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## Working with parents as a means of prevention and correction of psychosomatic disorders: results of an experimental study

This research topic is highly relevant today, as it addresses the issue of the increasing number of individuals suffering from psychosomatic illnesses. The article presents the results of a study by reputable international organizations, indicating a significant threat to the mental and physical well-being of people due to political, social, economic, and environmental circumstances. Considering the psycho-physical characteristics of adolescents and their age-related vulnerabilities, the authors identify school-aged children as a particularly susceptible to various stressors. The establishment of a system of psychological and pedagogical conditions for effective collaboration with parents is considered as a pivotal strategy in preventing and correcting psychosomatic disorders. The scientific novelty of the research is based on the findings of a pedagogical experiment conducted at a comprehensive school in Karaganda. The authors present the results of a mathematical analysis based on the Wilcoxon criterion, which indicated the presence of statistically significant changes in the results of the survey of parents before and after the experiment. The analysis highlights the need for further research to develop innovative approaches to educating a generation prepared for the complexities of a BANI world [1; 3].

*Keywords:* VUCA world, BANI world, psychosomatic disorder, mental health, psychological and pedagogical conditions, work with parents, child-parent relations, prevention, correction.

### Introduction

The foundational characteristics of the world, previously described by the SPOD model (S-steady, P-predictable, O-ordinary, D-definite), have been gradually changing since the late 1980s. Due to the rapid development of science and the massive spread of computing technology and the Internet, the concept of a new VUCA (V-volatile, U-uncertain, C-complex, A-ambiguous) world has emerged [2]. Despite the need to survive in a series of endless reforms, over the past two decades, humanity has adapted to the conditions of the modern world. However, the realities of the VUCA world are going to replace the BANI (B-brittle, A-anxious, N-nonlinear, I-incomprehensible) environment. At the beginning of this decade, futurist Jamais Cascio proposed the concept of a new life, where variability transformed into fragility, uncertainty changed into anxiety, complexity shifted to non-linearity, and ambiguity evolved into incomprehensibility [1; 4].

Certainly, there is a tendency to complicate and transform the world around us. However, human evolution has not consistently kept pace with the scientific and technological revolutions. The vast amount of new and available information sometimes overwhelms the human brain and leads to a state of anxiety. According to the data provided by the World Health Organization (WHO), there has been a significant increase in the number of individuals suffering from anxiety and depressive disorders in the last five years. In 2020, The Global Burden of Disease (GBD) statistics indicated that the prevalence of anxiety disorders globally increased by 25.6 %, while the number of cases of major depressive disorder rose by 27.6 % [3].

As reported by the Institute for Health Metrics and Evaluation (IHME), the prevalence of anxiety and depressive disorders has significantly increased over the past three decades [4]. The comparative data are presented in the figure below (Fig. 1).

