

NATURE BASED INTERVENTIONS FOR OLDER ADULTS

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QUESTION

What are the benefits of nature-base interventions for older adults in a residential aged care setting? What are common Nature based interventions? What are the barriers and enablers to nature-based interventions for older adults in a residential aged care setting?

SEARCH LIMITS

English-language, last 5 years.

SEARCH METHODOLOGY

A systematic search was conducted for literature. The results were screened by two librarians using [Covidence](#). See the Appendix for the PRISMA chart, search terms, and Medline search strategy.

DATABASES SEARCHED

- Medline – index of peer reviewed articles across health sciences and medicine.
- Embase – index of biomed and pharmacological peer reviewed journal articles.
- Emcare – index of nursing, allied health, critical-care medicine and more.
- Cochrane Library – collection of databases containing high-quality independent evidence.
- Grey literature – Google, Google Scholar, Trip database, Biomed Central Proceedings.

LITERATURE RESULTS

All articles can be provided in full text - email library@monashhealth.org a list of articles you require.

GENERAL RESOURCES

ONLINE RESOURCES (GREY LITERATURE)

Turrill, S, et al. (2021). **Care Homes in the Community: Evaluation report of a Bristol Ageing Better project led by Alive.** [Link](#)

Gardening and outdoor activities were very popular with residents and were the most chosen activity. Trips out into the community were also very popular, with residents choosing places that they had visited in the past and to which they felt a personal connection. Having the support of care home managers and activity coordinators was crucial to the successful delivery of the project. Training for all care staff, not simply activity coordinator staff, had an important role in

embedding a coproduction and community engagement ethos across care homes

Wu, Y.T, et al. (2020). **The Effect of Horticultural Program with Life Contexts on the Cognitive Function of the Elderly in Taiwan.** [Link](#)

The program content was based on farming experience of the elderly and integrated with diverse cognitive function trainings. It was found that the program showed immediate effect and two-week delay effect on promoting overall cognitive function of the elderly. Also, the elderly obtained new planting experience and their learning motivation was enhanced. Additionally, because of integrating with life contexts, the program was meaningful and encouraged the elderly to be engaged in the activities and recall the past. In the process, the elderly enjoyed the exchange of horticulture and life experience.

Yaacob*, W. N. A. H. W. A. et al. (2019). **Elderly Needs Of Garden In Retirement Homes: A Systematic Review.** [Link](#).

This review highlights the needs of the garden for the elderly at Retirement Homes are vital for resilient living. The finding revealed that elderly do need a specific green space or garden at Retirement Homes or Care Centre for improving their quality of life. This finding significantly leads towards the implementation of the garden area as health promotions and psychologically well-being engaged between the society and the community

Wang Z. et al. (2019). **Gardening for the health of elderly people: a systematic review and meta-analysis.** [Link](#)

Gardening may be an easy solution. Therapeutic gardens have been used in hospitals for thousands of years, and were strongly supported by Florence Nightingale, as they improve the surroundings for patients, visitors and staff. Some studies have also showed that therapeutic gardens have beneficial effects on stress, especially if the spaces support biodiversity, with increased satisfaction reported by those who use them.

PEER-REVIEWED LITERATURE - IN REVERSE CHRONOLOGICAL ORDER

Articles are grouped by theme:

- Cognitive Improvement – p. 3
- Psychological Benefits – p. 4
- Relaxation – p. 5
- Wellbeing – p. 6
- Residential Gardens – p. 7
- Horticultural Therapy – p. 8
- Indoor Interventions – p. 9

Each article summary contains excerpts from the abstract and an online link.

COGNITIVE IMPROVEMENT

Jueng, R.-N. et al. (2022). **The Effects of Horticultural Therapy on Sense of Coherence among Residents of Long-Term Care Facilities: A Quasi Experimental Design.** *International Journal of Environmental Research and Public Health* 19(9). [Click for full-text.](#)

Promoting positive mental health is crucial for the elderly living in long-term care facilities (LTCFs). This study aims to examine the effectiveness of horticultural therapy on the level of sense of coherence (SOC) among older LTCF residents with relatively normal mental function. Our findings indicate that horticultural therapy is effective to strengthen the SOC level of older LTCF residents without dementia.

