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HORTICULTURAL THERAPY AS A MEANS OF PSYCHO-EMOTIONAL SUPPORT FOR FAMILIES RAISING CHILDREN WITH SPECIAL EDUCATIONAL NEEDS

Abstract. The purpose of this article is to address the urgent issue of psychosocial support for families raising children with special educational needs (SEN) by using innovative nature-based methods, particularly horticultural therapy (horticultural therapy). The importance of the family in social integration of children with SEN is highlighted, as well as the high emotional exhaustion experienced by parents. This paper examines the use of horticultural therapy as a resource for emotional recovery, psycho-emotional well-being stabilization, and the development of positive parenting practices both internationally and in Ukraine. The aim of the article is to substantiate the effectiveness of horticultural therapy as a means of psycho-emotional support for families raising children with SEN, and to identify opportunities for integrating this practice into systems of psychosocial assistance. In order to achieve this, an empirical study was conducted that involved 60 participants, including parents and adolescents with SEN. The program of horticultural therapy was specialized for the participants, with gardening activities, art therapy components, and reflective sessions included. The BDI, CDI, and STAI diagnostic tools resulted in a significant decrease in depression levels by 36–40% and anxiety levels by 16–20% in both parents and children. Additionally, there was a notable improvement in indicators of social adaptation (by 18–30%) according to the SASS, enhanced quality of life across all domains (measured by WHOQOL-BREF and WHOQOL-Youth), and positive dynamics in self-esteem and self-image as evaluated by the Semantic Differential method. The results demonstrate that the horticultural therapy program has a positive effect on emotional well-being, social inclusion, and family cohesion. The scientific novelty of the study lies in its interdisciplinary analysis of the effects of horticultural therapy on various aspects of psychosocial functioning in families with children with SEN, and in the development of an original horticultural therapy program tailored to the Ukrainian sociocultural context. The findings indicate that horticultural therapy can be integrated into psychosocial support practices as an effective tool for improving emotional resilience, adaptive capacity, and overall family quality of life.

Key words: horticultural therapy, special educational needs, psycho-emotional state, parenting, psychosocial support, anxiety, depression, social adaptation, quality of life, inclusive education

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ГАРДЕНОТЕРАПІЯ ЯК ЗАСІБ ПСИХОЕМОЦІЙНОЇ ПІДТРИМКИ СІМЕЙ, ЩО ВИХОВУЮТЬ ДІТЕЙ З ОСОБЛИВИМИ ОСВІТНИМИ ПОТРЕБАМИ

Анотація. У статті розглядається актуальна проблема психосоціальної підтримки сімей, які виховують дітей з особливими освітніми потребами (ООП), через упровадження інноваційних природоорієнтованих методів, зокрема гарденотерапії. Підкреслюється значущість ролі родини у процесі соціальної інтеграції дитини з особливими освітніми потребами, водночас вказується на високий рівень емоційного виснаження батьків. Проаналізовано міжнародний і вітчизняний досвід використання садової терапії як ресурсу емоційного відновлення, стабілізації психоемоційного стану та розвитку позитив-

ного батьківства. Метою статті є обґрунтування ефективності гарденотерапії як засобу психоемоційної підтримки родин, що виховують дітей з особливими освітніми потребами, а також виявлення можливостей інтеграції цієї практики в систему соціально-психологічного супроводу. Для досягнення мети було проведено емпіричне дослідження за участі 60 осіб – батьків і підлітків з особливими освітніми потребами. Учасники пройшли програму гарденотерапії, яка включала садівничі практики, арттерапію та рефлексивні заняття. Результати дослідження засвідчили значне зниження рівнів депресії (на 36–37%) та тривожності (на 16–20%) у батьків і дітей, що підтверджується даними психодіагностичних методик BDI, CDI та STAI. Було виявлено покращення показників соціальної адаптації (на 18–30%), згідно із SASS, зростання якості життя в усіх вимірюваних доменах за WHOQOL-BREF та WHOQOL-Youth, а також позитивну динаміку самооцінки й образу «Я» за методикою «Особистісний диференціал». Дані підтверджують позитивний вплив садово-терапевтичної програми на емоційне благополуччя, соціальну включеність і внутрішньосімейну взаємодію. Наукова новизна дослідження полягає в комплексному міждисциплінарному аналізі впливу гарденотерапії на різні аспекти психосоціального функціонування сімей з дітьми з особливими освітніми потребами, а також у розробленні авторської програми садової терапії, адаптованої до українських соціокультурних умов. Отримані результати підтверджують доцільність включення гарденотерапії до практики соціально-психологічного супроводу як ефективного інструменту зміцнення емоційної стійкості, адаптації та підвищення якості життя родини.