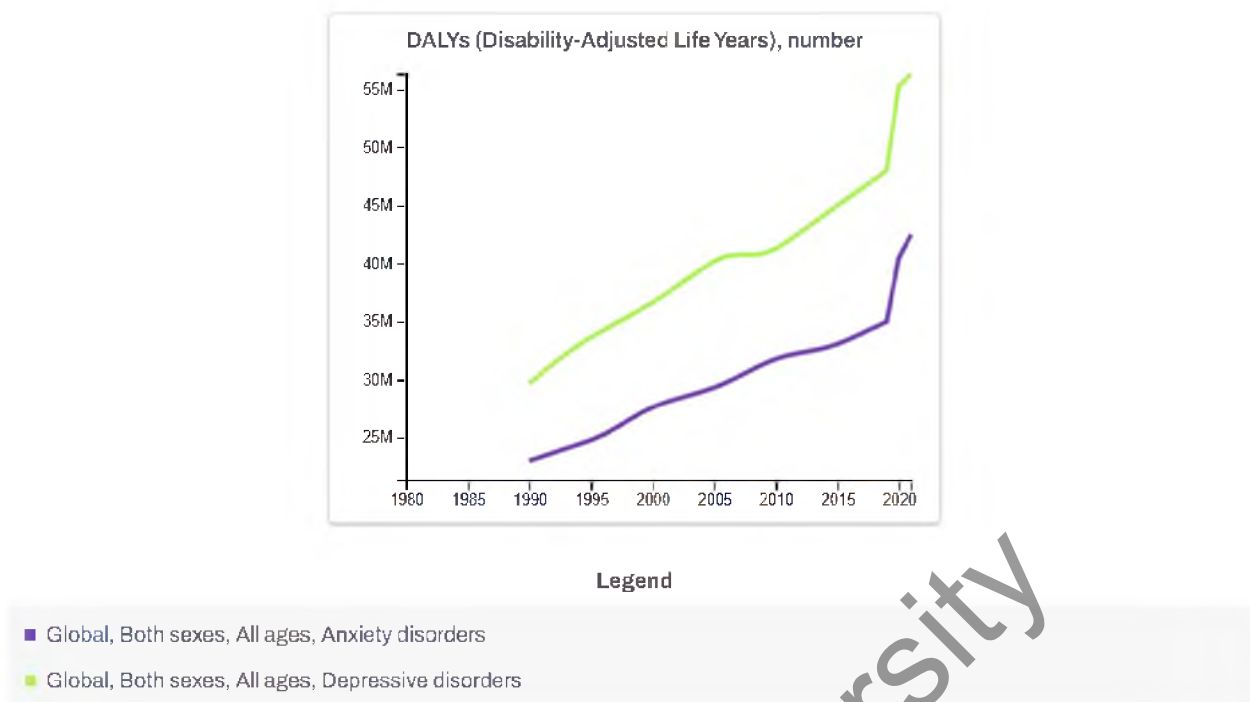


Figure 1. Statistics on the number of people from all over the world with anxiety and depressive disorders over the past 30 years

Environmental conditions, lifestyle, chronic anxiety, and stress contribute to physical health deterioration, facilitating the somatization of psychological symptoms and increasing the risk of various illnesses. When considering susceptibility to stressors and external socio-economic challenges such as political and economic instability, environmental degradation, societal inequality, and everyday conflicts, it is important to note that school-aged adolescents are particularly vulnerable to psychosomatic disorders because of their age-related psychophysiological traits. Therefore, the effective organization of psychological and pedagogical conditions for the prevention and correction of psychosomatic disorders in schoolchildren is a crucial task of modern pedagogy.

During these formative years, children become more resolute in their pursuits, face their first life challenges, and develop their perspectives on the world. Consequently, the efficient implementation of psychological and pedagogical measures aims at preventing and correcting psychosomatic issues in school-aged individuals emerges as a paramount objective in the contemporary educational practices.

Considering the aforementioned factors, the educational system seeks to cultivate an adoptable and resilient generation that will be capable of navigating both an ever-changing and unpredictable world. With the ongoing political transformations, economic uncertainties, and the deluge of news and information from social media platforms, it is no surprise that the contemporary individuals find themselves in a state of heightened anxiety and stress.

Currently, the issue of exposure to various stressors is critical due to the potential threat to the mental health of schoolchildren. Psychological health is a set of complex concepts encompassing mental, emotional, social, and spiritual dimension of well-being that promotes self-development, growth, and regulation. Specifically, the adequacy of self-esteem plays a crucial role in regulating interactions between children and adults, as well as among peers [5].

So, if we turn to the psychological dictionary, psychosomatics (from the Greek psyche-soul + soma-body) is a branch of medicine that studies the role of mental factors in the development of functional and organic disorders in the human body [6; 402]. Although the treatment of psychosomatic disorders is the responsibility of medical professionals and psychotherapists, we believe, that educators who are involved in educating and upbringing of younger generation have a significant role in preventing disorders.

There are many factors that can cause psychosomatic disorders in adolescents. While some of them are well-known, others can be identified only through indirect signs. Factors such as a large number of audiovis-

ual media, school overload, additional classes, numerous exams, changes in dietary quality, and the prevalence of bad habits such as alcoholism, smoking, and drug use can cause these disorders. The relevance of the mental aspects of chronic physical disorders stems from their prevalence and the rising morbidity rates among children and adolescents in recent years [7].

In light of the pressing issue of the increasing number of children suffering from psychosomatic disorders, we have formulated the purpose of our research:

- to substantiate and experimentally validate the effectiveness of psychological and pedagogical conditions for engaging with parents in the prevention and correction of psychosomatic disorders in schoolchildren.

In order to accomplish this purpose, the following objectives were set:

1. Theoretically substantiate the necessity of engaging parents in preventive and correctional work to solve the problems of psychosomatic disorders in schoolchildren.

2. To develop a set of psychological and pedagogical measures aimed at the active involvement of parents in the prevention and correction of psychosomatic disorders in children.

3. Conduct a pedagogical experiment using a mathematical analysis to verify the effectiveness of the selected measures.

4. Identify promising areas for further research aimed at developing new approaches to the prevention and correction of psychosomatic disorders in children.

Engaging with the parents of school-aged individuals holds immense potential in solving these problems. The bond between parents and their children has long been recognized as a crucial indicator of a child's emotional and social well-being [8], [9]. The "climate" of the family, manifested in the nature of the interaction between parents and children, significantly influences the cognitive, emotional, social, and behavioral faculties of the child, as well as their self-perception and self-identification [10].