Yang, Y., et al. (2021). **Effect of horticultural therapy on apathy in nursing home residents with dementia: a pilot randomized controlled trial.** *Aging and Mental Health* 26(4),745-753. [Request full-text.](#)

HT is feasible for residents with dementia and apathy. The HT program effectively reduced apathy and promoted cognitive function, but its effects on quality of life and functional capacity were not observed.

Bourdon, E. et al. (2021). **Enriched gardens improve cognition and independence of nursing home residents with dementia: a pilot controlled trial.** *Alzheimer's Research and Therapy* 13(1), 116. [Click for full-text.](#)

We asked staff members to frequently invite residents to visit the EG or the CSG depending on their group allocation. No invitation to gardens was made to the control group. We installed 12 enrichment modules in the EG that stimulated cognitive, independence and walking/balance functions. In conclusion, EGs offer a new approach to therapeutic mediation for residents of nursing homes with dementia.

Gueib, C., et al. (2020). **Impact of a Healing Garden on Self-Consciousness in Patients with Advanced Alzheimer's Disease: An Exploratory Study1.** *Journal of Alzheimer's disease: JAD* 75(4), 1283-1300. [Request full-text.](#)

The environment of patients with Alzheimer's disease and related disorders (ADRD) intensifies the consequences of cognitive impairment and exacerbates behavioral problems if inappropriate or, conversely, mitigate these problems if its design is tailored to the needs of these persons. In conclusion, factors that are grounded in the hypotheses that spearheaded its conception, such as sensory enrichment, familiarity, contact with nature, scaffolding role for cognitive functions, supportive effect for social interactions, and the "Nancy hypotheses of beauty", thus contribute to their validation.

Park, S.-A., et al. (2020). **Metabolite Profiling Revealed That a Gardening Activity Program Improves Cognitive Ability Correlated with BDNF Levels and Serotonin Metabolism in the Elderly.** *International Journal of Environmental Research and Public Health* 17(2). [Click for full-text.](#)

Gardening intervention as a regular physical activity for the elderly maintained and improved physical, psychology, cognitive, and social health. Brain-derived

neurotrophic factor levels (BDNF) in the gardening group were significantly increased after the gardening program. Correlation map analysis showed that the relative levels of tryptophan metabolites were positively correlated with BDNF.

PSYCHOLOGICAL BENEFITS

Lai, R., et al. (2023). **Access to a dementia-friendly garden on behavioural and psychological symptoms of dementia, falls and psychotropic medication use in residents of an aged care home in Melbourne, Australia.** *Australasian Psychiatry*, ePub ahead of print. [Click for full-text.](#)

This prospective cohort study followed a group of residents in the first 6 months after the opening of a new dementia-friendly garden. Staff remain concerned about falls risk despite the dementia-friendly design, and many residents do not access outdoors frequently. Further education may help to remove barriers to encouraging residents to access the outdoors.

Shen, J.-L., et al. (2022). **Horticulture therapy affected the mental status, sleep quality, and salivary markers of mucosal immunity in an elderly population.** *Scientific reports* 12(1), 10246. [Request full-text.](#)

HT activities significantly improved the happiness, satisfaction, well-being and sleep quality of the elderly. Moreover, mucosal immunity proteins, including IgA, lactoferrin, CgA and AA, were significantly increased.

Zhang, Y. W., et al. (2022). **The effect of horticultural therapy on depressive symptoms among the elderly: A systematic review and meta-analysis.** *Frontiers in public health* 10(101616579), 9533-9563. [Click for full-text.](#)

This evidence supported that horticultural therapy had a significant positive effect on the depressive symptoms outcomes for the elderly. Therefore, our data revealed that horticultural therapy could be considered as a part of therapy in depressive symptoms reduction programs.

