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## Improving children's communication: the impact of multidisciplinary support on children with speech disorders

### Поліпшення дитячого спілкування: вплив мультидисциплінарної підтримки на дітей із порушеннями мовлення

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#### Abstract


In recent years, the number of young children with speech disorders has been increasing. One of the approaches to solving this problem is the use of multidisciplinary support, with the involvement of specialized professionals in coordination with parents. The purpose of the study was to examine the effectiveness of multidisciplinary support for young children with speech disorders. Methods of the study. The study examined 70 children with speech disorders of early age (from 1 to 4 years), including 28 girls (40%) and 42 boys (60%). Diagnostics of speech disorders was carried out by examining articulatory motor skills, sound pronunciation, phonemic system of speech, vocabulary, grammatical and coherent speech, fine motor skills, etc. It was found that young children had the


#### Анотація


В останні роки зростає кількість дітей раннього віку з мовленєвими порушеннями. Одним із підходів до вирішення цієї проблеми є застосування мультидисциплінарного супроводу, з залученням профільних фахівців в координації з батьками. Вивчити ефективність мультидисциплінарного супроводу дитини раннього віку з мовленєвими порушеннями було метою дослідження. Методи дослідження. Обстежено 70 дітей з мовленєвими порушеннями раннього віку (від 1 до 4 років), із яких було 28 дівчинки (40%) та 42 хлопчиків (60%). Діагностування мовленєвого порушення проводили шляхом обстеження артикуляційної моторики, звуковимови, фонематичної системи мовлення, словникового запасу, граматичного та

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following speech disorders: rhinolalia - 10%, generalized underdevelopment of speech of the second degree - 20%, generalized underdevelopment of speech of the third degree - 10%; dyslalie 30%; dysarthria 20%; allia 10%. The children received qualification support and support in the form of a certain number of correctional classes with specialized specialists, and the rate of hours of correctional component was 100%. 7 children (10%) had level IV support and received 6 hours of correctional sessions with a speech therapist, psychologist and defectologist. 7 children (10%) were under the supervision of a teacher's assistant, 14 children (20%) had level II support and received 2 hours of lessons with a speech therapist per week, according to the current protocols. The effectiveness of multidisciplinary support for children with speech disorders, which depends on consistent, regular and well-organized coordinated work between narrow specialists and parents, has been shown.

**Keywords:** children, young age, diagnostics, correction, speech disorders.

зв'язного мовлення, дрібної моторики та інше. Встановлено, що у дітей раннього віку мали місце такі мовленнєві порушення: ринолалія – 10 %, загальний недорозвиток мовлення II ступеня – 20 %, загальний недорозвиток мовлення III ступеня – 10%; дислалія 30 %; дизартрія 20 %; алалія 10%. Діти отримували кваліфікаційний супровід та підтримку у вигляді певної кількості корекційних занять з профільними спеціалістами, показник забезпеченості годинами корекційної складової становив – 100%. 7 дітей (10%) мали IV рівень підтримки та отримувала 6 годин корекційних занять з логопедом, психологом та дефектологом. 7 дітей (10%) знаходилася під наглядом асистента вчителя, 14 дітей (20%) мали II рівень підтримки та отримували 2 години занять з логопедом на тиждень, відповідно до діючих протоколів. Показана ефективність застосування мультидисциплінарного супроводу дітей з мовленнєвими порушеннями, яка залежить від послідовної, регулярної та чітко організованої скоординованої роботи між вузькими спеціалістами та батьками.

**Ключові слова:** діти, ранній вік, діагностика, корекція, мовленнєві порушення.

## Introduction

This article examines the effectiveness of multidisciplinary support for 70 children with speech disorders. With the help of a comprehensive psychological and pedagogical assessment, the types of speech disorders in young children were identified. Diagnostics of the child's speech development included such examinations as articulatory motor skills; phonemic speech system (phonemic); sound pronunciation; vocabulary; grammatical structure of speech, etc. The number of hours for correctional and developmental classes with a speech therapist, psychologist and defectologist was established. The study showed almost 100% effectiveness of multidisciplinary support with a personalized approach to the child.

