

FORMULATING EVIDENCE-BASED DESIGN GUIDELINES FOR THERAPEUTIC GARDENS TAILORED TO ELDERLY POPULATIONS: A SYNTHESIS OF REMINISCENCE AND PREFERENCE STUDIES

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ABSTRACT

Gardens emerge as powerful catalysts for enhancing the well-being of the older generation. The design of a garden plays a significant role in engagement with such an environment. The investigation aimed to determine features integral to the garden for older adults to be applied as design guidelines for therapeutic gardens serving the elderly. A mixed quantitative-qualitative approach was used with a questionnaire focused on eliciting insights into the garden experiences. The respondents comprised individuals from Care Homes and Senior Activity Centres. The results revealed the importance of childhood gardens and associated memories of the elderly. Consequently, the conceptualisation of a garden tailored to the needs of older adults highlights relaxation. A garden should facilitate passive engagement with nature and active involvement in the nurturing of plant life. Botanical preferences encompass a diverse array of flora: roses, tulips, and peonies in the floral domain; tomatoes, onions, and carrots within the vegetables; and apples, pears, and plums within the realm of fruits.

Key words: ageing, care houses, elderly health, preventive medicine, therapeutic horticulture, well-being

INTRODUCTION

The ageing process and the challenges associated with it. The number of older people in the global population is growing rapidly. In 2020, one in ten people worldwide was 60 years or older, and in 2050, seventeen per cent of the world's population is projected to be older adults [United Nations 2019]. In Poland, older adults constituted 25,6% of the total population in 2020, and it is expected that they will constitute 40.4% by 2050. It is also observed that up to the age of 47, the number of men in the general population of the country exceeds the number of women, while after reaching the age of 47, the number of women exceeds the number of men. Hence, in care centres for the elderly, residents mainly comprise women, with a

low percentage of men [Statistics Poland 2021]. This rapid growth urges us to change the perception of older adults and the ageing process, as this phenomenon is inevitable, irreversible and concerns every human being [Manini 2013].

During the ageing process, people become prone to faster cognitive and physical decline. With age, the physiological indicators of the human body deteriorate, which applies, therefore, to the work of basically all the systems and organs [Harada et al. 2013]. Scientific research also indicates a high susceptibility to depression and social isolation among older people, which influences the deterioration of their well-being and health [Cooper Marcus and Sachs 2013, Heród et

al. 2022]. Researchers should concentrate more on finding solutions aimed at maintaining the good shape of older adults for as long as possible because, while in good health and well-being, they play an active role in local communities [Johnson and Mutchler 2014].

Gardens and gardening in support of the elderly.

For older people, gardening is one of the most important hobbies, a way of spending free time and often the only physical activity. It helps to maintain good health, supports the rehabilitation process, and has a positive effect on improving functions, especially memory [Soga and Gaston 2016]. Studies have shown that direct contact with plants has many health benefits for older adults. Either active involvement, such as potting up plants and watering them, or passive experiences, such as viewing a garden and listening to birdsong, may be beneficial for health and well-being and should be considered as a therapeutic process [Scott 2015]. In 2013, Hawkins et al. [2013] reported that ageing people benefit from ‘doing’ gardening because it lets them do something, is a distraction and is a form of physical activity. Moreover, they can share their expertise and produce with others, and they have a feeling of achievement. While ‘being’ in a garden allows them to be outdoors in a natural environment and provides social interactions and community involvement.

Gardens also have other features that are often underestimated. For many people, they are places of special meaning and memories [Magnussen et al. 2021]. In 1983, Ulrich [1983] hypothesised a relationship between the restorative potential of environments and the positive past experiences associated with them. Places can also evoke memories of experiences and events that occurred there and provide prompts for memories of people and things associated with the place [Reynolds 2016, Dahlkvist et al. 2020]. Memories of the past may also be linked to the creation of place meaning and place attachment. Reminiscence associates with places as part of the cognitive process of place attachment, which is generally understood as an effective bond or link between people and specific places. Place attachment constitutes a significant aspect of the human-environment relationship and a convenient form of human experience. For psychologists and sociologists, place attachment has a significant motivational potential for people to use outdoor spaces more and spend increased time in nature for

enhanced social interaction and well-being [Tsai et al. 2020]. Referring to the memory of the place, it is worth paying attention to the gardens, which, for the majority of older people, are a place of childhood memories. When designing gardens for older adults, it is worth introducing solutions and plants that they can remember from the gardens of their youth. The outdoor spaces should have the look of a domestic garden. This type of design may make older people more willing to use the gardens and, at the same time, make it easier for them to find themselves in such an environment and establish conversations with others [Cooper Marcus and Sachs 2013, Shi et al. 2019]. The design of the garden may influence the frequency and willingness to use the garden. The more home-like the surroundings, the stronger the sense of belonging and encouragement for spontaneous garden usage [Shi et al. 2019].

The design and proportions of the elements and features in the garden are also of great importance. In their review, van den Berg et al. [2020] identified outdoor area features that are important for older people in nursing home gardens, such as greenery, fauna, water, and sitting areas. The diversity of greenery, such as plants, trees and flowers, encouraged older adults to engage in gardening, explore the garden with all their senses and converse with others [Raske 2010, Bengtsson and Carlsson 2013]. Trees were viewed as essential pieces of the garden because they provided feelings of peace and being in touch with nature and an opportunity to follow seasonal changes and shade. In addition, the presence and the opportunities to interact with fauna, such as watching and listening to birds or seeing insects in the garden, were mentioned as necessary [Bengtsson and Carlsson 2013, Dahlkvist et al. 2020]. Water features in the garden were highly praised for their aesthetic and calming effects. Residents highlighted sitting as one of the most frequent uses of the garden; therefore, they expressed that there should be a variety of places to sit, the benches should be easily accessible and comfortable and should provide opportunities for seeing different views of the garden from both sunny and shaded places [Brown and Corry 2020]. Older adults very much like raised garden beds as they enable residents to view plants and flowers more efficiently, especially for those in wheelchairs [Raske 2010].