Carver, A., et al. (2020). **Is greenery associated with mental health among residents of aged care facilities? A systematic search and narrative review.** *Aging & mental health* 24(1), 1-7. [Request full-text.](#)

Exposure to greenery and use of greenspace in RACFs show promise for promoting mental health. More robust evidence based on valid and reliable mental health measures is needed. Future studies also need to examine the effect of visual exposure to greenery and the effect of greenery on stress reduction.

Chu, H.-Y., et al. (2019). **Efficacy of a horticultural activity program for reducing depression and loneliness in older residents of nursing homes in Taiwan.** *Geriatric nursing*, 40(4), 386-391. [Request full-text.](#)

The experimental group (n=75) participated in an 8-week horticultural activity program. The control group (n=75) received routine care. Generalized estimating

equations analyses revealed significant time by treatment interaction effects for depression ($p < .001$) and loneliness ($p < .001$). This study provides a reference for improving psychological health in older people.

RELAXATION

Chung, Y. H., et al. (2022). **Relaxing Effects of Breathing *Pseudotsuga menziesii* and *Lavandula angustifolia* Essential Oils on Psychophysiological Status in Older Adults.** *International Journal of Environmental Research and Public Health* 19(22), 15251. [Click for full-text.](#)

We evaluated the effects of breathing *Pseudotsuga menziesii* and *Lavandula angustifolia* essential oils (EOs) during a horticultural activity on older adults. These changes indicated a relaxing effect of breathing both EOs during a horticultural activity on older adults. Our results demonstrated a beneficial effect of *P. menziesii* EO which is as good as a well-known relaxant *L. angustifolia* EO.

Widodo, D., et al. (2019). **Stress of brain mapping in elderly people before and after giving horticultural therapy in planting flowers.** *Indian Journal of Forensic Medicine and Toxicology* 13(4), 1622-1626. [Click for full-text.](#)

The results showed that QEEG examination showed 42.9% of the stress condition improved. It was concluded that horticultural therapy to plant flowers had a positive effect on stress levels in the elderly. Based on these conclusions, it is recommended that horticultural therapy be applied to elderly people who experience stress.

Hassan, A., et al. (2018). **Physiological and psychological effects of gardening activity in older adults.** *Geriatrics & gerontology international* 18(8), 1147-1152. [Request full-text.](#)

Our research suggests that gardening activities might enhance physiological and psychological relaxation in older adults.

WELLBEING

Sia, A., et al. (2020). **Nature-based activities improve the well-being of older adults.** *Scientific reports* 10(1), 18178. [Click for full-text.](#)

This study provides new evidence using a comprehensive set of indicators across the affective, cognitive, functional, psychosocial and physical domains, supporting current literature on the benefits of nature programs, with a novel focus on tropical environments. It provides evidence that the nature-based intervention has the potential to be translated to programs to benefit older adults in the tropics.

Lo, S. K. L., et al. (2019). **Effects of horticultural therapy: Perspectives of frail and pre-frail older nursing home residents.** *Nursing Open* 6(3), 1230-1236. [Click for full-text.](#)

The findings provide evidence of the positive effects of horticultural therapy on

perceived well-being among frail nursing home residents and expand the existing state of knowledge on the use of horticultural therapy in long-term residential care. Among others nursing implications, they are also important to develop appropriate and meaningful nursing practice to improve frail residents' perceived quality of life in the institution they now call "home."

Bassi, M., et al. (2018). **Quality of experience during horticultural activities: an experience sampling pilot study among older adults living in a nursing home.**

Geriatric nursing 39(4), 457-464. [Click for full-text](#)

Horticulture was shown to represent a well-being source for older adults, encompassing the physical, mental and social domains. Findings showed that participants' levels of the cognitive and motivational variables increased during both activities, but horticulture was also perceived as providing higher challenges and stakes, and improving self-satisfaction. Results can have practical implications for well-being promotion among older adults through meaningful activity engagement.

