

## PEDIATRICS

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# PSYCHOLOGICAL STATUS OF CHILDREN WITH DIFFERENT SOMATIC ABNORMALITIES AS A PREDICTOR OF CARDIOVASCULAR RISK

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**Abstract:** Psychological status of children with different somatic abnormalities was assessed with the Beck-Youth questionnaire. Psychological profile of children with different somatic abnormalities is not identical which requires obligatory evaluation. The study showed that it is necessary to provide the assessment of psychological state at all stages of management of children with chronic diseases, and provide them with timely psychological assistance. Changes in inner psychological state of the child will potentially give a possibility to provide better treatment in this group of children and prevent recurrence.

**KeyWords:** psychological status, somatic abnormalities, children.



## INTRODUCTION

Formation of physically and mentally healthy personality capable of effective adaptation to the changeable living conditions is important as early as at children's age. Self-assessment plays an essential part as one of the most important indices of individual and personal development [1].

Researchers consider that even a disease caused by physical factors can be a source of emotional stress [2, 3]. However, prolonged stress leads to psycho-physiological impairment. Psychological factors can affect the course of a disease and its outcome. Thus, it is reasonable to study somatic abnormalities in relation to psychological factors. Psychological factors can be triggers intensifying the disease, or modulators influencing its course [4].

The most potentially threatening fact is that according to the WHO, the level of suicide cases is closely associated with mental disorders, and its number (including individuals with somatic abnormalities) is steadily increasing [5].

Self-esteem has an impact on behavior, activity and development of a child, his relationship with other people, to a certain extent forming regulative and protective functions of an organism. The importance of investigating the features of personality development and, in particular, self-esteem in this group of children, is determined by the fact that childhood morbidity has been increasing recently and as a consequence there is a problem with the assessment of development in children with chronic somatic abnormalities [6].

The Beck Anxiety Inventory (BAI) is a measure for classifying levels of anxiety as a reaction to stress factors, more often of social-psychological type. The BAI focuses on somatic symptoms of anxiety developed to differentiate anxiety from depression.

The Beck Depression Inventory (BDI) is used for quantifying such symptoms as anxiety, phobias, somatic complaints and behavioral disorders, grief, irritability. The specific signs of psychotic depression in children are hallucinations and delirium, more frequently occurring in teen-

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agers. These symptoms, lasting at least 2 weeks throughout the most part of day, lead to suffering and social maladjustment of the child.

The Beck Anger Inventory (BANI) is used to assess the level of anger which is an emotional state which arises spontaneously or in response to behavior of other people as defense reaction from real or mental disturbance of its psychological / physical borders.

The Beck Disruptive Behavior Inventory (BDBI) identifies behavior associated with aggression presenting physical or psychological threat to others. Aggression can take different forms and is diagnosed as persistence, assertiveness. The definition of "malignant" aggression is a hidden intention directed to offense or as the imagination of violence and destruction, for infliction of harm to other person who does not wish such action. It is accompanied by emotional conditions of hatred, rage, anger and hostility.

Obesity is not a disease in literal word meaning, but rather a physiological condition which is presented by extreme result of continual tendency [7]. At the same time development of obesity is associated with potential cardiovascular risk which is the leading factor of morbidity of adult population in the world [8].

Excessive calories intake, mainly sedentary lifestyle and psychological factors are main triggers of obesity development. Social-psychological factors include external triggers inducing the increased consumption and low rates of lipid-carbohydrate substances burning [9]. The role of psychological factors in the development of obesity is related to low self-assessment [10], frustration, anxiety [11] and depression [12], leading to disturbances of feeding behavior in children [13].

According to modern literature, functional relationship between psychological status and characteristics of breathing in children are not well understood [14]. Nevertheless the available data suggest that bronchial asthma as a chronic disease capable to incapacitate the patient, is accompanied by the development of somatic-psychological dysfunction that can influence the course of the disease [15]. Leading researchers believe that bronchial asthma

development in children is to a great extent related to chronic stress which has various clinical, metabolic, psychological manifestations and can influence the course of the underlying disease [16].

The problem of the relationship of psychological and somatic triggers, their influence on the course of somatic abnormalities in children is currently under study because pain and dyspeptic syndromes in chronic gastroenterological disorders deteriorate psychological condition of the child and his personal characteristics [17].