In selecting methods and approaches of instructional engagement, educators ought to prioritize fostering the intellectual and spiritual enrichment of families, with a curriculum designed to reinforce parental authority and amplify their positive influence on children's development [11].

#### *Methods and materials*

Our research included the following empirical methods: a pedagogical experiment comprising three stages: observation, survey, and conversation, as well as the use of mathematical statistics based on the Wilcoxon test.

At the initial stage of the research, parents who expressed a willingness to participate in the study were identified. We provided them with information about the objectives and procedures of the experiment. The study participants were parents of children aged between 14 and 17 years, studying at the lyceum school No. 66 in Karaganda. To assess the level of parental awareness regarding strategies for preventing and addressing psychosomatic issues in their children, we conducted a survey as a part of the initial phase of the study. For convenience, the survey was available in both Kazakh and Russian languages and was administered online using a Google form [12]. We emphasized that the survey was completely confidential, assuring participants that their responses would remain honest and protected. The questionnaire consisted of both open-ended questions with free-form responses and closed-ended questions with three predefined options. Additionally, some questions offered the opportunity to select multiple responses, while others required a single choice. The specific nature of the questions in the survey is summarized in Table 1.

Table 1

#### **The substance of the queries and responses in the survey for parents**

<b>№</b>	<b>Questions</b>	<b>Response alternatives</b>
<b>1</b>	Do you know the concept of "Psychosomatics" or "Psychosomatics disorder"?	- Yes; - No, it's not; - Partially / I find it difficult to answer.

№	Questions	Response alternatives
2	What, in your opinion, are some of the most common causes of psychosomatic disorders in school-aged children?	<ul style="list-style-type: none"> <li>- Problematic relationships with peers;</li> <li>- The tense situation in the family;</li> <li>- Stress related to learning;</li> <li>- Insufficient attention from parents;</li> <li>- The teenager's perception of himself as different from his peers;</li> <li>- Lack of the necessary skills to overcome the difficulties they face in life;</li> <li>- Emotional instability;</li> <li>- Conflict situations at school;</li> <li>- Your version.</li> </ul>
3	What symptoms would you name as manifestations of psychosomatic disorders in children?	<ul style="list-style-type: none"> <li>- Pain and discomfort in the stomach;</li> <li>- Frequent headaches;</li> <li>- Nervous tics;</li> <li>- Feeling of pain in the chest, back, limbs;</li> <li>- Negative habits, for example, a child bites his nails and pulls out his hair;</li> <li>- Skin problems — eczema, rash, itching;</li> <li>- Hyperactivity;</li> <li>- Sleep problems;</li> <li>- Impaired appetite;</li> <li>- Feeling of difficulty breathing;</li> <li>- Your version.</li> </ul>
4	Have you ever noticed any signs of the psychosomatic disorders in your child's behavior?	<ul style="list-style-type: none"> <li>- Yes;</li> <li>- No, it's not;</li> <li>- Partially / I find it difficult to answer.</li> </ul>
5	Do you think it is possible to prevent or correct psychosomatic disorders in schoolchildren during the educational process?	<ul style="list-style-type: none"> <li>- Yes;</li> <li>- No, it's not;</li> <li>- Partially / I find it difficult to answer.</li> </ul>
6	Who is responsible for implementing measures to prevent or correct psychosomatic disorders in children?	<ul style="list-style-type: none"> <li>- Class teacher;</li> <li>- School administration;</li> <li>- School psychologist;</li> <li>- Subject teachers;</li> <li>- Child's parents;</li> <li>- Nurses;</li> <li>- Child must do it himself.</li> </ul>
7	Should dedicated time be included in the school's educational program for the prevention and correction of psychosomatic disorders in schoolchildren?	<ul style="list-style-type: none"> <li>- It is important, therefore, the time for work in this direction should be specially allocated;</li> <li>- It is not so important, education should be allocated only in a specific time;</li> <li>- It doesn't matter, I don't think it's worth wasting time on this.</li> </ul>
8	Will the implementation of measures for prevention and correction of psychosomatic disorders in children in the school environment have a positive impact on your child's physical health?	<ul style="list-style-type: none"> <li>- Yes;</li> <li>- No, it's not;</li> <li>- Partially / I find it difficult to answer.</li> </ul>
9	If you had the chance to learn more about the details of how to prevent and correct psychosomatic disorders in children, would you take advantage of this information?	<ul style="list-style-type: none"> <li>- Yes;</li> <li>- No, it's not;</li> <li>- Partially / I find it difficult to answer.</li> </ul>
10	What would you suggest as a way to prevent and correct psychosomatic disorders in children during the school experience?	<ul style="list-style-type: none"> <li>- Your version.</li> </ul>

After analyzing the overall picture of parents' understanding of the issue of psychosomatic disorders in children, we moved on the second stage of the study. Based on the responses received, various forms of work with parents have been selected and implemented in order to create psychological and pedagogical conditions for preventing and correcting psychosomatic issues in school-aged children (Table 2).