Lai, C. K. Y., et al. (2018). **Effects of Horticulture on Frail and Prefrail Nursing Home Residents: A Randomized Controlled Trial.** *Journal of the American Medical Directors Association* 19(8), 696-702. [Click for full-text.](#)

HT was found to be effective in promoting subjective happiness for frail and prefrail nursing home residents. Its favorable effect suggests that HT should be used to promote the psychosocial well-being of those who are frail.

RESIDENTIAL GARDENS

Freeman, S., et al. (2022). **"I see beauty, I see art, I see design, I see love." Findings from a resident-driven, co-designed gardening program in a long-term care facility.** *Health promotion and chronic disease prevention in Canada : research, policy and practice* 42(7), 288-300. [Click for full-text.](#)

Active and passive engagement in gardening activities benefitted residents with diverse abilities. This fostered opportunity for discussions, connections and increased interactions with others, which can help reduce social isolation. Gardening programs should be considered a feasible and important option that can support socialization, health and well-being.

Motealleh, P., et al. (2022). **The Impact of a Dementia-Friendly Garden Design on People With Dementia in a Residential Aged Care Facility: A Case Study.** *HERD* 15(2), 196-218. [Request full-text.](#)

The garden promoted engagement and decreased apathy of people with dementia

living in the RACF with the researcher's partial facilitation of the intervention sessions. The qualitative findings indicated the effectiveness of the garden in reducing agitation.

Ng, L., et al. (2023). **Beyond garden design: A review of outdoor occupation in hospital and residential care settings for people with dementia.** *Australian occupational therapy journal* 70(1), 97-118. [Click for full-text.](#)

Current literature shows that many occupations can be done outside and that these are beneficial for people with dementia. Despite the wide range of benefits, multiple studies reported that outdoor spaces remain under-utilised. More work is required to design spaces for occupational engagement, support access to outdoor spaces, and promote occupational participation.

Charras, K., et al. (2020). **Designing dementia-friendly gardens: A workshop for landscape architects: Innovative Practice.** *Dementia*, 19(7), 2504-2512. [Request full-text.](#)

Conception and construction of nursing homes focuses mostly on architectural design. The cost of gardens and amount of work they require is usually underestimated. This often results in inaccessible, unfit and poorly designed outdoor spaces. This article describes a partnership between three French institutions established in response to the needs of people with cognitive disabilities. This partnership led to three different approaches (scientific, pedagogical and practical) with a common objective to provide dementia-friendly outdoor spaces.

Tsai, M., et al. (2020). **"I've always lived in a place with gardens": Residents' homemaking experiences in Australian aged-care gardens.** *Health & place* 61(9510067), e102259. [Request full-text.](#)

A garden is where residents can assert ownership, agency, and recall significant memories, especially after relocation in later life. Findings suggest residents are not merely passive users of gardens, they are active creators, shaping their outdoor environment through gardening and creating meanings in their local landscape that contribute to their experience of being 'home'.

HORTICULTURAL THERAPY

Wang, M., et al. (2023). **The effect of horticultural therapy on older adults in pension institutions: a systematic review.** *Geriatric nursing* 51, 25-32. [Click for full-text.](#)

As an affordable non-pharmacological intervention with a wide range of effects, horticultural therapy is suitable for older adults in pension institutions and is worth promoting in pension institutions, communities, homes, hospitals, and other institutions that require long-term care.

Wang, Z., et al. (2022). **Horticultural therapy for general health in the older adults: A systematic review and meta-analysis.** *PloS one* 17(2), e0263598. [Click for full-text.](#)

HT may improve physical function and quality of life in older adults, reduce BMI and enhance positive mood. A suitable duration of HT may be between 60 to 120 minutes per week lasting 1.5 to 12 months. However, it remains unclear as to what constitutes an optimal recommendation.