Reminiscence therapy as a method of memory training. Reminiscence therapy is based on discussing past experiences individually or in a group, often with the help of photos, music, sound recordings, or other well-known items from the past [Webster et al. 2010]. Memory-based activities can play a positive role in enhancing the life quality of people who struggle with problems of old age as well as cognitive functioning and life satisfaction. Activities in the area of reminiscence can be a substantial predictor of an older adult's ability to cope with difficulties [Lin et al. 2003]. The role of memory concerning natural environments is related to various pleasant associations, such as childhood vacation memories, playing in the garden, working with parents, and celebrating together. Multisensory environments, such as gardens or allotments, offer symbolism that may help recall memories from the past. Reminiscent interventions seem to promote well-being for healthy older people in later life mostly [Webster et al. 2010]. Older users of allotment gardens often express that being in an allotment activates adolescent memories of growing up in their neighbourhoods and that some familiar plants evoke memories of late family members [Hawkins et al. 2013]. Such positive memories can soften negative moods and have an impact on memory, improve self-esteem, and enhance social interactions [Hartig et al. 1999]. To the best of our knowledge so far, allotment gardens have been used in research on reminiscence therapy, but not gardens as such.

With advancing age, physical fitness decreases and activities that have not been a problem thus far begin to cause difficulties. It is crucial to ensure that older people can perform gardening activities that are important to them and please them. The garden is a flexible space that can be adapted in such a way that the people staying in it feel good and safe and do not have to give up their passion due to their age.

Due to the low availability of studies that consider the preferences and needs of the ageing demographic, this research has focused on the aspects of arranging therapeutic gardens and horticultural therapy sessions, intending to formulate evidence-based design guidelines for therapeutic gardens tailored to the needs of older people. To gain an in-depth understanding of the role of gardens in the lives of older people, a dedicated survey was conducted for older people living indepen-

dently within the community and those staying in nursing homes. The survey included questions about the role of the garden in the present life of older adults and their memories of gardening when they were young

MATERIAL AND METHODS

Respondents. The survey was conducted among two groups of respondents: residents of Care Homes (CH) and participants of Senior Activity Centres (SAC). CH are permanent residences intended for older adults and chronically somatically ill older adults where residents are provided with support by qualified personnel. SACs are institutions where older adults living around the area are encouraged to participate in active ageing. Inquiries about willingness to participate in the study were sent to 20 centres (10 CH and 10 SAC) located in Poland. The centres were selected for the study due to their representativeness of the population, which means they were large (from 90 to 160 persons), state-founded, located in various parts of Poland and intended for both men and women. An additional criterion was for CH to have any green area that could be used by residents while for SAC to run any plant-related or gardening workshops.

The research was conducted in centres that consented to participate in Krakow, Brzesko and Borne Sulinowo. The survey was conducted among 112 people aged 60 years and over (89 women and 23 men) – 55 people from SAC, and 57 people from CH. The majority of women participated in the research: 68% of those surveyed in CH, and almost 91% in SAC. In SAC, the largest group of respondents were people aged 60–70 (56%), while in CH, the largest group were people over 81 years of age (40%). The detailed demographic data of the respondents is shown in Table 1.

Procedure. The authors developed the questionnaire used in the study with a focus on the garden experience and a mixed quantitative-qualitative approach [Babbie 2020]. The first part of the survey asked about the present lives of older people and included three closed-ended questions about the importance of plants and gardens in the lives of older adults. The second part focused on the life history of the older adults and included five closed-ended questions about their relationship with the garden and plants in their youth. This part of the survey also included an open-ended

Table 1. Demographic characteristics of the respondents

Respondents group	Residents of Care Homes (CH)		Participants of Senior Activity Centres (SAC)	
	n	%	n	%
Gender				
Female	39	68.4	50	90.9
Male	18	31.6	5	9.1
Age (years)				
60–70	19	33.3	31	56.4
71–80	15	26.3	21	38.2
>81	23	40.4	3	5.4

question about pleasant memories related to the home garden. Respondents were interviewed individually by a therapist or assistant. The interviews lasted between 30 minutes and 1 hour and were recorded using a voice recorder. Participation was voluntary, with no incentive provided. The survey took place during the summer of 2021.

Data analysis. The study results were based on data relating to the demographic information and responses to the questionnaire. Data was screened for missing values and opportunities for further analysis. The obtained results were presented as percentages. Where possible, in closed questions, the results were subjected to statistical analysis. Quantitative analyses were conducted using Statistica 13 (StatSoft, Poland). The chi-square test was used to analyse categorical data to show the distribution of cases into different categories of variables. Analyses were performed using chi-square to a 95% confidence level. Descriptive statistics were used to describe the basic patterns of nominal data. A thematic analysis was conducted for the qualitative data. The associations between the respondents' answers were analysed within the concept maps, which allowed the categorisation of the gathered responses [Babbie 2020].