Table 2

**A series of actions implemented in collaboration with parents**

№	Working form	Purpose	Location/format of the event
1	Interactive parent-teacher meeting	Educating parents of school-age children on the fundamental concepts of “psychosomatics”, “psychosomatic manifestation”, “psychosomatic disorders”.	School building.
2	Training-game	Acquainting parents with the techniques of prevention and correction of psychosomatic disorders in children, as well as the practical implementation of the acquired knowledge.	School gym. Presentation, videos, distribution of booklets, brochures.
3	Consultations	Organizing an online roundtable discussion with experienced psychologists, where participants can anonymously ask questions and receive responses on topic related to parent-child relationships, school-child interactions, and child-peer dynamics.	Zoom platform.
4	One-on-one sessions with a school counselor.	To discuss problematic questions related to psychosomatic disorders in a one-on-one consultation with a psychologist.	School building.
5	“Homework” for parents	To assign and oversee the completion of tasks related to the principles of sleep hygiene [13; 5], breathing exercises, the 5-4-3-2-1 distraction and grounding technique [14; 30], Mindfulness [15], and other relevant practices.	Social networks, messengers.

The aforementioned types of activities were structured with parents who had volunteered to participate study. Initially, a meeting with the parents was conducted, during which comprehensive information about psychosomatic disorders and their manifestations was provided. During the training sessions participants were introduced to techniques for preventing and addressing psychosomatic disorders, stress, anxiety, which were presented in the form of handouts and pamphlets. To apply theoretical knowledge in practice, it was proposed to implement these techniques in daily life. In addition, social media platforms and messaging services were established for addressing any questions or concerns regarding the methodology. Moreover, the school psychologist was engaged in consultative work, addressing concerns through individual conversations.

*Results and Discussion*

Regarding the findings, it is important to analyze the parents' responses from the ascertaining stage. A total of 28 participants completed the online survey. After analyzing the responses, it became evident that the concepts of “psychosomatics” and “psychosomatic disorders” are widely recognized in contemporary society. Among 28 individuals surveyed, only one (3.6 %) indicated he was unfamiliar with these concepts, while six (21.4 %) expressed an incomplete comprehension, and the remaining 21 (75 %) affirmed their familiarity with these terms.

As for the causes of psychosomatic disorders, a majority of respondents (18 individuals, or 60.4 %), identified “insufficient parental attention” as the main factor. It is encouraging to note that parents were aware of their role in addressing this issue. However, when we asked, “who is responsible for the implementing measures for the prevention and correction of psychosomatic disorders in schoolchildren?” — out of 28 parents, only 12 (42.9 %) selected the “parents” option. According to the parents, the primary responsibility should lie with the psychologist. Specifically, 22 out of the 28 respondents selected this category as their re-

sponse. The number of respondents who selected the “classroom teacher” as “being responsible for implementing measures to prevent and correct psychosomatic disorders” was 14 (50 % of all participants). The option “school nurse” was selected by 5 people (17.9 %), while two people (7.1 %) preferred the “school administration”. Only one person (3.6 %) responded that “the children themselves were responsible for implementing measures to prevent and correct psychosomatic disorders”.

Parental responses suggest that the most prevalent symptoms of psychosomatic disorders in children include “headaches”, “negative habits such as nail biting”, and “sleep problems”. The responses given by parents during the diagnostic phase of the study are shown in Figure 2.

