HORTICULTURAL THERAPY

Therapeutic garden – Garden therapy
Therapeutic horticulture
Nature-based therapy – Healing garden[1]

KEY POINTS

- To provide physical rehabilitation, cognitive maintenance or management of behavioural and psychological symptoms.
- This intervention involves physical, cognitive, psychological and social processes.
- Observed effets are an improvement in general physical health, a slowing of cognitive decline, reduced agitation, a sense of well-being, the expression of positive emotions and the satisfaction of engaging in nature-related activities.
- In group, individually or with a family caregiver.
- For all people with dementia, regardless of the stage of the disease.

PRESENTATION

A. Definition

A holistic therapeutic act that involves garden using, gardening, plants growing or more generally relationship to plants and materials derived from nature in order to improve physical, mental, and social health[2]. This therapy is particularly suitable for elderly people and people with dementia[3-4].

B. Fundamentals

The general fundamentals refer to evolutionary theories of biophilia and the genetically embedded processes of adaptation to the environment[5]. Biologically, physiologically, and spiritually, human being is made to interact with natural environment in the sense of life. Relationship to nature provides stimulation of vital momentum, body mobilisation, positive emotions, decreased stress levels, recovery of attention and concentration abilities and stimulation of cognition. It supports imagination and creativity. It strengthens self-esteem, sociability and contributes to the development of the inner history of life by positioning and balancing being in its fundamental relationships with the world. These instinctive mechanisms are relatively independent of intellectual capacity and cultural background. They remain for a long time preserved and mobilisable regardless of the pathologies[6].

THEORETICAL BACKGROUND

A. Processes involved

- Physical processes: musculoskeletal maintenance: tone, trophicity, muscle strength, joint flexibility, motor coordination, fine motor skills, respiratory capacity. Cardiovascular maintenance: heart rate, blood pressure, arterial and venous network, skin trophicity. Sensory maintenance: vision, hearing, smell, taste, hearing, touch, proprioception, balance, temporal and spatial orientation. Exposure to natural light: regulation of biological rhythms, sleep/wake, appetite regulation, vitamin D therapy, mood regulation, strengthening of natural immunity.

- Cognitive processes: reminiscences and memory training: episodic memory, semantic memory, procedural memory, and cultural memory. Emotions stimulating, wording, storytelling. Imagination and metaphor. Psychomotor programming.
- Psychological and behavioural processes: body autonomy, adaptation to situations, self-esteem, expression of emotions, communication.
- Social processes: openness, listening, trust, willingness to exchange, social interactions, tolerance, quality of life and dignity.

B. Neurophysiological correlates

Variety of natural sensory stimulations promotes brain arousal and adaptation of muscle tone from the brain stem. The stimulation of memory and emotions centers induces an impression of familiarity and adaptability to this environment. This condition requires cognitive abilities and behavioural regulation. Regulation of stress levels lowers cortisol levels. Inhibition of the sympathetic system reduces the catecholamines rate (action on the cardiovascular system). Action on serotonin pathways reinforces the benefits of stress regulation on the immune system. Mood regulation benefits to emotions expression that are fundamental for communication.

SCIENTIFIC EVALUATION

A meta-analysis of scientific publications over the past 20 years assessed the effectiveness of horticultural therapy on cognitive decline, agitation level, positive emotions, and level of engagement in people with dementia. The results indicated that there was a significant difference when individuals participated in an effective horticultural therapy program, while there were no significant results on agitation and positive emotions when the relationship to the plant was purely ornamental[7].
A second review of the literature on 23 articles, 8 of which were already meta-analyses, found a significant effectiveness of a horticultural therapy program on the level of agitation. The effect was also particularly significant (+ 45%) on the impression of commitment and adherence to the activity[8].