Recent observations of the researchers confirm an increase in the number of young children with speech disorders (Lyons et al., 2022). It is possible to reduce the number of children with speech disorders with the use of early diagnostics in the early stages, which is a relevant and complex issue, demanding timely detection and elimination. Teachers and parents should pay special attention to such a child to eliminate delay in speech development in the early stages. If speech disorders are detected in early stages, it is necessary to immediately begin correction and work with a child. Parent's inability to notice such speech disorder in the early stages or failure to recognize it as a problem results in the failure to conduct early diagnostics and timely taking correction measures.

Young children with speech disorders find it difficult to learn reading and writing, their development is delayed, which is further observed in communication with peers and further studying. Therefore, it is important to pay attention to any change in the speech behaviour of a child in time and immediately refer parents to specialists, emphasising possible complications in the child's development. There is no sufficient information on early diagnostics methods of young children with speech disorders, specific correction schemes or types of individual approaches in different disorders. The attention is mainly paid to the methods of work of speech therapists, but in the late stages of speech disorders detection. In such situations, correction requires a special approach to a child, as well as a higher number and length of activities. Correction is especially difficult for children with congenital defects or any accompanying disease, such as those of the nervous system. It is critical to detect deviations in speech at an early age, and analyse external and internal factors influencing it to further exclude mental, motor and sensory disorders in a young child (Sakash et al., 2023; Matuszkiewicz & Galkowski, 2021).

Nowadays, many researchers study this area and analyse the experience of foreign and domestic specialists. Many authors emphasise both the necessity of early diagnostics of severe disorders and their timely detection, as well as psychological and pedagogical support to children of the risk group (Krueger & Storkel, 2023; Jin, 2024).

However, follow-up of young children with speech disorders in children polyclinics is an unfavourable factor, as in most situations there are no narrow specialists as psychologists and speech therapists, as well as correctional aid. The percentage of children born with perinatal encephalopathy, which further leads to speech disorders, increases.

Therefore, nowadays, the development and implementation of coherent multidisciplinary team support, new methods of examination, diagnostics, and correction of diagnosed speech disorders in young children is definitely one of the relevant issues.

## Literature Review

Language and communication are essential in early psycho-social development, for example learning to control emotions, express feelings, and establish and maintain relations (Law et al., 2017), thus, children with speech disorders have difficulties in academic, social and emotional spheres (Hobson et al., 2022).

Children with externalising behaviour problems, in particular attention deficit hyperactivity disorder, approximately are about five times more likely to have language delays than their peers with normal development, moreover, up to 90% of children with speech disorders also have hyperactivity (Lyons et al., 2022; Gregg et al., 2021). Although efforts of early interventions were originally directed at solving these problems separately, it is obvious that the scale of these issues requires a multidisciplinary approach.

Speech disorders are communication disorders, which prevent communication, including expressive and receptive language, which can lead to achievement reduction and/or functional deficits in the further academic environment (Kovalenko et al., 2021; Kostenko et al., 2022).

From the perspective of social functioning, children with speech disorders experience social deficits, including limited interaction with peers. Furthermore, children with speech disorders, as a rule, poorly perform tasks related to executive function, and children with better speech skills perform such tasks better. Children who have early speech difficulties, as a rule, demonstrate lower results on all parameters of preparedness for school at preschool age. Still, the way language skills determine differences in reacting to interventions in different spheres remains unclear. Conducted longitudinal studies, which revealed long-lasting results of children with severe speech disorders showed that children who overcame speech disorders before the age of 5.5, had positive behaviour and social results (Gregg et al., 2021). Still, children who had speech difficulties during their school years had an increased risk of developing problems with attention, behaviour, and social functioning. There is evidence that without necessary correction, the problem, young children face persists in early school age and has further long-lasting negative influence on academic achievements in disciplines like reading (Gregg et al., 2021).

