

RESEARCH ARTICLE

Effects of horticultural therapy: Perspectives of frail and pre-frail older nursing home residents

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Abstract

Aim: The aim of the study was to explore the perceptions and experiences of a group of frail and/or pre-frail older nursing home residents in relation to horticultural therapy.

Method: A total of 22 frail/pre-frail residents were interviewed. A qualitative content analysis approach was adopted to interpret the data from four nursing homes.

Results: Four main themes were identified: (a) "Horticultural therapy is an enjoyable activity and a good pastime in nursing home life"; (b) "Joining the programme made me happier"; (c) "Horticultural activities facilitated socialization among the residents"; and (4) "Not much mention was made of the programme by the staff outside the sessions."

Conclusion and implication for practice: 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."

KEYWORDS

gardens, horticultural therapy, horticulture, nurses, nursing, nursing homes, older people, residential homes

1 | INTRODUCTION

The number of older people with long-term illnesses and functional disabilities requiring long-term residential care is increasing globally. Soon after moving into long-term residential care, many older residents experience loneliness as a result of losing contact with old friends and acquaintances (Perissinotto, Stijacic & Covinsky, 2012). Half of nursing home residents were found to be frail and dependent (Kojima, 2015). Frailty, a clinical syndrome where three or more of the following conditions are present: unplanned weight loss (10 lbs in the past year), self-reported exhaustion, weakness (grip strength),

slow walking speed and low physical activity (Fried et al., 2001), is described as a continuum of three stages (Lang, Michel, & Zekry, 2009; Op Het Veld, 2015), namely, *non-frail* (score 0), *pre-frail*/becoming frail (scores 1–2) and *frail* (scores 3–5). While frailty is deemed an independent predictor of worsening mobility or of disability in the activities of daily living (Fried et al., 2001), it may limit nursing home residents' participation in therapeutic activities that are often used to improve their general well-being.

Therapeutic activities, such as horticultural therapies, have been shown to have a statistically significant positive effect on health outcomes, including an increased satisfaction with life and

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improved quality of life, as well as a decrease in depression and anxiety (Soga, Gaston, & Yamaura, 2017). However, how frail older nursing home residents perceive it remains essentially missing from the literature. Voices from this segment of the population are important in order for health professionals to be better informed about the various effective approaches to promoting and understanding the subjective well-being of frail nursing home residents. Therefore, the aim of this study was to address this knowledge gap by exploring frail and institutionalized older persons' perceptions of horticultural therapy.

Horticultural therapy, which involves the use of horticultural activities to achieve specific therapeutic or rehabilitative goals "to maximize social, cognitive, physical and/or psychological functioning and/or to enhance general health and wellness" (Haller & Kramer, 2006, p. 5), has been developed and used in clinical settings for decades. One of its special features is its ease of adaptation as a therapeutic activity to meet the needs of different people (Predny & Relf, 2004). We believe that horticultural therapy could benefit older nursing home residents who are frail or becoming frail.

Barley, Robinson and Sikorshi (2012) contended that horticultural therapy could improve the mood and well-being of people with mental, physical and social problems in the community. Engaging in this rehabilitative activity generated a feeling of pleasure in patients with cancer. Several studies found that horticultural therapy helped various groups of people to manage severe stress, promoted relaxation and social interactions among individuals with mental illness and improved their life satisfaction and well-being (Kam & Siu, 2010; Parkinson, Lowe, & Vecsey, 2011; Perrins-Maralis, Rugletic, Schepis, Stepanski & Walsh, 2000; Van Den Berg & Clusters, 2011).