RESULTS

The meaning of plants and gardens in older adults' present life. In the first part of the survey, respondents' current perceptions of gardens were analysed

based on three closed questions. The results of the analysis are presented below.

Older adult's willingness to take care of plants and gardens. Statistical analysis showed significant relationships between the respondents' present willingness to take care of plants and gardens and the respondents and age groups. For 82% of participants of SAC, a garden is an important place, while among residents of CH, this answer was given by five times fewer respondents (16%). They also emphasised that they would like to spend time in the garden, but their health did not allow for it (51% of residents of CH). Only 4% of participants of SAC and 33% of residents of CH declared that they did not want to take care of the gardens (Fig. 1). Analyses of the results, performed independently of the respondent group, showed that the youngest seniors, aged 60–70 (70% of respondents), are most willing to take care of plants and gardens. The willingness to take care of plants and gardens decreases with age, and the reason for this is poor health (65% of respondents) as shown Figure 2.

The meaning of the garden in older adults' lives. The analysis confirmed that the garden is an essential element of the current life of older people, both among residents of CH and participants of SAC. They treat gardening as a pleasant activity (56% and 59%, respectively), and the garden is a respite for them (67% and 63% respectively). Only less than 2% of both respondent groups think that the garden constitutes a burdensome obligation. Participants of SAC consider the garden as an escape from problems more often than

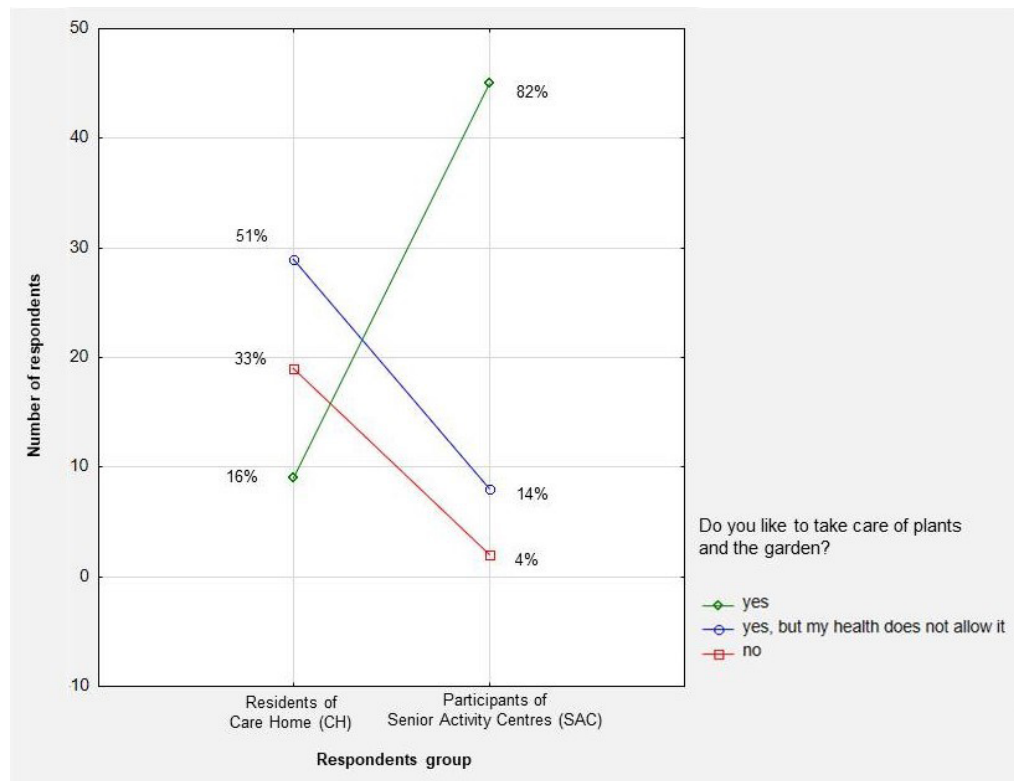


Fig. 1. Respondents' willingness to take care of plants and garden depending on the respondents' group ($\text{Chi}^2 = 49,66$, $\text{df} = 2$, $p = 0.001$)

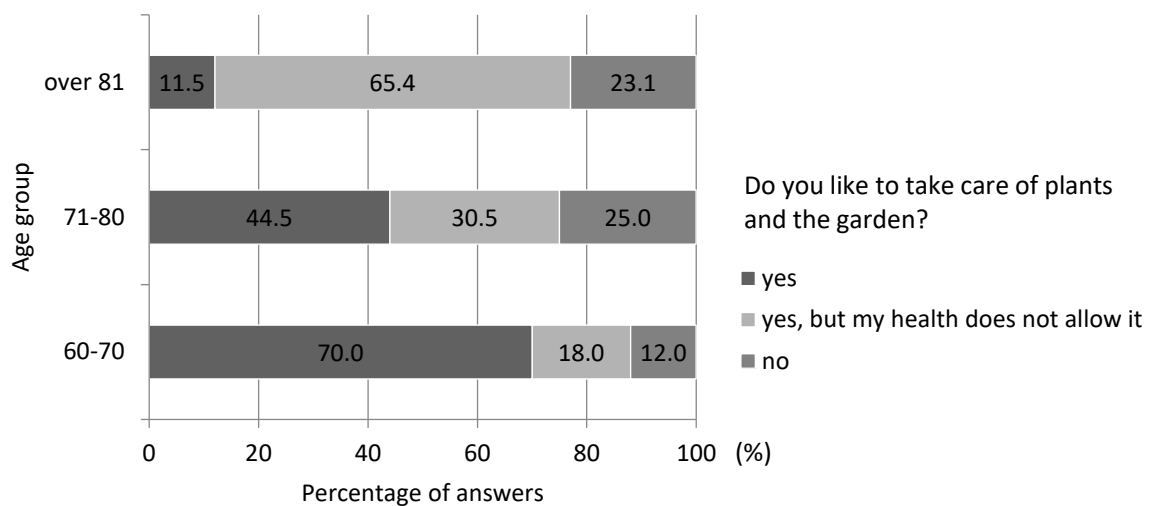


Fig. 2. Respondents' willingness to take care of plants and garden depending on age group ($\text{Chi}^2 = 19.24$, $\text{df} = 2$, $p = 0.001$)