Multidisciplinary team support shall be conducted by two or more different members of the multidisciplinary team. This means that every person makes their contribution to the support, having different spheres of knowledge, for example, multidisciplinary work with children may be conducted by a speech therapist and psychologist, physiotherapist, occupational therapist or nutritionist, depending on the state of the child and their need.

Potentially, all specialists will not conduct therapy at the same time. Still, they will tightly cooperate and contact each other, to ensure the best result for the child. Multidisciplinary team support is commonly the most appropriate for children with complex needs or many difficulties, which should be considered in totality.

A high percentage of children with mental disorders have poor language skills, but there is not enough evidence of how mental health support is provided to children with language needs. Content analysis of the survey responses, received from parents of children with speech and communication needs, demonstrated three main factors, important for parents' experience: relational aspects of care, organisational aspects of care and professional supervision. Thematic analysis of the interview of parents of children with speech

development delay showed 5 themes: the influence of language problems on distress overcoming, the role of the school environment, the role of key specialists, standard approaches to mental health maintenance can be irrelevant, and the role and influence on parents. Parents of children with speech and communication needs face barriers to access to mental health support for their children, including a lack of professional knowledge on the speech needs of their children. Parents confirmed that speech and communication needs can significantly influence the effectiveness and efficiency of psychological therapy and intervention. Systematic research is needed to understand ways of successful service adaptation and making them accessible to children with speech needs (Hobson et al., 2022).

Children with speech disorders, more often than those who do not have such disorders, experience mental health and well-being problems (Hobson et al., 2022; Hancock et al., 2023). Approximately 80% of children having emotional behaviour problems were found to have poor language skills (Hollo et al., 2014; Mahr & Hustad, 2023).

Understanding of cause-and-effect mechanisms which explain the relation of speech problems with mental health problems enables understanding of the risk factors and protective factors of mental health of children and youth with speech problems. Accurate cause-and-effect mechanisms remain unclear, but there are several possible explanations for the relationship between language needs and mental health. One of the explanations is that speech and mental health problems are related because of the shared genetic effects (Newbury et al., 2019; Toseeb et al., 2022). Speech problems are explicitly affecting mental health through explicit factors (Hobson et al., 2022).

Besides the study of cause-and-effect mechanisms which explain the relation of speech problems with mental health problems, we should understand the types of support children with speech need to receive for their mental health, as well as the level of accessibility and efficiency of such support. In their meta-analysis, Hollo et al. (2014) studied the prevalence and severity of undiagnosed language disorders in children with emotional behavioural disorders. Conclusions in the group of 1171 children aged less than five, who had a formal diagnosis of emotional behavioural disorder, showed that 4 of 5 children had at least mild speech disorders, and 47% of children had medium or severe speech problems which were under-diagnosed. The high prevalence of speech needs among children with emotional and behavioural problems indicates that interventions for mental health children should probably consider the simultaneous development of emotional and speech needs to be maximally effective.

Multidisciplinary team support has been recommended for many years as the means using which the needs of children with speech disorders can be satisfied before school. The presented literature review indicates the absence of a common understanding of multidisciplinary team support of young children between speech therapists, teachers, parents, and children (Shirokova et al., 2023; Vermeij et al., 2023), as well as psychiatrists (Gallagher et al., 2019; McGregor, 2020).

### ***Purpose of the study***

To study the efficiency of multidisciplinary team support of a young child with speech disorder.

### ***The tasks of the study:***

- To determine types of speech disorders in young children with the use of complex psychological and pedagogical education.
- Determine the number of hours for correction-developmental work with a speech therapist, psychologist and defectologist.
- To determine the efficiency of multidisciplinary team support of a young child with speech disorders.

### **Methodology**

The study involved the observation of 70 young children with speech disorders (from 1 to 4 years old) including 28 girls (40%) and 42 boys (60%), who received multidisciplinary team support.

Inclusion criteria - the study involved young children with diagnosed speech disorders. Exclusion criteria - children of school age and older children.

Variations in specific features of young children's language functions are associated with different nature of the defect and different clinical manifestations. In such empirical studies, it is quite difficult to form a comparison (control) group, due to the fact that over time, a smaller percentage of children are found to have no signs of speech impairment.