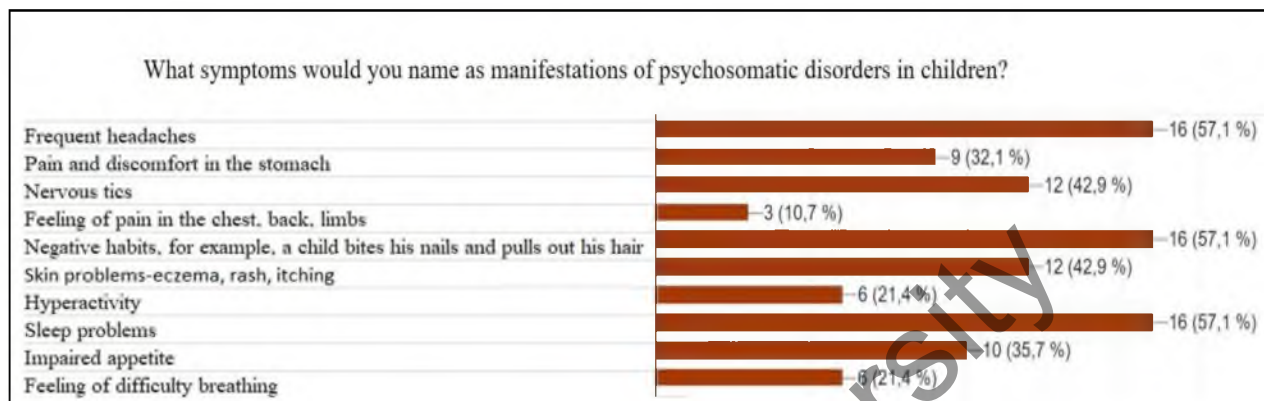


Figure 2. Question answers regarding the symptoms of manifestation of psychosomatic disorders

While 13 respondents (46.4 %) reported observing manifestations of psychosomatic disorders in their children, 6 (21.4 %) confidently stated that they had not, while the remaining 9 individuals (32.1 %) were unsure.

To the question “Do you think it is possible to prevent or correct psychosomatic disorders in schoolchildren during the educational process?” a majority of individuals, 24 (85.7 %) responded positively, whereas the remaining 4 (14,3 %) found it difficult to provide an answer for it.

Twenty-five respondents believed that allocating dedicated time within the school’s educational process for the prevention and correction of psychosomatic disorders in schoolchildren would be beneficial. 75 %, or 21 people, agreed that working on the prevention or correction of these disorders in school would have a positive effect on schoolchildren’s physical and mental health. 3 respondents (10.7 %) disagreed and remaining 4 individuals chose the option “I find it difficult to answer”.

Of the 28 respondents, 26 (92.9 %) expressed a strong desire for more comprehensive information regarding the measures for the prevention and correction of psychosomatic disorders in children.

At the final stage of the experiment, parents filled out the questionnaire again. The findings of the survey conducted before and after the experiment are presented in Table 3.

Table 3

#### Results of the survey for parents before and after the experiment

Questions	Before the experiment		After the experiment	
	Response	Percentage (n)	Response	Percentage (n)
Do you know the concept of “Psychosomatics” or “Psychosomatics disorder?”	“Yes”	75 % (21)	“Yes”	100 % (28)
	“No”	3,6 % (1)	“No”	0 % (0)
	“Partially / I find it difficult to answer”	21,4 % (6)	“Partially / I find it difficult to answer”	0 % (0)
Have you ever noticed any signs of the psychosomatic disorders in your child’s behavior?	“Yes”	46,4 % (13)	“Yes”	75 % (21)
	“No”	21,4 % (6)	“No”	7 % (25)
	“Partially / I find it difficult to answer”	32,1 % (9)	“Partially / I find it difficult to answer”	0 % (0)

Continuation of Table 3

Questions	Before the experiment		After the experiment	
	Do you think it is possible to prevent or correct psychosomatic disorders in schoolchildren during the educational process? Who is responsible for implementing measures to prevent or correct psychosomatic disorders in children?	“Yes”	85,7 % (24)	“Yes”
	“No”	0 % (0)	“No”	0 % (0)
	“Partially / I find it difficult to answer”	14,3 % (4)	“Partially / I find it difficult to answer”	0 % (0)
Should dedicated time be included in the school’s educational program for the prevention and correction of psychosomatic disorders in schoolchildren?	“It is important, therefore, the time for work in this direction should be specially allocated”	89,3 % (25)	“It is important, therefore, the time for work in this direction should be specially allocated”	100 % (28)
	“It is not so important, education should be allocated only in a specific time”	10,7 % (3)	“It is not so important, education should be allocated only in a specific time”	0 % (0)
	“It doesn’t matter, I don’t think it’s worth wasting time on this”	0 % (0)	“It doesn’t matter, I don’t think it’s worth wasting time on this”	0 % (0)
Will the implementation of measures for prevention and correction of psychosomatic disorders in children in the school environment have a positive impact on your child’s physical health?	“Yes”	75 % (21)	“Yes”	100 % (28)
	“No”	10,7 % (3)	“No”	0 % (0)
	“Partially / I find it difficult to answer”	14,3 % (4)	“Partially / I find it difficult to answer”	0 % (0)
If you had the opportunity to get more detailed information about the conditions for the prevention or correction of psychosomatic disorders in children, would you use it?	“Yes”	92,9 % (26)	“Yes”	100 % (28)
	“No”	0 % (0)	“No”	0 % (0)
	“Partially / I find it difficult to answer”	7,1 % (2)	“Partially / I find it difficult to answer”	0 % (0)
What, in your opinion, are some of the most common causes of psychosomatic disorders in school-aged children?	The vast majority of respondents were unable to provide a comprehensive explanation for their responses.		Each participant can enumerate all the principal considerations.	
What symptoms would you name as manifestations of psychosomatic disorders in children?	Only 2-3 of the proposed alternatives have been chosen.		All the proposed answers are considered as a manifestation of psychosomatic disorders.	
Who is responsible for carrying out measures for the prevention or correction of psychosomatic disorders in students of the educational process of the school?	Most of individuals opted for the choices of “school psychologist” and “classroom teacher” from the provided options.		The responses clearly indicate that collaboration among all parties involved in addressing this issue is crucial, and they recognize the need for coherent and systematic interaction.	