Table 2. Comparison of meaning of the garden of different respondent groups and gender

Meaning of the garden	Respondents group*		Gender*	
	Residents of Care Homes (CH)	Participants of Senior Activity Centres (SAC)	Men	Women
	%		%	
Escape from problems	33.3	44.4	30.4	40.4
Burdensome obligation	1.8	1.9	0.0	2.2
Respite	66.7	63.0	69.6	62.9
Pleasant activity	56.1	59.3	47.8	58.4

Table 3. The most important functions of the garden of different respondent groups and gender

Function	Respondents group*		Gender*	
	Residents of Care Homes (CH)	Participants of Senior Activity Centres (SAC)	Men	Women
	%		%	
Relaxation	56.1	74.5	52.2	69.7
Fulfilment	3.5	20.0	8.7	11.2
Passion	1.8	25.5	8.7	13.5
Utilitarian	15.8	47.3	34.8	30.3
Decorative	21.1	27.3	17.4	23.6

* The analysis of responses was based on percentages calculated concerning the number of respondents (multiple-choice questions)

residents of CH, and women declare it more often than men. At the same time, gardening is more often a pleasing activity for women (Tab. 2).

The most important functions of the garden. In their present lives, older people consider relaxation to be the most essential function of the garden (56% in CH and 75% in SAC), with women indicating this more often than men. Respondents indicate decorative function two and a half times less often (21% in CH and 27% in SAC), with women more often than men. Participants of SAC indicate the importance of the utilitarian function three times more often than residents of CH (almost 50%). Women and men

consider the utilitarian function equally important. Simultaneously, participants of SAC emphasise the importance of fulfilment and passion functions of the garden six/seven times more often than residents of CH (Tab. 3).

Past relationship with plants and gardens of older adults. Most respondents who participated in the research (97.8%) had had a garden in the past, and the second part of the survey concerned memories related to it. Four closed questions were analysed (two of which were single-choice questions and were subject to statistical analysis), and one open question was subjected to thematic analysis.

Older adult’s attitudes towards gardening. Statistical analysis showed no significant difference in attitudes towards gardening between the respondent groups. Both residents of CH and participants of SAC mostly remember gardening as a pleasure (88% and 75%, respectively). The youngest respondents indicated that gardening was an obligation for them (5% in CH and 20% in SAC) as shown Table 4.

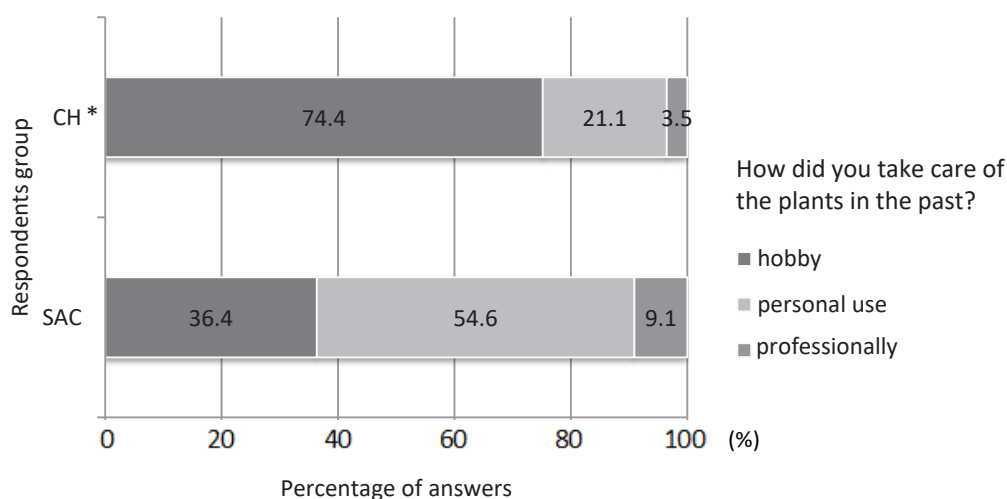
Older adults’ motivations to take care of plants and garden. Statistical analysis showed significant de-

pendencies between the responses of respondent groups regarding their motivation to take care of plants and gardens in the past. For residents of CH, gardening was a hobby (75%), and for participants of SAC, it was for personal use (55%). Residents of CH were twice as likely as participants of SAC to indicate that they had dealt with plants as a hobby in the past and twice as rare that they had dealt with plants for personal use (Fig. 3).