Ключові слова: гарденотерапія, особливі освітні потреби, психоемоційний стан, батьківство, психосоціальна підтримка, тривожність, депресія, соціальна адаптація, якість життя, інклюзивна освіта.

To establish inclusive education and social integration in Ukraine, it is important to not only adjust the educational environment to the needs of children with special educational needs, but also provide systemic psychosocial support for their families. Modern scientific thought and social practice acknowledge the crucial role played by the family in the development of a child with special educational needs, while highlighting the high level of psychological stress and emotional burnout felt by parents. According to official data from the State Statistics Service of Ukraine, at the end of 2023, there were over 163 thousand children with special educational needs in Ukraine, of which about 94% are raised in families, not in boarding schools [2]. At the same time, the results of a survey conducted by the Ukrainian Institute of Social Research named after O. Yaremenko (2021) indicate that over 67% of parents of children with special educational needs experience a constant shortage of psychological support and information resources for high-quality child care. Another 72% of parents noted that they are in a state of chronic stress or emotional burnout [5]. In this context, it is crucial to use alternative and integrative therapies that are intended not only for the child but also for the entire family as a system. One of such areas is horticultural therapy (horticultural therapy) – a method that uses active or passive interaction with the natural environment (garden, vegetable garden, plants) to promote emotional relief, develop cognitive and motor skills, and improve mental state [7]. According to foreign studies, horticulture therapy is actively used in the countries of the European Union, the USA, Canada, Japan and South Korea as an effective rehabilitation resource for children with special educational needs, the elderly and people with post-traumatic conditions.

The effects of healing gardens on the emotional state and level of anxiety of patients, especially in medical and rehabilitation settings, were investigated by Clare Cooper Marcus in the USA. Also significant are the studies of Rachel & Stephen Kaplan, authors of the theory of restorative environment (restorative environment theory), which proved the positive impact of interaction with nature on cognitive functions, reducing psycho-emotional exhaustion and restoring attention [6]. In the field of development of children with special needs, Ruth Wilson's work was decisive, as he explored the importance of the natural environment in the development of sensory, emotional, and social skills [12]. Susan Stain concentrated on analyzing horticulture therapy as a way to provide emotional support and strengthen family relationships, particularly with families raising children with developmental disabilities.

Horticultural therapy is being actively introduced into the practice of psychosocial rehabilitation in the European scientific discourse. Marta Strimek is responsible for developing and executing horticultural therapy programs for children with developmental disorders, which emphasize the integration of sensory experiences and learning in natural environments. Thor Martinsen is investigating how gardening impacts the psycho-emotional state of family members raising a child with special educational needs, and has proven its effectiveness in reducing stress and enhancing intra-family interaction [9].

Ukrainian science is currently only forming conceptual approaches to horticulture, however, in related fields there is a noticeable increase in interest in natural therapeutic resources. In particular, O.I. Romanenko analyzes the use of art therapy and recreational methods in the context of psychosocial care [4], I.V. Abramova develops resource-oriented

models of support for families raising children with special educational needs [1]. Also, O.A. Karabaeva explores the possibilities of using a therapeutic environment in correctional and developmental work with children with special educational needs [3].