Thus, in the context of pathogenic features of various somatic abnormalities children should undergo comprehensive assessment of psychosocial dysfunction necessary for early prognosis of complications, elaboration of differentiated approach to treatment and rehabilitation of patients.

## **2 PURPOSES, SUBJECTS and METHODS:**

### **2.1 Purpose**

Evaluation of psychological status in children with different somatic abnormalities as a predictor of cardiovascular risk.

### **2.2 Subjects & Methods**

The study involved 350 children aged 4-17 years with different somatic abnormalities. The inspected children were divided into groups: group 1 included 66 children with chronic gastrointestinal pathologies, group 2 - 150 children with excessive body weight and obesity, group 3 - 21 children with acute bronchopulmonary diseases, group 4 - 25 children with bronchial asthma, group 5 - 88 children with chronic diseases of kidneys. The comparison group was formed by average population values in Kharkiv region [18]. The level of psychological stress was assessed by the Beck Youth Questionnaire (in translation) and BSCI assessment - self-concept, the BAI - anxiety, BDI - depression, BANI - anger, BDBI - aggressive behavior. All the data were processed by methods of variation statistics and correlation analysis by "EXCEL" and "STATISTICA 7.0" software.

### **Conflict of interests**

There is no conflict of interests.

### 3 RESULTS AND DISCUSSION

The results of examination of children with different somatic abnormalities are presented in Table 1.

As the data suggest, when compared to the recommended authors of the questionnaire, the results of the examination of teenagers in Kharkov region correlate with the regulatory level of American and European students of appropriate age and gender. The study also involved correlation analysis to establish the relationship between psychological indices which evidently demonstrated ( $p < 0.01$ ), that self-esteem in teenagers in Kharkov region negatively correlated with the level of anxiety ( $r = - 0.21$ ), depression ( $r = - 0.41$ ) and deviant behavior ( $r = - 0.29$ ), anxiety levels were positively associated with the severity of depression ( $r = 0.58$ ) and anger ( $r = 0.52$ ), but follow-up level of depression was positively associated with deviant behavior ( $r = 0.62$ ) and anger ( $r = 0.74$ ) (Table. 2).

As shown in the presented correlation matrix self-esteem in adolescents significantly ( $p < 0.01$ ) negatively correlated with the severity of anxiety, depression and deviant behavior, anxiety levels positively correlated with depression and anger, and the level of depression was also considerably associated with deviant behavior and anger. That connection was expressed by source for the general population and may be considered as a basis for further considerations. especially if they fully agree with the published data on features of teenagers' behavior.

Mental disorders accompany different diseases and their development is not a direct result of psychological deviations, but is quite closely connected with features of the course. Thus, we will consider the results concerning children with different somatic states.

Teenagers with obesity have a registered possible increase of anxiety levels and depression given a decreased self-esteem.

Most children with asthma ( $84.0 \pm 5.0\%$ ) were found to suffer from instability and disorientation in psychosomatic stress, while  $28.5 \pm 3.8\%$  group 1 patients had impaired emotional state. The average level of anxiety in group 2

was  $40.0 \pm 3.0\%$  vs.  $14.3 \pm 2.7\%$  in group 1. The highest level of anxiety in children with asthma was  $32.0 \pm 4.5\%$ , compared to  $9.5 \pm 2.6\%$  in group 1.

Self-esteem in children with respiratory diseases was identified as reduced, normal or high. Decreased self-esteem was observed in  $64.0 \pm 5.5\%$  of children with asthma in group 1 of children with low self-esteem; normal in  $28.0 \pm 2.5\%$  and  $71.4 \pm 3.1\%$ ; high in  $8.0 \pm 1.5\%$  of children with asthma and in  $28.6 \pm 4.2\%$  of group 1 patients. Signs of depression were detected in  $12 \pm 1.5\%$  of group 2 children.

As for children with chronic gastroenterological disorders, average level of anger was observed in 60 (91%) of children, slightly increased in 3 (4.5%) children, moderately elevated in 2 (3%) children and significantly increased in 1 (1.5%) child.