Horticultural therapy was also found to be effective at improving attention and depression scores among a group of clinically depressed, community-dwelling people (Gonzalez, Harting, Patil, Martinsen & Kirkevold, 2009, 2011), achieving statistically significant improvements in psychological well-being (Heliker, Chadwick, & O'Connell, 2001) and leading to better affect and prolonged engagement among people with dementia (Gigliotti, Jarrott, & Yorgason, 2004). More recently, Kamioka et al.'s (2014) systematic review concluded that horticultural therapy resulted in statistically significant improvements in mental health outcomes and behaviours of participants with dementia, severe mental illness and stroke with hemiplegia. Same, Lee, McNamara and Rosenwaz (2016) reported that gardening and related activities had a positive impact on the independence and emotional well-being of frail older adults living in the community.

Horticultural therapy enhanced the quality of life of residents (Raske, 2010), improved their self-rated health and happiness (Collins & O'Callaghan, 2008) and significantly improved their life satisfaction and social networks (Tse, 2010). However, its use among older people who are *frail and institutionalized* remains under-studied and under-reported. There is limited evidence on how this disadvantaged group views the effects of horticultural therapy.

1.1 | Aim

The aim of this study was to answer the research question: What are the perceptions and experiences of a group of frail and/or pre-frail older nursing home residents with regard to horticultural therapy?

2 | METHODS

2.1 | Context and participants

There is limited understanding of the perceived effect of horticultural therapy on frail nursing home residents. A qualitative descriptive approach (Braun & Clarke, 2006) was used in this paper to report the results of the qualitative arm of this study. The quantitative arm, which involved a randomized controlled trial examining the effects of horticultural therapy on the psychosocial well-being of frail and pre-frail nursing home residents, was published earlier (Lai et al., 2018). Qualitative approaches focus on meaning, understanding and explaining the views and experiences of individuals (Graneheim & Lundman, 2004) and thus are well-suited to explore unsophisticated reporting of common issues mentioned in the data, which matches well with the aim of this paper (Green & Thorgood, 2004).

Guided by an established protocol, a qualified horticultural therapist conducted a one-hour weekly horticultural therapy session for eight consecutive weeks, assisted by an intern. A staff member from the home also took part in the programme sessions to support the participants as needed. Each horticultural therapy group consisted of six to eight participants. The principles of horticultural therapy were reinforced to ensure consistency among the different therapy groups throughout the study. These principles included the following: (a) the plants that are used should be hardy and easy to procure in the market; (b) there should be enough flexibility in conducting the sessions to accommodate changes in the weather for the comfort and safety of the residents; (c) the plants that are used should be those that show a sense of continuity and cyclical development in the life of the plant; and (d) the level of participation of each participant should be adapted to his/her own capability and needs. During the sessions, various means were used to motivate the participants to become more engaged, including encouraging them to talk about their favourite plants, trim unhealthy parts of the plants and water the plants.

In a week after completion of the horticultural therapy programme, individual semi-structured interviews were conducted by two trained interviewers (AC & CV) to elicit the perceptions and experiences of individual participants. Both interviewers had prior experience in horticultural therapy and were interested in working with older people. They were trained to understand the unique needs of older people, such as their potential challenges are recalling memories and their limited energy to endure long interviews for the sake of yielding rich data. This was especially important, given that all of our participants had either frail or pre-frail status. The participants were interviewed for as long as they were willing to talk

and up to the point at which they felt that they shared all that they wanted to.

The interview questions were from the literature review and from the personal experiences of the researchers and of experts in the field. Examples of the questions include the following: "Will you please share with me your experience of the horticultural therapy programme that you participated in?" and "Please tell me your feelings, if any, after participating in the programme." To ensure clarity and consistency, the interview questions were pilot tested by a member of the team (xxx), along with two trained research assistants. These two research assistants conducted all the interviews in a quiet corner of the nursing home. The interviewers took a flexible approach and were careful to encourage the participants to elaborate on their accounts as fully as possible. The relative brevity of the interviews was due to the frailty and personality of the participants. Each interview lasted for only about 8–13 min, with a mean duration of 10.2 min. Chinese older people are in general not particularly keen to express their feelings and tend to be less articulate in answering questions than Westerners (Wong, 2001). It was also true in this study that some of them were quite reserved. However, their opinions were thin or weak simply because their responses were short and brief. All the interviews were audio recorded with the prior consent. All of the recorded interviews were then transcribed verbatim.