Lin, Y., et al. (2022). **Effectiveness of horticultural therapy on physical functioning and psychological health outcomes for older adults: A systematic review and meta-analysis.** *Journal of Clinical Nursing* 31(15-16), 2087-2099. [Click for full-text.](#)

Horticultural therapy has potentially positive effects on the physical functioning and psychological health of older adults. As a safe and promising nonpharmacological intervention, healthcare professionals may consider the HT intervention when caring for older adults with cancer, dementia and frailty.

Tu, P.-C., et al. (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). [Click for full-text.](#)

We arranged four horticultural activities: Grass Doll, Kokedama, Rocky Leaf Prints, and Herb Tasting and Smelling. Twenty-seven senior citizens (60 to 76 years) were recruited to participate. Findings showed that the impact of activities involving contact with plants was more significant in short-term activities.

Gagliardi, C. et al. (2019). **The use of nature - based activities for the well-being of older people: An integrative literature review.** *Archives of gerontology and geriatrics* 83(8214379, 7ax), 315-327. [Click for full-text.](#)

The examined studies offered numerous examples of the healing power of nature for the health and well-being of older people. Occupational therapists could gain substantial insight from earlier experiences of NBA for application in their practices.

Nicholas, S. O., et al. (2019). **The Effectiveness of Horticultural Therapy on Older Adults: A Systematic Review.** *Journal of the American Medical Directors Association* 20(10), 1351.e1351-1351.e1311. [Click for full-text.](#)

There is evidence for benefits of horticulture among older adults, particularly in long-term care facilities. Nonetheless, as the robustness of evidence is lacking, more rigorous randomized controlled trials and between-group effects need to be investigated.

Im, E.-A., et al. (2018). **Developing evaluation scales for horticultural therapy.** *Complementary therapies in medicine* 37(9308777, c6k), 29-36. [Click for full-text.](#)

This study was the first to demonstrate validity and reliability by simultaneously developing four measures of horticultural therapy effectiveness, namely, physical,

cognitive, psychological-emotional, and social, both locally and externally. It is especially worthwhile in that it can be applied in common to people.

INDOOR INTERVENTIONS

Mochizuki-Kawai, H., et al. (2021). **Indoor horticultural therapy for older adults living in a nursing home: Bedside structured floral arrangement program.**

Geriatrics & gerontology international 21(6), 538-539. [Request full-text.](#)

We found improvements in QOL and depressive symptoms 5 days after the bedside structured floral arrangement therapy. Although the duration of the bedside SFA therapy was approximately 4 min, the participants enjoyed the activity and the flowers in their room for several days, which possibly induced a significant improvement in QOL and mental state

Yeo, N. L., et al. (2020). **Indoor Nature Interventions for Health and Wellbeing of Older Adults in Residential Settings: A Systematic Review.** *The Gerontologist*

60(3), e184-e199. [Click for full-text.](#)

There is inconsistent evidence that indoor nature exposures are beneficial for older care residents. We expect that successful interventions were, at least partly, facilitating social interaction, supporting feelings of autonomy/control, and promoting skill development, that is, factors not necessarily associated with nature per se. Higher-quality studies with improved reporting standards are needed to further elucidate these mechanisms.

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MEDLINE SEARCH STRATEGY

1 exp Aged/ or exp Residential Facilities/ or exp Geriatrics/ or elder*.tw. or "old* adults".tw. or "aged care".tw. or "nursing home".tw. or geriatric*.tw. 3597228

2 exp Horticulture/ or Horticultural Therapy/ or Nature/ or gardening.tw. or nature?based.tw. 3638