The most satisfying activities in the garden. When asked about the most satisfying activities in the gar-

Table 4. Attitudes towards gardening of different respondent groups and gender

Respondents group	Age group	Answer	
		pleasure %	obligation %
Residents of Care Homes (CH)	60–70	28.1	5.3
	71–80	87.7	12.3
	over 81	36.8	3.5
Participants of Senior Activity Centres (SAC)	60–70	36.4	20.0
	71–80	74.5	5.5
	over 81	5.5	0.0



*CH – Residents of Care Homes; SAC – participants of Senior Activity Centres

Fig. 3. Respondents’ motivations to take care of plants and garden depending on the respondents’ group (Chi2 = 17,37, df = 2, p = 0.001)

Table 5. The most satisfying activities in the garden of different respondent groups and gender

Activity	Respondents group*		Gender*	
	Residents of Care Homes (CH)	Participants of Senior Activity Centres (SAC)	Men	Women
	%		%	
Harvesting	59.6	69.1	47.8	66.3
Lawn mowing	29.8	16.4	26.1	20.2
Nature observation	86.0	54.5	73.9	76.4
Relaxing	70.2	56.4	65.2	60.7
Weeding	45.6	14.5	26.1	30.3
Sowing	43.9	25.5	26.1	36.0

* The analysis of responses was based on percentages calculated concerning the number of respondents (multiple-choice questions)

den in the past, residents of CH answered observation of nature (86%), while participants of SAC mentioned harvesting (69.1%). Relaxation was also a popular activity in both respondent groups (70.2% and 56.4%, respectively). Residents of CH considered lawn mowing their least favourite garden activity (29.8%), whereas those of SAC considered weeding (14.5%) (Tab. 5).

Analysing the answers according to gender, both women and men indicated observation of nature as the most satisfying activity from youth (76.4% and 73.9%, respectively). Second, women remember harvesting from their youth, and men remember relaxation (Tab. 5).

Older adults' favourite plants of their younger years. Respondents remember how many plants they grew and cared for in their youth. Among the flowers remembered from the gardens of their youth, residents of CH most often mentioned roses (*Rosa* sp., 75.4%), tulips (*Tulipa* sp., 70.2%), and peonies (*Paeonia* sp., 66.7%), while participants of SAC mentioned daffodils (*Narcissus* sp., 63.6%), roses (*Rosa* sp., 60%), and tulips (*Tulipa* sp., 60%). Sunflowers (*Helianthus* sp.) and daisies (*Bellis* sp.) were mentioned almost twice as often by residents of CH than by participants of SAC (Fig. 4A). Among the vegetables, respondents most often mentioned tomatoes (*Solanum lycopersicum*, 77.2% and 83.6%). Residents of CH also often mentioned onions (*Allium cepa*, 77.2%) and carrots (*Daucus carota*, 73.7%), while participants of SAC mentioned cucumbers (*Cucumis sativus*, 78.2%) and parsley (*Petroselinum crispum*, 78.2%) (Fig. 4B). Among the

most frequently mentioned fruits, both residents of CH and participants of SAC mentioned apples (*Malus domestica*, 72% in CH and 70% in SAC), pears (*Pyrus communis*, 62.1% in CH and 58.2% in SAC), and plums (*Prunus domestica*; 51.6% in CH and 65.5% in SAC) (Fig. 4 C).

Thematic analysis of pleasant memories connected with the home garden

Based on the answer to the open question, "What is your most pleasant memory of the garden from your childhood or youth?" a thematic analysis was conducted using a modified Babbie [2020] method. Based on the analysis, seven categories were selected describing respondents' memories of the garden from the past. Due to their nature, some responses were assigned to more than one category. The categories were the same for both groups: residents of CH and participants of SAC. A complete list of answers and their associated categories is presented in Table 6.

Memories related to the pleasure of work category were the most frequently mentioned among the answers. Most often, these were answers about the general pleasure of working in the garden without specifying any gardening activities, such as: "I really liked working in the garden". The pleasure of work category was related to the satisfaction category. Respondents mentioned feelings of contentment or reward from the work performed, such as "It was hard work, but rewarding". The satisfaction category was also related to the sharing category, as respondents mentioned that they could share their harvests with neighbours. The second