2.2 | Data collection

The study took place in four participating nursing homes run by a collaborating non-governmental organization in Hong Kong SAR. Purposeful sampling (Creswell, 2007) was employed in this study to select participants according to the following recruitment criteria: aged 70 and over, able to communicate orally in Cantonese, in a frail or pre-frail state (Fried et al.'s criteria, 2001), able to articulate their feelings, with normal or mildly impaired cognition as defined by a Chinese Abbreviated Mental Test score of 6 or greater out of 10 (Chu, Pei, Ho, & Chan, 1995), not suffering from a terminal illness or not in a deteriorating state of health and not having received horticultural therapy in the last 6 months.

All 45 participants in the horticultural therapy groups were invited to take part in an interview for this research study and 22 (48.8%) were interviewed (Table 1) face-to-face, including 8 male and 14 female participants with a mean age of 86.3. Nineteen participants were not interviewed because they were either hospitalized, refused to be interviewed or experienced some difficulties in recalling the horticultural therapy activity when approached. One had passed away. Three only spoke with the interviewers for 1 or 2 min; therefore, their data were not included in this analysis.

2.3 | Analysis

Braun and Clarke's (2006) thematic analysis approach was used because it works with an array of research questions, from those about people's perceptions and experiences, to those about people's understanding in particular contexts. The framework for analysis

TABLE 1 Characteristics of the participants (N = 22)

Gender	
Male	8 (36.4%)
Female	14 (63.6%)
Age (years)	86.3 (±7.5)
Mean years of education	3.4 (±4.9)
Mean Abbreviated Mental Test score (range 0–12)	7.7 (±1.8)
Mean Fried Frailty Index score (range 0–5)	2.7 (±0.9)
Frail group	15 (68.2%)
Pre-frail group	7 (31.8%)

consists of six phases: familiarizing oneself with the data, coding, grouping codes under higher-order headings, formulating a broad description of the topic, generating categories and subcategories and writing up the findings to tell the reader about the data (Braun & Clarke, 2006). In this study, the data were analysed manually with colour pens and paper; the patterns in the data were identified through a rigorous process of data familiarization among the members of the team.

2.3.1 | Ensuring rigour of the study

To improve the reliability of the study, each coder independently coded the data and materials in the same way as did the peer researchers. Peer checking of inter-coder reliability was ensured by the team of three (CL, SL and WL), who met periodically to engage in in-depth discussions on the data-driven coding process to identify patterns of meaning in the participants' reflections on horticultural therapy. The analysis began by breaking the text into relatively small meaning units of content and presenting them for descriptive usage (Sparke, 2005). Repetitive scanning of the data in each code and category was conducted to ensure their authenticity. Sections in the text that yielded certain themes were collated into various topic clusters. Finally, the domains that emerged were compared and integrated to complete the process of analysis and interpretation. The team considered the categories to be saturated when no new ideas emerged from the data.

Back translations of the quotations, from Chinese to English, were carried out to ensure the authenticity of the qualitative data. Four main categories were identified through the stringent cross-checking of codes, subcategories and categories, until a final consensus was reached among all members of the research team. The research team did not conduct member-checking out of consideration of the physical and mental state of the participants.

3 | ETHICAL CONSIDERATIONS

The Human Subjects Ethics Subcommittee of the university with which the authors were affiliated provided ethical clearance for this study (HSEARS20140000415005). All of the participants were recruited on

a voluntary basis and had the aim and details of programme explained to them. They were guaranteed anonymity. Only then was written informed consent obtained from each individual. Written informed proxy consent was also obtained for those identified as having mild cognitive impairment. The participants were assured that they had full rights to withdraw from the study at any time without any adverse consequence.