The cost-effectiveness of horticultural therapy is not sufficiently referenced to date

IMPLEMENTATION AND PRACTICAL ADVICE

A. Training and/or knowledge required to provide the intervention

A dual competency is required. It should be noted that no program in France offers a degree in horticultural therapy. However, care staff can be made aware of this through continuing education. Diploma or certification courses are offered in the USA, Japan, and several European countries.

Horticultural therapist: care staff of all professional categories trained in the benefits of therapies through the relationship to nature, therapeutic gardens, horticultural activities, gardening, and horticulture.

Mediator gardener, Horticultural therapy facilitator: gardening and landscape professionals trained in the care and accompaniment of a vulnerable public, the benefits of therapies through the relationship to nature, therapeutic gardens, and horticultural activities.

NB: The High School of Horticulture and Landscape of Brive-Voutezac (France) has created in 2020 a Gardener Mediator specialisation. This professional title is based on the acquisition of four abilities: Design - Create - Manage/Animating landscaping and edibles for social and/or therapeutic purposes - Agroecology/Solidarity between the forms of life.

B. Practical and clinical advice

THERAPEUTIC INTENTION	RECREATIONAL INTENTION
Participants profile People with dementia. The professional will adapt activity to the participant profile, to his clinical situation, to the specific indications and his expectations if they can be formulated.	People with dementia, voluntary or whose previous life history leads to think that this recreational activity will be particularly favourable.
Indications ■ Global physical rehabilitation: musculoskeletal, cardiovascular, respiratory, sensory, appetite, sleep quality, fall prevention, trophic disorders. ■ Cognitive maintenance: reminiscence, memory stimulation, verbalisation, action programming, praxis, temporal and spatial orientation, body schema. ■ Behavioural and psychological symptoms: anxiety, withdrawal, depression, insomnia, restlessness, wandering, aggressiveness.	Horticultural therapy sessions may be prescribed for recreational purposes when primary purpose is regulation of stress levels[9] and recovery of attentional fatigue[10]. Distraction, positive emotion, feeling of escape, familiarity with the place contribute to well-being.
Contra-indications ■ No tetanus vaccination. ■ Severe and uncontrolled Allergic Asthma.	Idem. High risk of falls requires careful and suitable accompaniment during a trip to the garden.
Contributors Horticultural therapist, gardener mediator and care staff made aware of horticultural therapy. The indication is made by the health care team. For an individual session, horticultural therapist intervenes alone. For a group session, therapist is assisted by a care staff who is aware of the therapeutic issues of the intervention. In an institution where there is a therapeutic garden, the mediator gardener prepares the equipment and the site of the intervention. He assists the horticultural therapist during his intervention.	For a recreational and beneficent walk in the garden, the intervention can also be done individually or in groups. The mediator gardener welcomes, accompanies the walk and presents the garden. When the group exceeds two people, presence of volunteer visitor or family caregiver is necessary.
Setting of intervention In institution, in person's or professional' home: ■ In a garden designed for this purpose, a terrace, a greenhouse, or an equipped room. ■ In the person's bed or in the armchair near an open window. ■ Safe and comfortable (which requires accommodation). ■ With suitable equipment: tooling, raised planter, tray or repotting table, horticultural therapy trolleys.	A garden, a patio, a terrace, indoors.
Dosage Individual or group sessions of 5 to 6 participants. ■ Period: all year round. ■ Frequency: at least twice a week. When possible, every day. ■ Duration: half-hour in individual and 1 hour and 30 minutes in group.	Idem.
Session sequencing When possible: go around the garden, observe plants, awaken senses, observe reactions, and adapt its activity. To be attentive, in the exchange, propose a simple gardening activity, achievable and soothing, or targeted by the indication. For example: watering is generally appreciated and soothing. More structured workshops may be offered[11]. *Recommendation: based on the indication, always adapt the proposed activity to the situation and encourage to maintain the session duration for an effective natural exposure.*	The recreational outing always benefits from the mediator gardener presence.
Observance / Attendance Unless opposed and according to indications, minimum compliance can be defined for an actual result. For example: decreased agitation and aggression. A walk in the garden twice a day for 30 minutes or exposure to natural light from a veranda in the morning for 1 hour.	Not specified.
Assessment The therapist must be able to assess the person's abilities and adapt the activities. Sessions' evaluations are targeted from indications. They are carried out by both the horticultural therapist and by care staff the current and end-of-program. Physical measures: heart rate and blood pressure at the beginning and end of the session. Well-being with the EVIBE scale. Behavioural disorders with neuropsychiatric inventory (NPI) short version (NPI-reduced) and health care version (NPI-ES) at the beginning and end of the program. Quality of life with the Qol-AD questionnaire at the beginning and end of the program.	Not specified.