Multidisciplinary team support for children with speech disorders involved: elementary level of complex psychological and pedagogical evaluation of a child with the determination of the level of support and recommendations, organisation of correctional activities; determination of the number of hours of support with narrow specialists per week, consulting and teaching parents, providing them with psychological aid; multidisciplinary interaction of specialists.

The work was conducted according to "Ethical Principles for Medical Research Involving Human Subjects", "Universal Declaration on Bioethics and Human Rights", and principles of the Declaration of Helsinki (1964) (World Medical Association, 2022), and approved by the local commission. Before the beginning of the study, parents of all children provided informed consent on observation and examination of their children (Artal & Rubinfeld, 2017).

Diagnostics of speech development of children with speech disorders involved the following examination stages: articulatory motor skills, sound pronunciation, phonemic speech system, vocabulary, grammatical and coherent speech, fine motor skills, etc.

**Results**

A significant percentage of children attended preschool educational institutions. By the results of psychological, pedagogical and speech diagnostics of the development of young children, conducted by profile therapists, the following speech disorders were found: rhinolalia - 10% (7 children), general speech underdevelopment of II stage - 20% (14 children), general speech underdevelopment of III stage - 10 % (7 children), dyslalia - 30% (21 children), dysarthria - 20% (14 children) - speech impairment with insufficient innervation of the speech apparatus, alalia - 10% (7 children) - speech impairment caused by damage to the language zones of the cerebral cortex.

Young children with speech disorders received qualified team support, according to which a certain number of correction activity hours with specialists was provided, an indicator of ensuring the hours of correctional component amounted to 100% (Table 1).

**Table 1.**  
*Characteristics of children and parents with speech disorders*

Parameter	Number, n (%)
<b>Age of the child</b>	
1 year	7 (10.0)
2 years	21 (30.0)
3 years	21 (30.0)
4 years	21 (30.0)
<b>Sex</b>	
Boys	42 (60.0)
Girls	28 (40.0)
<b>Speech disorders</b>	
Rhinolalia	7 (10.0)
Dyslalia	21 (30.0)
Dysarthria	14 (20.0)
Alalia	7 (10.0)
General speech underdevelopment of II stage	14 (20.0)
General speech underdevelopment of III stage	7 (10.0)
<b>Relationship to a child</b>	
Mother	63 (90.0)
Father	7 (10.0)
<b>Parents' education</b>	
Higher	21 (30.0)
Secondary	49 (70.0)

Note: general speech underdevelopment (GSU)

7 children (10%) had IV-level support and received 6 hours of correctional activities with a speech therapist, psychologist and defectologist. 7 children (10%) were under the supervision of a teacher's assistant and 14 children (20%) had II-level support and received 2 hours of correctional activities with a speech therapist per week, according to applicable protocols.

According to the data of control observations, positive dynamics in children with speech disorders were observed due to multidisciplinary team support. However, analysis of the efficiency of the measures of multidisciplinary team support found that teachers need additional assistance in selecting the scheme of detected disorders correction.

Speech therapy in dysarthria management was conducted systematically in combination with medication therapy and rehabilitation (massage, therapeutic baths, physiotherapy, mechanotherapy, acupuncture, etc.) assigned by a neurologist. Due to the development of fine motor skills, motor skills of the speech apparatus, and breathing exercises of every child, methods, and content of speech therapy were varied based on the type and severity of dysarthria, as well as the level of speech development. In case of impairments of phonemic processes and lexical-grammatical structure, the work on their development was conducted. Hence, it is possible to state that the most positive effect was further observed in these children after the use of the above-mentioned methods of work.

Children with speech impairments are characterized by underdevelopment of all structural components of an arbitrary behavioral act: memorization and understanding of instructions, planning and reproduction of actions, and self-control (Table 2).