The table above demonstrates that a series of interventions has heightened parental comprehension and insight into the realm of psychosomatic disorders in children. Nonetheless, to maintain the integrity of our study, we chose to compare the pre- and post-intervention survey data to determine whether there were statistically significant changes, employing the Wilcoxon. For this purpose, we narrowed our focus to the closed-ended questions that allowed for a single response option

To commence, we propose the null and the alternative hypotheses:

*Null hypothesis (H<sub>0</sub>):* the disparities between the contrasted cohorts of observations are not significant, indicating a lack of distinction in the responses provided by parents before and after the experiment intervention.

*H<sub>0</sub>:* Before the experiment = After the experiment

*Alternative hypothesis (H<sub>1</sub>):* the disparities between the contrasted cohorts of observations are statistically substantive, indicating a material distinction in the responses provided by parents before and after the experiment intervention.

*H<sub>1</sub>:* Before the experiment ≠ After the experiment

Table 4 below presents the magnitude of changes in the results of the survey and their corresponding ranks.

Table 4

**Magnitude of changes in the results of the questionnaire and their corresponding ranks**

Questions number	Before the experiment	After the experiment	The magnitude of the change	The rank of the change with a sign
Do you know the concept of "Psychosomatics" or "Psychosomatics disorder"?	"Yes" (21)	"Yes" (28)	+7	+11,5
	"No" (1)	"No" (0)	-1	-1
	"Partially / I find it difficult to answer" (6)	"Partially / I find it difficult to answer" (0)	-6	-10
Have you ever noticed any signs of the psychosomatic disorders in your child's behavior?	"Yes" (13)	"Yes" (21)	+8	+13
	"No" (6)	"No" (25)	-19	-15
	"Partially / I find it difficult to answer" (9)	"Partially / I find it difficult to answer" (0)	-9	-14
Do you think it is possible to prevent or correct psychosomatic disorders in schoolchildren during the educational process? Who is responsible for implementing measures to prevent or correct psychosomatic disorders in children?	"Yes" (24)	"Yes" (28)	+4	+8
	"No" (0)	"No" (0)	0	-
	"Partially / I find it difficult to answer" (4)	"Partially / I find it difficult to answer" (0)	-4	-8
Should dedicated time be included in the school's educational program for the prevention and correction of psychosomatic disorders in schoolchildren?	"It is important, therefore, the time for work in this direction should be specially allocated" (25)	"It is important, therefore, the time for work in this direction should be specially allocated" (28)	+3	+5
	"It is not so important, education should be allocated only in a specific time" (3)	"It is not so important, education should be allocated only in a specific time" (0)	-3	-5
	"It doesn't matter, I don't think it's worth wasting time on this" (0)	"It doesn't matter, I don't think it's worth wasting time on this" (0)	0	-

Continuation of Table 4

Questions number	Before the experiment	After the experiment	The magnitude of the change	The rank of the change with a sign
Will the implementation of measures for prevention and correction of psychosomatic disorders in children in the school environment have a positive impact on your child's physical health?	"Yes" (21)	"Yes" (28)	+7	+11,5
	"No" (3)	"No" (0)	-3	-5
	"Partially / I find it difficult to answer" (4)	"Partially / I find it difficult to answer" (0)	-4	-8
If you had the opportunity to get more detailed information about the conditions for the prevention or correction of psychosomatic disorders in children, would you use it?	"Yes" (26)	"Yes" (28)	+2	+2,5
	"No" (0)	"No" (0)	0	-
	"Partially / I find it difficult to answer" (2)	"Partially / I find it difficult to answer" (0)	-2	-2,5

Now let us verify the accuracy of the ranking procedure. Based on the parameters of the Wilcoxon test, in this case, the calculated sum of ranks equals 120. To determine the correct sum, we employ the formula:  $n*(n+1)/2$ , where "n" represents the number of elements in the dataset. We observe that there are 18 elements in the first column. However, in accordance with this method, we only consider changes that are non-zero. In our research "n" is, thus  $15*(15+1)/2=120$ . The calculated sum of the ranks matches the correct sum, indicating that the ranking process was concluded correctly.