3 1 and 2 650

4 limit 3 to last 5 years 203

5 limit 4 to english 196

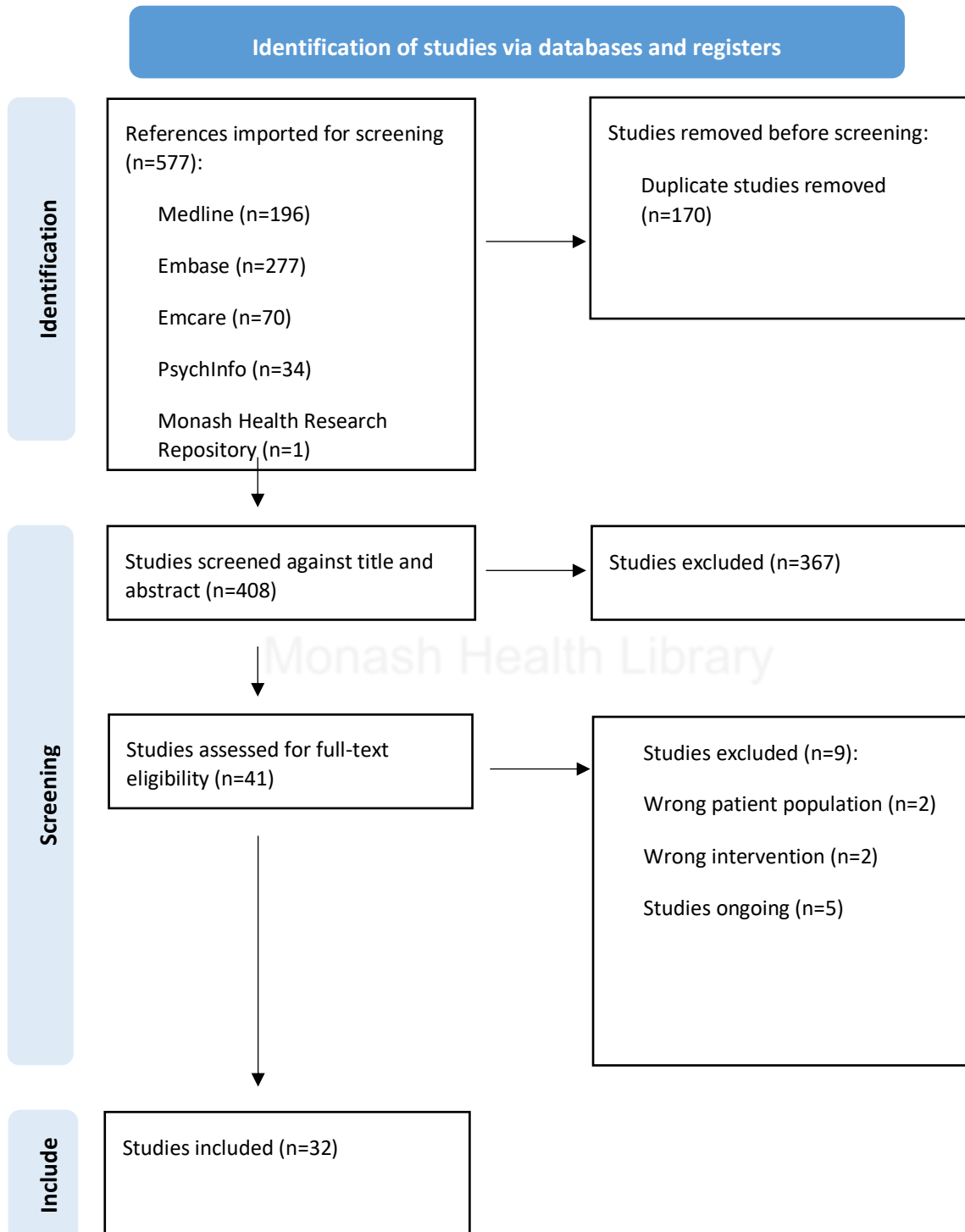
SEARCH TERMS

Concept	MeSH headings	Keywords
Concept 1	Aged, Residential Facilities, Geriatrics	Elder*, "old* adults", "aged care", "nursing home", geriatric*
Concept 2	Horticulture, Horticultural Therapy, Nature.	Gardening, nature?based

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APPENDIX

PRISMA CHART



This report contains curated literature results against a unique set of criteria at a particular point in time. Users of this service are responsible for independently appraising the quality, reliability, and applicability of the evidence cited. We strongly recommend consulting the original sources and seeking further expert advice.