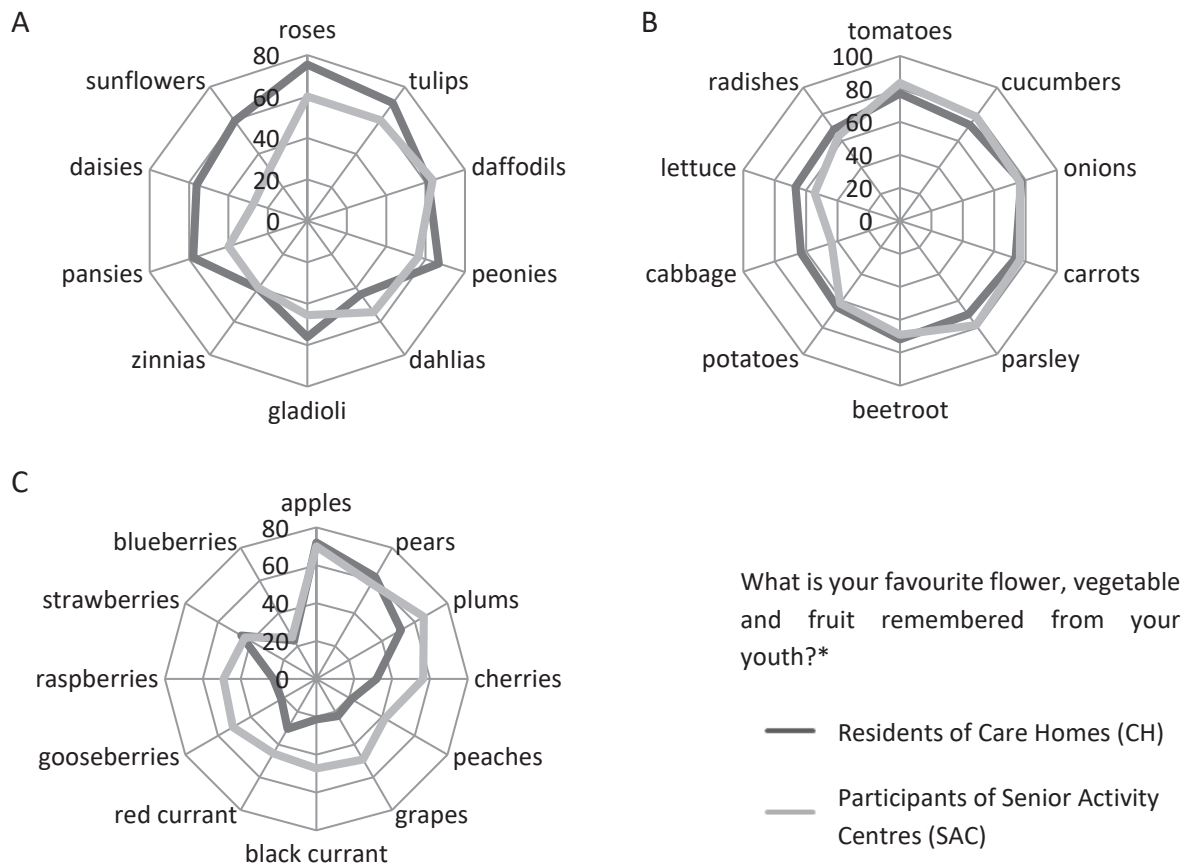


Fig. 4. Respondents' favourite flowers (A), vegetables (B) and fruits (C) remembered from their youth depending on respondents group

* The multiple-choice question included a list of the most popular plant species (flowers – 24 species; vegetables – 16 species; fruits – 15 species) and the option to provide a species from outside the list. The analysis of responses was based on percentages calculated concerning the number of respondents (multiple-choice questions)

most frequently appearing category was the family time category, which occurred in 1/3 of the responses. The memories collected in this category concerned both working together in the garden and time spent relaxing with the family. The family time category was closely related to the knowledge category as one of the respondents said: “She [my mom] taught me various tricks on how to care for flowers”. Respondents also frequently mentioned the garden as a place of pastime and relaxation. Responses related to this category accounted for more than 25% of all responses. Respondents mentioned favourite places in the garden, such as the porch or orchard, and activities, such as picnicking or

eating cherries. Answers related to the observation of nature category accounted for 1/5 of the answers and focused mainly on observing the growth of plants and the diversity of flowers. Respondents also mentioned how plants improved the decorative aspect of the garden. One person recalled: “They [the pumpkins] were so nice and decorated the garden”.

DISCUSSION

Outdoor landscapes, such as gardens, are seen by older adults as an extension of the home and a vital part of the homemaking process. Memories are the

Table 6. Categories of answers to the survey question: “What is your most pleasant memory of the garden from your childhood or youth?”

Sample quotes from respondents' answers	Categories						
	Family time	Pastime and relaxation	Knowledge	Pleasure of work	Nature observation	Sharing	Satisfaction
When the sun was shining, my parents spread a blanket in the orchard, and we had a picnic together	×	×					
We loved the garden and the time spent in it with the family	×						
I liked working in the garden with my mother. She taught me various tricks on how to care for flowers	×		×	×			
We sowed and planted flowers and vegetables together and made preserves after the harvest	×						
I really liked working in the field with my parents	×			×			
My aunt had a garden, I really liked to walk and rest in it		×					
My parents ran a garden, I liked being there. There was a porch on which I spent much time, it gave me much pleasure		×					
I remember when I was sitting on a tree and eating cherries		×					
I liked the garden because of the flowers, I really liked watering them and watching them grow				×	×		
I was glad when the pumpkins grew because they were so lovely and decorated the garden					×		
I used to go to my friend who had a garden, and I liked to see her flowers					×		
Contentment when I have weeded out the entire potato bed within 4 hours or managed to plant the beets by noon				×			×
Orchard, flowers, moving and milking cows. We had a small farm. I have been loving flowers and working on the land since I was a child				×			
There was terrible poverty, and you had to work to get enough food. It was hard work but rewarding. Because what would I live on?				×			
I had very good cucumbers and shared them with my neighbours						×	×

firm foundation of a home, and their meaningful past influences their current engagement and the homemaking process in changing life situations, e.g. moving to a nursing home or changing home to an apartment in a block of flats. Memories of the garden represent garden experiences that were important in older adults' lives and help explore various ways of connecting with the current living situation and living environment [Reynolds 2016, Tsai et al. 2020]. Older adults are a diversified social group with different needs and abilities. The research was conducted among both active older adults living independently within the community and those residing in nursing homes. The goal was to enlarge the knowledge base on the role of gardens in the lives of older adults from their perspective and to take into account the cultural specifications of Poland. Cultural inheritance is an essential factor in the design of gardens and the creation of scenarios for therapeutic activities, as previously pointed out by Cooper Marcus and Sachs [2013]. For example, some plant species may have special sacred or cultural significance, which in another country or cultural circle will be interpreted in a completely different way.