Subsequently, we must compute the sum of the ranks of atypical changes, which constitutes the empirical value of the Wilcoxon test. Atypical changes, in our investigation, refer to ranks marked with a positive (+) sign. This is equal to 14 ( $W_{emp}=14$ ). We determine the critical values for the given sample, specifically for a sample comprising 18 elements, where  $W_{cr1} = 47$  ( $p=0.05$ ) and  $W_{cr2} = 32$  ( $p=0.01$ ). Next, we compare the empirical value of the Wilcoxon criterion ( $W_{emp}=14$ ) with its critical value ( $W_{cr1}=47$ ,  $W_{cr2}=32$ ). It is known that the critical area of Wilcoxon test is positioned to the left of the critical point. Referring to Figure 3, it becomes evident that statistical significance of these changes is substantial. Consequently, we can affirm the acceptance of the alternative hypothesis.

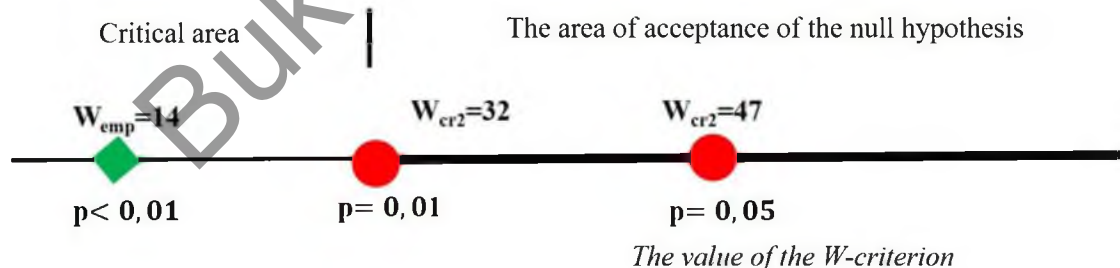


Figure 3. Evaluation of the statistical significance of the parents' survey results before and after the experiment using the Wilcoxon test (W)

### Conclusion

The statistical data provided by renowned organizations such as the World Health Organization and the Institute for Health Metrics and Evaluation reveal a grave threat to the mental and physical well-being of individuals due to global political, social, economic, and environmental factors. In this context, particular attention is focused on adolescents, as this period is often referred to as a "transitional phase" between childhood and adulthood. During this time, stable patterns of behavior, personality traits, and emotional responses are shaped, significantly influencing the trajectory of person's life and his long-term physical and mental

well-being. Consequently, the family environment plays a critical role in fostering conditions that do not impede but actively contribute to a harmonious development of the adolescent's personality.

Educators who are engaged in daily interactions with school-aged individuals must prioritize the creation of a nurturing environment conducive to the psychosomatic well-being of their students.

We regarded parents as one of the crucial stakeholders who could contribute to the prevention and correction of psychosomatic disorders in children. To accomplish this goal, we successfully achieved the following objectives:

- The importance of family support as a key factor in a child's emotional well-being and in reducing the risk of psychosomatic disorders has been substantiated.

- A set of psychological and pedagogical measures has been developed to engage parents in preventive and correctional work.

- The conducted pedagogical experiment showed positive outcomes from the implementation of the range of preventive and corrective measures.

- Analysis of data from parent surveys before and after the experiment, using the Wilcoxon test, has revealed statistically significant changes indicating an increase in parental awareness of psychosomatic disorders and the effectiveness of their prevention.

Thus, the results of the study support the significance of a systematic approach to the prevention and correction of psychosomatic disorders in children.

Despite the significant progress, there is still a need to explore new approaches to the prevention of psychosomatic disorders adapted to the conditions of the BANI-world.

Promising areas for the future research aimed at developing new approaches to preventing and correct psychosomatic disorders in children include:

- The development and implementation of digital technology.

- Creating mobile applications and online platforms for self-diagnosis and monitoring of the psycho-emotional state of children.

- Using artificial intelligence to monitor and analyze changes in the psychosomatic state of schoolchildren.

- Investigating the effect of cognitive behavioral therapy and neuro-correction techniques on reducing anxiety and psychosomatic symptoms.

- Development of personalized programs for the psychophysiological rehabilitation of children with psychosomatic disorders.

- Introducing game-based and art-therapy methods into the educational process for the prevention of psychosomatic disorders.

- Conducting comprehensive research at the intersection of pedagogy, psychology, medicine, and neuroscience to deeply study risk factors and mechanisms of formation of psychosomatic disorders.

- Development of cooperation between educational institutions, medical centers, and family counseling services.