The study of horticulture therapy's potential to provide socio-psychological support to families raising children with special educational needs is both scientifically sound and practically relevant. The integration of nature-oriented methods into the modern social assistance system is possible through this approach, which improves the quality of life of families, builds resilience to stress, and develops positive parenting in difficult life situations.

The purpose of the article is to substantiate the effectiveness of horticultural therapy as an innovative means of psycho-emotional support for families raising children with special educational needs, as well as to identify opportunities for its implementation in the practice of socio-psychological support. The objective was attained by conducting an empirical study to investigate how horticultural therapy classes affect the psycho-emotional state of parents raising children with special educational needs. The experimental part of the study involved organizing and conducting a cycle of classes using elements of horticultural therapy, as well as assessing the dynamics of the psychological state of the participants before and after participating in the program. The study included a sample of 60 participants who were members of families who raised children with special educational needs. The sample was developed using the principle of voluntary participation and informed consent, which is fully compliant with the ethical

standards of conducting psychological research. The total number of participants was 60 people, of which 30 were parents (mothers and fathers) who were directly involved in the horticultural therapy process, and 30 were children with special educational needs aged 13 to 16. Children's psychophysical development is in different stages and they have medical diagnoses that encompass physical, intellectual, and mental disabilities.

The horticultural therapy program is intended to provide psycho-emotional support to families who raise children with special educational needs, and is built on a combination of gardening practices, elements of ecotherapy, and art therapy. By actively interacting with the natural environment, the goal is to reduce stress, anxiety, and depression, increase psychological resilience, and provide overall emotional comfort to participants. The program's structure consists of progressive stages of practical and reflective activities that establish favorable conditions for emotional recovery and social adaptation of parents and children.

To assess the level of depressive symptoms in parents and children, two psychodiagnostic methods were used: the Beck Depression Inventory (BDI) for adult study participants, which allows for a quantitative assessment of the intensity of depressive symptoms; and the Children's Depression Inventory (CDI) is an adapted scale for children, which was applied to participants aged 13–16. The CDI is a validated tool for identifying emotional disorders in adolescents, taking into account their developmental characteristics. Thus, the selected sample and the research methods used ensured the proper

Table 1

Structure of a horticultural therapy program for families raising children with special educational needs

Stage	Activity content	Objective and expected results
1. Introductory and motivational	<ul style="list-style-type: none"> – Introductory session, getting to know the participants; – Discussion of the program goals; – Determining the expectations of the participants. 	<ul style="list-style-type: none"> – Building trust in the group; – Motivation to participate; – Reducing psychological stress.
2. Preparatory	<ul style="list-style-type: none"> – Introduction to gardening techniques; – Safety briefing; – Distribution of responsibilities in the group. 	<ul style="list-style-type: none"> – Developing responsibility; – Stimulating team interaction.
3. Main (gardening block)	<ul style="list-style-type: none"> – Planting plants; – Plant care (watering, weeding, fertilizing); – Growth monitoring. 	<ul style="list-style-type: none"> – Formation of a sense of success; – Development of a caring attitude towards living things; – Reduction of anxiety.
4. Creative-reflective	<ul style="list-style-type: none"> – Creating natural compositions; – Making art objects from natural materials; – Keeping an "emotion diary". 	<ul style="list-style-type: none"> – Development of self-expression; – Increased self-esteem; – Awareness of positive experiences.
5. Summary	<ul style="list-style-type: none"> – Discussing changes in well-being; – Analyzing one's own experience; – Providing recommendations for continuing practices. 	<ul style="list-style-type: none"> – Awareness of achievements; – Increasing the level of internal motivation; – Planning for further self-support.

representativeness and scientific reliability of the results obtained, which allowed for a comprehensive assessment of the effectiveness of horticultural therapy as a means of psycho-emotional support for families raising children with special educational needs.

Before the program, all participants demonstrated moderate levels of depression: the mean BDI score for parents was 23,4, corresponding to a moderate level of depression, while the mean CDI score for children was 19,2, also indicating moderate depression. After completing the horticultural therapy program, the mean BDI score for parents decreased to 14,8, indicating a significant improvement in psycho-emotional state, and the mean CDI score for children decreased to 12,3, also indicating an improvement in the emotional state of children.