Among the surveyed children the average level of depression was identified in 52 (78.9%), slightly increased in 9 (13.6%), moderately increased in 4 (6%), significantly increased in one child (1.5%).

Assessment of anxiety level showed average rate in 49 (74.4%), slightly increased in 5 (7.6%), moderately elevated in 12 (18%); significantly increased level of anxiety was not found.

Significantly elevated levels of aggressive behavior was observed in 3 (4.5%) children, the vast majority of patients - 53 (80%) were shown to have an average level of aggressive behavior; a slight increase was observed in 9 (13.6%) and moderately increased in one child (1.5%).

Comparative analysis showed that self-esteem was low in all the children with chronic diseases and obesity, a condition that is not accompanied by any pain or limitations in physical activity, the rate was the lowest. The level of anxiety was significantly increased in obesity (and more) as well as in asthma and chronic kidney diseases. An interesting fact is that increased level of anger and aggression with a predisposition to deviant behavior was identified only in children with chronic kidney diseases.

Table 1.

**Psychological profile of children with various somatic abnormalities (in points)**

Group		Self-esteem	Anxiety	Depression	Anger	Aggression
Standards questionnaire Beck-Youth,		(45-55)*	(< 55)	(< 55)	(< 55)	(< 55)
The average value in the population, n=582	0	46.34 ± 8.05	48.61 ± 8.48	47.53 ± 8.40	46.22 ± 8.49	50.85 ± 9.56
Chronic GIT problems, n = 66	1	43.36 + 9.14	46.86 ± 13.28	45.12 ± 8.35	42.06 ± 2.14	47.08 ± 6.25
Overweight and obesity, n = 150	2	38.19 ± 6.28	61.77 ± 10.31	47.57 ±10.5	47.08 ± 7.7	49.03 ± 9.99
Acute bronchopulmonary diseases, n = 21	3	55.80 ± 6.40	37.61 ± 3.01	44.20 ±6.95	44.20 ± 9.12	46.83 ± 7.54
Asthma, n=25	4	41.20 ± 9.80	50.52 ± 12.30	49.73 ± 8.31	44.66 ± 6.82	49.66 ± 9.12
Chronic kidney disease, n=88	5	39.19 ± 4.27	50.62 ± 2.34	50.57 ± 9.76	52.86 ± 11.82	53.85 ± 11.82

Note: \* - differences in the incidence of causative microorganisms in the groups are statistically significant (p < 0.05).

Table 2

**Correlation matrix of psychological parameters in the population of teenagers in Kharkiv region (r)**

	Self-esteem	Anxiety	Depression	Anger	Deviant behavior
self-esteem		- 0.2050	- 0.4164	- 0.2464	- 0.2951
anxiety		p=0.000	p=0.00	p=0.000	p=0.000
depression	- 0.2050		0.5801	0.5244	0.3252
anger	p= 0.000		p=0.00	p=0.00	p=0.000
deviant behavior	- 0.4164	0.5801		0.7405	0.6206
self-esteem	p=0.00	p=0.00		p=0.00	p=0.00
anxiety	- 0.2464	0.5244	0.7405		0.6679
depression	p = 0.000	p=0.00	p=0.00		p=0.00
anger	- 0.2951	0.3252	0.6206	0.6679	
	p=.000	p=0.000	p=0.00	p=0.00	

#### 4 CONCLUSIONS

1. Psychological profile of children with different somatic abnormalities is not identical requiring obligatory evaluation.
2. Teenagers with obesity were found to have significantly increased levels of anxiety and depression secondary to low self-esteem.
3. Children with asthma had an increased level of anxiety in combination with low self-esteem, which distinguishes them from children with acute bronchopulmonary disorders, which corresponds to a population profile value.
4. Children with chronic diseases of the gastrointestinal tract were shown to have low self-esteem.
5. Chronic kidney diseases are accompanied by decreased self-esteem with a tendency to rage and aggressive children.
6. The abovementioned findings determine the necessity for the assessment of psychological state at all stages of management of children with chronic diseases, and providing them with timely psychological assistance.
7. Changes in inner psychological state of the child (in the family environment, related to the disease, education and communication with age-mates) will potentially give a possibility to provide better treatment in this group of children and prevent recurrence.

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