive forms, attracting adolescents to the organizational process; c) individual psychological counseling aimed at analyzing the problems and difficulties of an adolescent in the institution; d) development of a common style of communication with an adolescent among all employees of the institution (considering his individual characteristics) 	<p>Cognitive and behavioral therapy aimed at smoothing negative emotional and behavioral reactions. Social and psychological training aimed at development of communication skills.</p> <p>Role-playing games simulating and resolving conflict situations.</p> <p>Special psychological correction based on the individual characteristics of the adolescent.</p>

classes, trainings, games) is preferred. However, individual counseling is also possible upon request, which adolescents periodically sought. Psychological assistance procedures can be diverse and include individual techniques of psychodynamic therapy (self-expression of patients and establishing contact with them), cognitive and behavioral therapy (changing maladaptive thoughts in relation to oneself and own disease), psychodrama (responding to emotional stress), psychoregulatory training (improvement of self-regulation), etc. Participating in our study shows that adolescents are interested

in psychological work, which is determined by their age peculiarities (desire for self-understanding).

Tasks, forms, and methods of psychological assistance depend on the time of disease onset, severity, and attitude toward the treatment performed (Table 1).

Conclusion

Psychological assistance for adolescents with spinal pathologies represents a complex system of psychological and rehabilitation outcomes, in

which clinical (etiology and severity of the disease), individual psychological (personality characteristics, world picture traits, gender) and social and psychological (frequency of hospitalizations, attitude toward rehabilitation) factors have to be considered.

Additional information

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Conflict of interest. The authors declare no obvious or potential conflicts of interest related to the publication of this article.

Ethical review. The study was conducted in accordance with the ethical standards of the Helsinki Declaration of the World Medical Association as amended by the Ministry of Health of Russia, approved by the ethics committee of the St. Petersburg State University (protocol No. 6 dated 15.09.2015). Patients (their representatives) gave their consent to participation in the study, processing and publication of personal data.

Contribution of the authors

S.V. Krainyukov conducted the study, analyzed the results, and wrote the text.

I.I. Mamaichuk wrote and edited the text.

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