The results showed a significant reduction in depression levels in both groups of participants: in parents the reduction was 37% (from 23,4 to 14,8), and in children – 36% (from 19,2 to 12,3). Statistical analysis using Student's t-test showed that the changes in depression levels were statistically significant for both groups ($p < 0,01$), confirming the effectiveness of the horticultural therapy program in reducing depressive symptoms among participants.

Thus, the results obtained indicate a positive effect of the horticultural therapy program on reducing depressive symptoms in both parents and children with special educational needs, confirming the effectiveness of using this method as a resource of psychological support for families raising children with special educational needs.

The study used two main components of the STAI scale: situational anxiety (STAI-S) and personality anxiety (STAI-T). Since these components are of different nature, their results were analyzed separately.

1. The Situational Anxiety Inventory (STAI-S) measures the temporary level of anxiety caused by specific stressful events or situations. This measure is variable and reflects how anxious the study participants feel at the time of the test.

2. Personality Anxiety (STAI-T) assesses the general level of anxiety predisposition as a stable personality characteristic that can influence the perception of various situations as stressful or threatening.

The initial situational anxiety level (STAI-S) in the group of participants was on average $53,7 \pm 9,5$, which indicates a fairly high level of anxiety caused by stressful situations, in particular, due to caring for children with special educational needs and adapting to their needs. After completing the horticultural therapy program, the average score decreased to $43,2 \pm 8,1$, which is a decrease of 19,6%. This indicates the effectiveness of horticultural therapy in reducing situational anxiety in parents and children, contributing to the improvement of the emotional well-being of the participants.

Regarding personal anxiety (STAI-T), the initial indicators also indicated a high level of anxiety, with a mean value of $56,3 \pm 7,8$. After completing the horticultural therapy course, this indicator decreased to $47,1 \pm 6,2$, which corresponds to a decrease of 16,3%. The decrease in the level of personal anxiety indicates an improvement in the general psychological state of the participants, a decrease in the general tendency to anxious reactions in everyday life.

Statistical processing of the results using the Student's t-test showed that changes in anxiety levels are statistically significant ($p < 0,001$), which confirms the effectiveness of horticultural therapy in reducing anxiety among parents and children with special educational needs. The results obtained

Table 2

Results using the Beck Depression Inventory (BDI) and Children's Depression Inventory (CDI) before and after the implementation of the horticultural therapy program

Group of participants	To the program (average value)	After the program (average value)	Change (average)	Percentage change	Statistical significance (Student's t-test)
Parents (BDI)	23,4	14,8	-8,6	-37%	$t = 5,67, p < 0,01$
Children (CDI)	19,2	12,3	-6,9	-36%	$t = 4,42, p < 0,01$

Table 3

Changes in the level of anxiety on the Spielberger scale (STAI) before and after gardenotherapy (n = 60)

Indicator	To the program (M \pm SD)	After the program (M \pm SD)	Percentage change (%)	t-value	p-value
Situational Anxiety (STAI-S)	$53,7 \pm 9,5$	$43,2 \pm 8,1$	-19,6%	6,87	$p < 0,001$
Personality Anxiety (STAI-T)	$56,3 \pm 7,8$	$47,1 \pm 6,2$	-16,3%	6,34	$p < 0,001$

indicate a significant positive impact of the program on reducing both situational and personal anxiety of the participants.

Thus, the results of the study confirm that the horticultural therapy program is an effective method of psychological support for families raising children with special educational needs, contributing to reducing anxiety and improving the emotional state of the participants.