The results of our research indicate that older people have a strong bond with their childhood gardens and memories of people, plants, and important events related to them. They refer to the time spent working in the garden, which was sometimes physically difficult but brought much satisfaction. They also remember the time spent in the garden with their families. They return to these memories whilst in the garden, looking at and smelling individual plants and performing specific gardening activities. The natural environments of childhood and adolescence are associated with being rooted in the landscape and seem to help one remember one's life history and be one's person [Johansen and Gonzales 2018]. The "sentimental value" of plants evokes special meanings and stories that motivate them to be active [Tsai et al. 2020, Magnussen et al. 2021]. This strong connection with memories plays a crucial role in linking the past with present life situations. Artefacts from the past provide associations with memories of places that were an essential part of the respondent's past life and may be embodied in the present garden [Tsai et al. 2020].

Our respondents showed appropriation for the gardens, and the majority said that the garden is an es-

sential place for them. Simultaneously, it was found that with age and deteriorating health, the willingness of older adults to take care of plants and gardens decreases. Deteriorating health affects regularity and gardening methods because people are unable to perform some activities that were not difficult for them before. Also, changing the place of residence from one's own home with a garden to a care home may constitute an obstacle to the implementation of gardening due to the lack of a garden, limited access, or maladjustment of the space to the capabilities of older adults [Magnussen et al. 2021].

Our observations identified that, depending on age and health, the garden serves different functions in the lives of older adults. For most older adults at present, the most critical function of the garden is relaxation. Respondents considered the garden to be a place of relaxation that evokes a sense of peace and joy in life. It brings back memories of fun times spent there as a child, playing and spending time with their parents. Spending time in the garden for the sole purpose of relaxation and reflection evokes a sense of wonderment at the beauty of nature and a feeling of peace [Orr et al. 2016]. Hawkins [2013] also showed that both staying in the natural environment of a garden and gardening create a sense of calm and peace. Our respondents living in the care homes considered decorativeness to be an equally important function, which indicates passive use of the garden. For older people who cannot engage in gardening for various reasons, whether due to the specialisation of the care home where they live, which does not allow gardening, deteriorating health or the availability and willingness of carers to assist them, the garden still offers an outdoor space for respite and observation of the beauty and detail of nature [Orr et al. 2016]. On the other hand, our active older adults consider utilitarianism (active use of the garden) to be an equally important function. Having a domestic or allotment garden allows older people to freely use the space as they wish [Gibson et al. 2007]. Due to their better health, gardening does not constitute such a burden for them, and the awareness of their declining physical abilities allows them to prepare for old age by adapting their gardens to use them despite being less physically able [Orr et al. 2016]. Our active older adults, due to their lifestyle, also indicated escape from problems as an essential function of the garden. Leaver

and Wiseman [2016] reported that the garden is considered “very distressing” because it allows one to live in the moment, forget everyday worries, and enjoy the here and now. Being in the garden is perceived by older people as pleasant for the senses because they enjoy the smells and sounds of the garden. They emphasise that sensory involvement is a goal in itself when staying in the garden.

Our research and analyses confirmed that the garden serves various functions for older people. Therefore, when designing a garden for older adults, designers should consider elements that allow for various functionalities. Each older person should be able to choose a passive or active form of spending time in the garden. It can be achieved by resting on a bench and observing nature, taking a short walk, or growing and caring for plants. Well-designed gardens have been proven to encourage seniors to enjoy nature and actively maximise user benefits. A well-designed garden can only be achieved through careful analysis of the needs and expectations of the target user group during the planning process. The garden for older adults should have the look of a domestic garden, and the composition of the space should have a simple but interesting layout, allowing for the creation of an aesthetic placebo [Cooper Marcus and Sachs 2013]. The beauty of the place should be shaped based on theories from cognitive psychology, which suggest that physical spaces such as gardens are evaluated based on subjective relational and personal experiences [Weinstein et al. 2013]. Our research confirmed that the look of a domestic garden plays a vital role because, given that most older people remember the garden of their childhood/youth as an important place and the moments spent there as pleasant, a garden with a domestic look evokes positive emotions. Cooper Marcus and Sachs [2013] stated that the home-like look of a garden evokes a sense of familiarity and belonging in the “home away from home”. Moreover, an attractive, well-designed, and well-maintained environment reassures residents that they will be given an equally high level of attention and care. The attractive look, both indoors and outdoors, has been associated with stress reduction, patient satisfaction, and perceived quality of care [Dijkstra 2008]. Therefore, if older people feel good in a garden and find it attractive or beautiful, this may lead to an aesthetic placebo effect, which means simply a better sense of well-being

resulting from believing that a garden can heal them. What a garden looks like can influence how people feel and even how they will behave [Cooper Marcus and Sachs 2013]. Our research has shown that a garden should also offer soft fascination. It provides an opportunity for reflection, which may further enhance the benefits of recovering from directed attention fatigue. To provide the possibility of soft fascination, the garden should provide much diversity so that when a person visits it every day, they can still view it in a new way to provide the necessary conceptual shift. It must provide many elements to see, experience, and think about in order to take up a substantial portion of the available room in one’s head. The garden should also provide different sensory stimulations, such as bird-song, the smell of flowers, different textures of leaves, and the possibility of observing animals. Such natural distractions allow older people suffering from complex health problems to break away from the routine of everyday tasks and demands [Kaplan 1995]. In their research, Dahlkvist et al. [2020] reported that participants talked about the garden as an essential place that stimulates the senses and is fascinating because of seeing and smelling flowers and interacting with animals. The garden should communicate with visitors on many levels by awakening all the senses. It can be achieved by listening to running water, touching stones, tasting berries, or smelling flowers [Freeman et al. 2019]. Our study found that the decorative aspect of the garden is essential for older people looking for passive relaxation. The design of a garden for older adults should include high biodiversity, as well as plants that will encourage insects and small animals to live in the garden. Comfortable places to sit, including roofed ones, that will allow you to observe nature regardless of the weather conditions should also be designed. According to Freeman et al. [2019], the essential features of a garden are vegetation, views (from the house looking into the garden or from the garden looking outside), structures (such as a patio, greenhouse, or pond), and seating areas for relaxation. The study established that for people who want to participate in gardening actively, a place for growing vegetables should be designed, preferably in the form of raised beds. Older adults should be provided with the opportunity to perform gardening activities they enjoy, such as harvesting, and not activities they do not like, such as mowing the lawn or weeding.