**Table 2.**

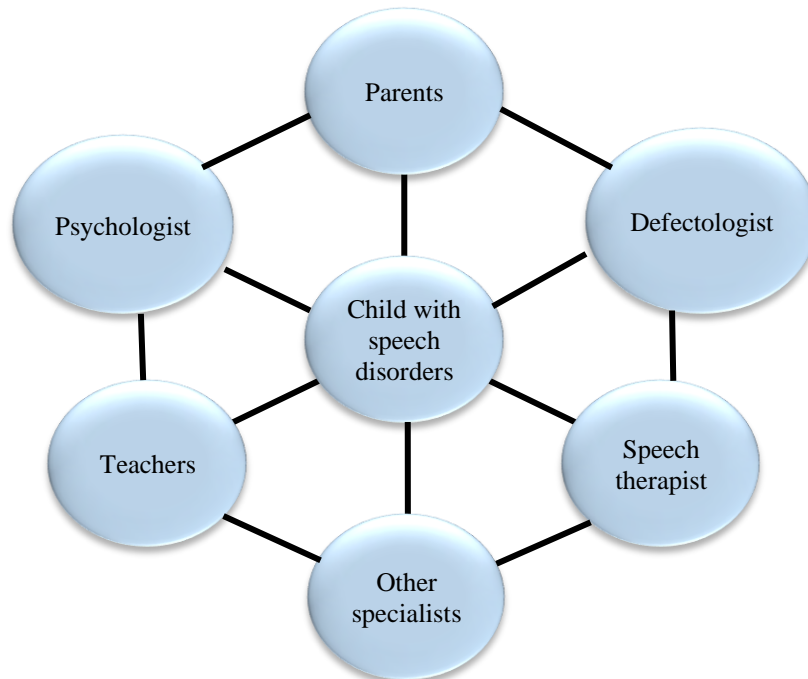
*Factors influencing the effectiveness of multidisciplinary support for children with speech disorders*

<b>Factors</b>	<b>Reduced efficiency</b>
<b>Speech disorders</b>	Late detection of the disorder
<b>Age of the child</b>	> 3 age
<b>Speech disorders</b>	Presence of dyslexia, general speech underdevelopment of stage III
<b>The level of responsibility of parents</b>	Underestimation of the problem and reduced level of responsibility of both parents

It has been shown above that some of the factors that can influence the effectiveness of multidisciplinary support are the severity of speech disorders, the age of the child, and the level of responsibility of both parents. In most cases, parents turn to a specialist when they begin to notice that their child is delayed in development and lags behind their peers in many functions.

Another important and negative factor is the underestimation of the problem by specialists and parents; most often, negative signs are noticed in children over 3 years old, but at this age, speech disorders or underdevelopment are much more difficult to correct by specialists, and early observation of children at risk is essential, primarily by pediatricians and speech therapists.

The analysis of the conducted multidisciplinary team support indicated explanatory support of parents and teachers while working with children with speech disorders (Figure 1).



**Figure 1.** Coordinated interrelations of multidisciplinary team support while working with young children with speech disorders.

Herewith, parents were shown to have difficulties in supporting children with speech disorders, so they require professional support for their families. 70 families, engaged in multidisciplinary team support, participated in the survey. The survey results showed that in most situations parents for the first time learned about such multidisciplinary team support and form of correction of the diagnosed disorders, which indicates a low level of awareness of multidisciplinary team support, they also did not pay sufficient attention to the problem of speech disorder and require constant professional support. Analysis of the results after professional support found that mothers (90) pay more attention to mentoring support and work with children than fathers, but the education of both parents did not have a significant influence on the responsibilities related to the work with children, both parents with higher and secondary education treated recommendations of specialists responsibly.

Such multidisciplinary team support involves education, consultations, and methodological materials for advancing the competencies of narrow specialists. It is necessary to note that most children with inclusive forms of studying in educational institutions have speech disorders, therefore, it is important that qualified narrow specialists pay more attention to this work.

The efficiency of multidisciplinary team support of a young child with speech disorders as well as the analysed approach to a child in the process of implementation of psychological, pedagogical and speech therapy support in the early stages of child development were demonstrated. The efficiency of the use of multidisciplinary team support of children with speech disorders definitely depends on consistent, regular and clearly organised and coordinated work between narrow specialists and parents.