4 | FINDINGS

Importantly, the study focused primarily on the voices of frail older residents. The findings provide an understanding of the frail and pre-frail older participants' perceptions of horticultural therapy in this programme. The four main themes identified are as follows: (a) "Horticultural therapy is an enjoyable activity and a good pastime in the nursing home"; (b) "Joining the programme made me happier"; (c) "Horticultural activities facilitated socialization among the residents"; and (d) "Not much mention was made of the programme by the staff outside the sessions."

4.1 | Horticultural therapy is an enjoyable activity and a good pastime in nursing home

This theme was found to be the most frequently cited. At least 11 of the participants repeatedly said they enjoyed the pretty colours and shapes of the plants they encountered during the horticultural therapy sessions:

P (participant): "The most unforgettable thing about horticultural therapy? ... The plants grow well, and they are pretty."

(C2-FW-#6; a pre-frail male, aged 72, with good cognition)

P: "It is good, just watching it grow, seeing it alive and changing every day, is truly amazing; it is such a pleasant experience."

(C2-DW-#5; a pre-frail male, aged 88, with sound cognition)

The natural, fresh fragrance of some plants added to the participants' enjoyment as well. Some of the participants recalled that an especially fragrant plant, Aglaia, was used in one of the sessions and that this was enjoyable. In addition, 20 out of 22 interviewees found that horticultural therapy was fun and kept them engaged and helped to fill a boring day with purpose. Two of the participants mentioned that the activity was quite meaningful:

P: "[It] is very good because I have something to do to pass the time here...."

(C3-YS-#1; a pre-frail female, aged 83, with mild cognitive impairment)

P: "It is much better than sitting there idly... I am not as bored; with the horticultural therapy activities, it is easier to get through the day."

(C7-TW-#2; a pre-frail male, aged 85, with mild cognitive impairment)

This perception seemed stronger among those whose physical status was compromised by long-term illness. An example of this can be seen in the response of a male participant who had suffered from hemiplegia after a stroke, rendering him unable to join most of the facility-arranged activities. Recalling his recent experience with horticultural therapy, he indicated to the researcher that horticultural therapy was a good pastime:

P: "I am physically impaired ... weak on one side, you see. ... All I can do is sit here day in and day out, doing nothing. During the horticultural therapy sessions, however, I could at least do something to pass the time."

(C1-CT-#8; a pre-frail male, aged 85, cognition intact)

4.2 | Joining the programme made me happier

Thirteen of the interviewed participants revealed that they perceived the horticultural therapy programme to be an enjoyable activity and that they became happier after taking part in it. The following quotations, although brief, succinctly reflect the participants' cheerfulness as a result of joining the programme:

P: "I feel happier after joining the horticultural therapy programme ... look - I have gained weight since joining the programme - 8 lbs. You see, of course I am happier and have made more friends since then."

(C3-YS-#1; a pre-frail female, aged 83, cognitively intact)

P: "I used to be a plant killer ... but I learned new skills in the horticultural therapy sessions.... I can grow some now. I am happier and becoming more positive towards life now...."

(C5-Tk-#5; a frail male, aged 85, with intact cognition)

4.3 | Horticultural activities facilitated socialization among the residents

During the horticultural therapy sessions, arrangements were made for the frail participants to sit at a table and work together. With the facilitation of the therapist, the participants engaged in conversations on what they were viewing and/or doing. Many perceived the horticultural therapy session as a social activity,

through which they made new friends, praised each other's good work in planting and, most of all, spent some fun time together, chatting and laughing. The following quotations contributed to this theme:

P: "I got to know more friends through the horticultural therapy activities ... lots of friends...."

(C3-YS-#1; a pre-frail female, aged 83, mildly cognitively impaired)

P: "Joining the horticultural therapy activity was nice; it was fun. We chatted while working together in a group. I liked having a chance to talk with others and having something to do together."

(C6-NLH-#8; a frail male, aged 91, cognitively intact)

As noted above, frail older residents found the horticultural therapy sessions to be joyful, fun and capable of providing them a forum for chatting and socializing in a meaningful way. However, several noted that nursing staff did not actively initiate horticultural therapy-related dialogue with residents, as described below.