- Creating long-term educational programs for parents.

- Forming strategies for the formation of resilience and adaptability in children in conditions of instability, uncertainty and, increased anxiety.

- Including modules on emotional regulation, stress management, and digital hygiene into school curriculums.

These directions will not only deepen our understanding of psychosomatic disorders in children, but also lead to create more effective and modern methods for their prevention and correction.

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## Психосоматикалық бұзылыстардың алдын алу және түзету әдісі ретіндегі ата-аналармен жұмыс: эксперименттік зерттеу нәтижелері

Авторлардың соңғы жылдардағы психосоматикалық дертке шалдыққан адамдар санының жылдам өсу мәселесін қозғауы, зерттеу тақырыбының бүгінгі таңда өзекті екендігін растайды. Мақалада жаһандық саяси, экономикалық және экологиялық жағдайларға байланысты адамдардың психикалық және физикалық денсаулығының нашарлау қаупін айқындайтын Дүниежүзілік денсаулық сақтау ұйымы мен Сиенгадағы денсаулық көрсеткіштері мен жағдайын бағалау институты сияқты беделді әлемдік ұйымдардың зерттеу нәтижелері келтірілген. Жасөспірімдердің психологиялық-физиологиялық жас ерекшеліктерін ескере отырып, авторлар мектеп жасындағы балаларды түрлі стресс факторларының әсеріне аса сезімтал адамдар санатына жатқызады. Ата-аналармен табысты ынтымақтастықты жүзеге асыруға арналған психологиялық-педагогикалық шарттардың ұйымдастырылуы психосоматикалық бұзылыстардың алдын алу мен түзетудің негізгі әдістерінің бірі ретінде қарастырылған. Авторлар ұсынған, яғни Қарағанды қаласындағы жалпы білім беретін мектепте жүргізілген педагогикалық эксперименттің нәтижелері зерттеудің ғылыми жаңалығы. Зерттеу жұмысының анықтаушы, қалыптастырушы және бақылау кезеңдері егжей-тегжейлі сипатталған. Математикалық талдау әдісі ретінде таңдалған Уилкоксон критерийі эксперименттің алғашқы және соңғы кезеңдеріндегі көрсеткіштер арасында статистикалық тұрғыдан маңызды өзгерістердің болуын растайды. Авторлар хаотикалық BANI-әлемінің тұжырымдамасындағы беймаза әрі осал әлемнің күрделілігін бағдарлауға әзір болатын ұрпақ буынын тәрбиелеу мақсатында жаңа, инновациялық және дәстүрлі емес тәсілдерді әзірлеу үшін осы бағыттағы зерттеу жұмыстарын одан әрі жалғастыру қажеттілігін атап өтеді.

*Кілт сөздер:* VUCA-әлемі, BANI-әлемі, психосоматикалық бұзылыс, психикалық денсаулық, психологиялық-педагогикалық жағдай, ата-аналармен жұмыс, бала мен ата-ана қарым-қатынасы, алдын алу, түзету.

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## Работа с родителями как способ профилактики и коррекции психосоматических нарушений: результаты экспериментального исследования

Тема исследования актуальна на сегодняшний день, так как авторы затрагивают проблему стремительного роста количества людей с заболеваниями психосоматического характера. В статье приведены результаты исследований авторитетных мировых организаций, таких как ВОЗ и Институт показателей и оценки состояния здоровья, которые свидетельствуют о серьезной угрозе ухудшения качества психического и физического здоровья людей в связи с глобальными политическими, экономическими и экологическими обстоятельствами. Учитывая психофизические и возрастные особенности подростков, авторы относят детей школьного возраста к категории людей наиболее восприимчивых к различным факторам стресса. Организация психолого-педагогических условий для успешного сотрудничества с родителями рассматривается как один из ключевых способов профилактики и коррекции психосоматических нарушений. Научной новизной исследования являются представленные авторами результаты педагогического эксперимента, проведенного в общеобразовательной школе города Караганда. Подробно описаны констатирующий, формирующий и контрольный этапы исследовательской работы. Авторы представили результаты математического анализа по критерию Уилкоксона, который обозначил наличие статистически значимых изменений в результатах опроса родителей до и после эксперимента. Отмечается необходимость продолжения дальнейших исследований в данном направлении для разработки новых, инновационных и нестандартных подходов, направленных на воспитание поколения, способного ориентироваться в сложностях тревожного и хрупкого мира, находящегося в концепции хаотичного BANI-мира.

**Ключевые слова:** VUCA-мир, BANI-мир, психосоматическое нарушение, ментальное здоровье, психолого-педагогическое условие, работа с родителями, детско-родительские отношения, профилактика, коррекция.

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