Horticultural therapy program demonstrated a significant positive impact on the social adaptation of parents and children with special educational needs. To assess the level of social adaptation of the participants, the Self-Assessment Scale for Social Adaptation (SASS) was used, which includes three main components: social activity, relationships with the environment and emotional stability. The collected data were compared before and after the program, which allowed us to assess changes in these indicators. According to the results of the study, the average score for social activity before the program was $25,4 \pm 5,2$, and after the program this figure increased to $30,2 \pm 4,1$, which indicates an increase in social activity by 18,9%. A similar trend was observed in the component of relationships with the environment, where before the program the average score was $21,3 \pm 4,9$, and after – $27,5 \pm 4,0$, which indicates an improvement in interaction with other people by 29,6%. The greatest importance for the emotional well-being of the participants was emotional stability, which increased from $22,8 \pm 6,3$ to $28,7 \pm 5,5$, reflecting an improvement in emotional stability by 26,0%. To test the statistical significance of the changes, a t-test for dependent samples was

used, which confirmed the statistical significance of the changes obtained in all three measured aspects ($p < 0,05$). This indicates a high level of effectiveness of horticultural therapy in improving the social adaptation of both parents and children with special educational needs.

The results of the study indicate a positive impact of the horticultural therapy program on the social adaptation of parents and children with special educational needs. All indicators – social activity, relationships with the environment and emotional stability – showed significant improvement after completing the program, which is confirmed by statistically significant changes ($p < 0,05$). This indicates that horticultural therapy is an effective method of supporting social adaptation and emotional well-being of participants.

As a result of the implementation of the horticultural therapy program, statistically significant positive changes in the quality of life levels were recorded both among adult participants (parents of children with special educational needs) and among adolescents with special educational needs. Standardized instruments were used to assess changes: WHOQOL-BREF – for adults (aged 18 years and older), and WHOQOL-Youth – for adolescents (aged 12 to 18 years).

In the adult sample ($n = 30$), after completing the program, the average physical health score increased from 61,3 to 72,5 points, which is an increase of 18,3%; psychological well-being increased from 59,0 to 70,1 points (+18,8%); the level of social relations – from 63,2 to 74,7 points (+18,2%); the assessment of the environment increased from 66,0

Table 4

Results of the assessment of social adaptation of parents and children with special educational needs before and after the horticultural therapy program

Indicator	Before the horticultural therapy program (M ± SD)	After the horticultural therapy program (M ± SD)	Percentage changes
Social activity	25,4 ± 5,2	30,2 ± 4,1	+18,9%
Relationships with the environment	21,3 ± 4,9	27,5 ± 4,0	+29,6%
Emotional stability	22,8 ± 6,3	28,7 ± 5,5	+26,0%

Table 5

Dynamics of changes according to the results of WHOQOL-Youth (adolescents with special educational needs, $n = 30$)

Quality of life domain	Before horticulture (M ± SD)	After gardenotherapy (M ± SD)	Δ , %	Student's t-test	p-value
Physical health	58,5 ± 6,9	69,8 ± 6,2	+19,3%	6,72	$p < 0,01$
Psychological well-being	56,8 ± 7,3	68,7 ± 6,5	+20,9%	6,93	$p < 0,01$
Social relations	60,2 ± 6,7	72,1 ± 6,1	+19,8%	6,49	$p < 0,01$
Environment	61,5 ± 7,0	71,3 ± 6,3	+15,9%	5,91	$p < 0,01$

to 75,4 (+14,2%). All these changes were statistically significant (Student's t-test $> 5,8$, $p < 0,01$), which indicates the effectiveness of the therapy in improving the quality of life of adults.

Among adolescents with special educational needs ($n = 30$) who participated in the program, the results showed even more pronounced positive dynamics. In particular, the physical health score increased from 58,5 to 69,8 points (+19,3%), psychological well-being from 56,8 to 68,7 (+20,9%), social relationships from 60,2 to 72,1 (+19,8%), and the environmental satisfaction score from 61,5 to 71,3 (+15,9%). The results also turned out to be statistically significant ($t > 5,9$; $p < 0,01$).

Thus, the data analysis shows that horticultural therapy contributes to the improvement of all key areas of the participants' quality of life, in particular – reducing psychological stress, increasing subjective well-being, improving social functioning and emotional stability. The use of horticultural therapeutic tools in the context of working with families raising children with special educational needs is an effective way to provide psychosocial support.