## Discussion

Children with speech disorders often fail to receive appropriate qualified assistance (McGregor, 2020; Thordardottir et al., 2021). This may be the result of insufficient awareness of these disorders, their hidden nature, outdated policies and dissonance, which develops when speech therapists diagnose speech disorders. Therefore, there is a need for extended approaches to the support of young children with speech disorders. It is possible to provide them only due to clearer communication between families and narrow specialists.

Children with speech disorders have difficulties with speech understanding, and producing words and sentences. Signs and symptoms of speech impairments are different in different children depending on the language zone damage, problem severity, age of the child and the stage of speech development. Speech disorder may be related to intellectual disability or autism spectrum disorder, but its main reason remains unknown in many situations (Brumbaugh & Gibson, 2021). This is the most common type of child development problem. Although children with speech disorders are involved in different aetiological and clinical classifications, the common is that their limited speech abilities intervene in their communication with parents, peers and other people. Language and communication are essential for the cognitive, social and emotional development and well-being of a child, while speech disorders can significantly affect the development of a child (Toseeb et al., 2020; Vermeij et al., 2023). Parents value the development of speech and communicative skills of their children as they feel they are necessary for fostering independence, acceptance and engagement, as well as achieving academic success. Parents, speech therapists, teachers, and other specialists working with children with speech disorders, consider successful communication in everyday life to be the final objective of interventions for such children. Traditionally, speech therapeutic work was directed at impairments of speech form (phonology, syntax, and morphology), content (semantics) and language use. Clinicians, acting within the framework of the traditional biomedical perspective, assume that communication problems are in children with speech disorders, and thus, the work of speech therapists lies in changing patients' knowledge of linguistic and pragmatic language rules. However, functional benefits should not be assumed if the aim of the intervention is improving body function. After years, it became clear that knowledge of language structures and rules does not automatically lead to better communication results for children in everyday life (Toseeb & St Clair, 2020).

In recent years, clinicians' approach to the treatment of young children with speech disorders has somewhat changed from exclusive orientation to language knowledge and skills of children to improvement of children's actual participation in communication activity in real life, and thus, improvement of communication in everyday life became the final objective of speech therapy (Singer et al., 2020; Wiefferink et al., 2020).

Active transition to a distance form of education is planned in future, thus, specialists work on adaptation of the form of work and determination of the forms of communication (Toseeb et al., 2020). Parents will be able to get familiarised with notifications and recommendations on professional social pages concerning a child's speech disorders, and interesting articles on peculiarities of correctional work at home. Parents will be able to share their experiences and consult with specialists in mobile applications, providing multidisciplinary team support. Parents will also be able to discuss themes of seminars, training workshops, classes, and consultations.

## Conclusions

The paper demonstrated that the efficiency of multidisciplinary team support of children with speech disorders is directly dependent on coordinated work between specialists and parents, their professional training and the level of support implementation. The practical use of reconsiderations will enable organising an effective system of coordination measures between specialists and parents. With the help of multidisciplinary support, applied in the early stages of development of speech disorders in a child, it will be possible to get rid of the identified defects with greater efficiency within a short period of time. Therefore, it is promising to continue research in this area, including longitudinal studies to assess the long-term impact of multidisciplinary support for children with speech disorders.

## Study limitations

In our study older children, young children with speech disorders, who had congenital defects, and diseases of the central nervous system, for whom conducting correction of speech disorders without additional medication and other therapy would be difficult, were excluded.

## Further studies perspectives

The development of practical recommendations of subject matter specialists with parents' engagement concerning multidisciplinary team support of children with speech disorders, which were found in late stages or are accompanied by diseases of the central nervous system with the purpose of improving indicators of speech disorders in children as well as increasing efficiency of multidisciplinary team. For



each child, it is necessary to apply a personalized approach to determining the number and duration of sessions with specialists and to provide professional support to parents to increase the effectiveness of multidisciplinary support and its efficiency.

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