This agrees with the guidelines of Cooper Marcus and Sachs [2013], who noted that therapeutic gardens intended for older people should provide a space specifically designed for gardening that will allow older people to draw on their past skills.

Plants not only symbolise past experiences but can also refer to social aspects of life, preserving memories of particularly important stories or remarkable people. Some plant species have friends and family memories associated with them, and these personal relationships make viewing them enjoyable [Dahlkvist et al. 2020, Tsai et al. 2020]. In our study, older adults indicated specific species that they remembered from the gardens of their youth. Among the flowers they mentioned were roses, tulips, daffodils, peonies, gladioli, dahlias, pansies, sunflowers, daisies, and zinnias. Crops that are important to them are vegetables, tomatoes, onions, carrots, cucumbers, parsley, beetroot, radish, potatoes, lettuce, and cabbage. Fruit plants should also be included in gardens for older adults. Our respondents most often mentioned apples, pears, plums, strawberries, cherries, peaches, gooseberries, raspberries, and grapes. Selecting plants from the past can help recreate memories of a place in the current living environment and create a sense of home, especially after moving to a care home, and may provide coherence of self-identity [Reynolds 2016].

The results of our study allowed us to deepen our understanding of experiencing gardens in the present life of older people, as well as to learn about the memories that older people have of the gardens of their youth. It allowed us to develop design guidelines for gardens intended for use by older people and during horticultural or reminiscence therapy classes.

CONCLUSIONS

Our research consistently supports the idea that gardens hold significant importance for the well-being of older individuals. When formulating designs dedicated to the elderly, it is imperative to consider that the garden must:

1. Serve multiple purposes, providing not only relaxation but also practical, decorative, fulfilling, and hobby-related functions.
2. Accommodate a wide range of activities, from active engagement for pursuing passions, problem-

solving, and achieving fulfilment – particularly important for active older adults – to passive enjoyment, appreciated more often by residents of care homes who value the decorative aspects of the space.

3. Feature plant species that older adults remember from their youth, including flowers like roses, tulips, peonies, and daffodils; vegetables like tomatoes, onions, carrots, cucumbers, and parsley; and fruits like apples, pears, and plums. This intentional inclusion aims to create a nostalgic connection, thereby enhancing the overall therapeutic impact on the elderly.

SOURCE OF FUNDING

This research was supported by the Ministry of Science and Higher Education of the Republic of Poland from subvention funds for the University of Agriculture in Krakow.

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Appendix 1

Reminiscence in horticultural therapy

Gender:

- A. women
- B. men

Age:

- A. 60–70 years
- B. 71–80 years
- C. over 81

PRESENT

Do you like to take care of plants and the garden?

- A. yes
- B. no
- C. yes, but my health does not allow it

What does garden mean to you?

- A. escape from problems
- B. burdensome obligation
- C. respite
- D. pleasant activity

What are the most essential functions of the garden for you?

- A. relaxation
- B. fulfilment
- C. passion
- D. utilitarian
- E. decorative

PAST

What was your attitude towards gardening?

- A. pleasure
- B. obligation

What was your motivation to take care of plants and gardens?

- A. hobby
- B. personal use
- C. professionally

What were the most satisfying garden activities for you?

- A. harvesting
- B. lawn moving
- C. observation of nature
- D. relaxation
- E. weeding
- F. seeding

What flowers do you remember from your youth?

- A. no garden in the past
- B. roses
- C. peonies
- D. tulips
- E. daffodils
- F. gillyflower
- G. dahlias

H. zinnias

I. mallow

J. daisies

K. phlox

L. lily of the valley

M. grape hyacinths

N. clematis

O. gladioli

P. sunflowers

Q. marigolds

R. cosmoses

S. nasturtium

T. pansies

U. chrysanthemums

V. forgot-me-nots

W. cloves

X. lilies

Y. snowdrops

Z. other answer

What vegetables do you remember from your youth?

A. no garden in the past

B. potatoes

C. beetroot

D. tomatoes

E. cucumbers

F. onions

G. carrots

H. parsley

I. cabbage

J. zucchini

K. pumpkin

L. lettuce

M. radishes

N. beans

O. pea

P. celery

Q. pepper

R. other answer

What fruits do you remember from your youth?

A. no garden in the past

B. apples

C. pears

D. plums

E. cherries

F. peaches

G. grapes

H. black currant

I. red currant

J. white currant

K. white currant

L. gooseberries

M. raspberries

N. strawberries

- O. blueberries
- P. apricot
- Q. other answer

What is your most pleasant memory of the garden from your childhood or youth?
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