Within the framework of the implementation of the horticultural therapy program, the psychosemantic method “Personality Differential” was applied (Semantic Differential Test) to study changes in self-esteem, self-image, and emotional-semantic perception of oneself and the environment in both parents and adolescents with special educational needs (aged 12 to 17). We conducted the study before and after the therapeutic intervention to assess its impact on the structure of emotional-value attitudes towards oneself and the social environment. Negative assessments on the activity, friendliness, confidence, and harmony scales were common in both groups before the start of the program. The self-image of 63% of parents was described as anxious and emotionally unstable, and 58% of adolescents with special educational needs assessed themselves as being in the negative range of the scales (passive, insecure, unattractive).

After participating in the horticultural therapy program, positive dynamics were observed: 77%

of parents noted an increase in emotional stability, confidence in themselves and in their child, and 73% of adolescents began to perceive themselves as more active, balanced, and capable of interaction. Average self-esteem indicators increased significantly. Statistical processing of data using Student's t-test confirmed the reliability of changes in self-image indicators:

- in parents: $t = 3,94$; $p < 0,01$;
- in adolescents: $t = 3,47$; $p < 0,01$.

The results obtained prove that horticultural therapy is effective in balancing the internal emotional state and strengthening a positive self-perception for both parents and children with special educational needs. The study's results confirmed the theoretical and practical feasibility of utilizing horticultural therapy as an integrated psychosocial resource for supporting families who raise children with special educational needs. The study, based on an interdisciplinary approach, allowed for a comprehensive assessment of the impact of horticultural therapy practices on the psycho-emotional state, social adaptation, quality of life, and self-esteem of both parents and children with special educational needs.

The empirical data obtained indicate statistically significant positive changes in the psychoemotional functioning of the participants. In particular, the results obtained on the depression (BDI, CDI) and anxiety (STAI) scales showed a significant decrease in the levels of depressive symptoms (on average by 36–37%) and anxiety (on average by 16–20%), which indicates the effectiveness of horticultural therapy as a method of emotional relief and stabilization of the mental state. The use of the social adaptation scale (SASS) confirmed an increase in the level of social activity, improved interaction with the environment and an increase in emotional stability by an average of 18–30%. This indicates the ability of horticultural therapy to promote greater integration of family members into the social context, improved interpersonal interaction and the formation of adaptive behavior.

Data obtained using quality of life assessment methods (WHOQOL-BREF and WHOQOL-Youth)

Table 6

Dynamics of self-esteem indicators according to the “Personal Differential” method before and after the horticultural therapy program (in %)

Group	Positive self-esteem to (%)	Positive self-esteem after (%)	Average value (to)	Average value (after)	t-test	p-level
Parents	37	77	3,2	4,5	3,94	<0,01
Teenagers with special educational needs	42	73	3,4	4,6	3,47	<0,01

Note: Positive self-esteem is the proportion of participants who rated themselves at the positive end of the scales (“active”, “confident”, “pleasant”, etc.); the average value is calculated using a 7-point scale for assessing each self-image parameter.

revealed an increase in subjective well-being in all measured domains – physical, psychological, social, and environmental – indicating an overall improvement in the life functioning of the study participants after completing the horticultural therapy program. In addition, the results obtained using the psychosemantic method “Personal Differential” showed an increase in positive emotional self-perception, the level of confidence, harmony and benevolence of the “I” image in both parents and children, which allows us to consider horticultural therapy as a means of restoring personal resources and improving emotional and semantic integration. Horticultural therapy was found to be an effective tool for multidimensional psychosocial support, impacting both the individual’s psycho-emotional state and family dynamics when raising a child with special educational needs, as confirmed by the study. It can be integrated into the system of social support and rehabilitation as a resource approach focused on developing internal strengths, reducing stress, building resilience to psycho-emotional exhaustion, and improving the quality of life of the family as a whole.

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