FOR MORE INFORMATION

- French Federation of Gardens, Nature and Health: therapeutic gardens, horticultural therapy and ecotherapy: https://f-f-jardins-nature-sante.org
- American of horticultural therapy association: https://www.ahta.org/
- Canadian Horticultural Therapy Association: https://www.chta.ca/
- Trellis Scottish Organisation: https://www.trellisscotland.org.uk/
- Haller, R. L., Kennedy, K. L., & Capra, C. L. (2019). *The profession and practice of horticultural therapy*. CRC Press.
- Marcus, C. C., & Sachs, N. A. (2013). *Therapeutic landscapes: An evidence-based approach to designing healing gardens and restorative outdoor spaces*. John Wiley & Sons.

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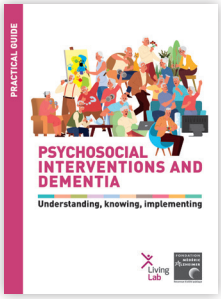
References

[1] Hazen, T. (2013). Horticultural therapy and healthcare garden design. In C. C. Marcus & N. A. Sachs (Eds.), *Therapeutic Landscapes: An Evidence-Based Approach to Designing Healing Gardens and Restorative Outdoor Spaces* (pp. 250–260). John Wiley & Sons.
[2] Haller, R. L., Kennedy, K. L., & Capra, C. L. (2019). *The profession and practice of horticultural therapy*. Boca Raton: CRC Press.
[3] Pollock, A., & Marshall, M. (2012). *Designing outdoor spaces for people with Dementia*. HammondCare.
[4] Gonzalez, M. T., & Kirkevold, M. (2014). Benefits of sensory garden and horticultural activities in dementia care: a modified scoping review. *Journal of clinical nursing, 23*(19-20), 2698–2715.
[5] Kellert, S. R., & Wilson, E. O. (1993). *The biophilia hypothesis*. Island Press.
[6] Pringuey-Criou, F. (2015). Introduction au concept de jardins de soins en psychiatrie. *L'Encéphale, 41*(5), 454-459.
[7] Zhao, Y., Liu, Y., & Wang, Z. (2020). Effectiveness of horticultural therapy in people with dementia: A quantitative systematic review. *Journal of Clinical Nursing*, 10.1111/jocn.15204.
[8] Lu, L. C., Lan, S. H., Hsieh, Y. P., Yen, Y. Y., Chen, J. C., & Lan, S. J. (2020). Horticultural Therapy in Patients With Dementia: A Systematic Review and Meta-Analysis. *American journal of Alzheimer's disease and other dementias, 35*, 1533317519883498.
[9] Ulrich, R.S., Simons, R.F., Losito, B.D., Fiorito, E., Miles, M.A., & Zelson, M. (1991). Stress recovery during exposure to natural and urban environments. *Journal of Environmental Psychology, 11*, 201-230.
[10] Kaplan, R., & Kaplan, S. (1989). *The experience of nature: A psychological perspective*. CUP Archive.
[11] Tu, P. C., Cheng, W. C., Hou, P. C., & Chang, Y. S. (2020). Effects of Types of Horticultural Activity on the Physical and Mental State of Elderly Individuals. *International Journal of Environmental Research and Public Health, 17*(14), 5225.



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