4.4 | Not much mention of the programme by the staff outside the sessions

To obtain a better understanding of the effects of horticultural therapy on the daily life of frail older people living in nursing homes, the research team asked the participants whether they had talked about the horticultural therapy activities with their family members, the staff of the home and other residents. Despite the fact that this weekly activity had been conducted for eight weeks, our older residents stated that very few staff members in the home spoke about the horticultural therapy activities with them or initiated conversations on horticultural therapy-related topics outside of the sessions. The participants also expressed the opinion that both the staff and their families who visited were *too busy* to engage in such conversations. Similar sentiments were echoed by many other participants:

P: "...No, they [staff] do not talk about it in our daily conversations..."

(C1-CT-#8; a pre-frail male, aged 85, with intact cognition)

P: "My family knows [about the horticultural therapy programme], but they are too busy ... The staff? Well, they have not said much about it."

(C2-KS-#2; a pre-frail, aged 88, with intact cognition)

Only one participant, whose family visited from overseas and spent a long evening with him at the home, recalled that they enjoyed and praised his "products" – the plants that he had planted and cared for during the programme.

Overall, most of the participants enjoyed the intervention programme, except for a female participant who revealed to us that she did not like it because the therapy sessions disrupted her routine, such as her bathing schedule. This concern will be discussed further in the next section.

5 | DISCUSSION

This study provided authentic data generated from the participants' point of view by giving voice to frail and pre-frail nursing home residents. As informants in a qualitative study, they are deemed an expert source of information (Morse & Field, 2002). In our study, the interviews might appear brief and some might view them as superficial or simplistic. This could be due to their relatively low education level. The participants had only received three years' education on average. They might not be as articulate as a better-educated person. Besides, having been brought up in a group-oriented culture where the emphasis is on the family and community (Wong, 2001), Chinese older people in general are not particularly keen to express their personal feelings in front of others. Therefore, their expressed opinions are of considerable significance to this vulnerable group and must not be deemed thin just because they were expressed in relatively brief interviews.

This qualitative study was among the first to explore the effects of horticultural therapy on frail older Chinese people in residential homes. The findings from international studies are not suitable for direct comparisons because of cultural differences (Wong, 2001). Lai et al. (2018) took a quantitative approach in their study and measured loneliness, life satisfaction and social networks. Raske's study (2010) was a qualitative one, but the sample consisted of a diverse group of residents, family members, staff and people in the community. The only study with which we can compare ours is that by Collins and O'Callaghan (2008). Our findings, from a different population group, echo their observations that engaging in indoor gardening brought happiness to older people in assisted living.

It appeared that in the horticultural therapy programme, the colour, texture, vibrancy and scent of the plants was a source of enjoyment to the participants that was not readily available in their institutionalized life. More importantly, horticultural therapy gave many of them something to do to pass the time in a place where nothing much was happening. To a certain extent, the participants valued therapeutic activities that could purposefully engage them. They felt useful and had something to look forward to. This was particularly true for those frail older residents who were physically challenged, because their choice of activities in the home might have been significantly limited due to their health status.

The findings of the study suggest that most of the frail/pre-frail nursing home residents experienced happiness and enjoyment from participating in the horticultural programme. They expressed that the programme provided them not only with a certain degree of leisure, but also a *meaningful use of time* in the home. These perceptions of beneficial effects to the participants should inform healthcare practitioners

and policymakers of the importance of the personal preferences and values that older people may attach to their daily activities when implementing interventions for this particular group who are frail.

In many developed regions, the number of older people living in nursing homes is increasing as the population ages. Nursing homes are at the heart of the long-term care continuum (Morley, 2010). As such, interventions must be developed to promote quality care for nursing home residents and to maintain their physical and cognitive functions. Tolson, Rolland, and Andrieu (2011) stated that meaningful activities, such as physical and mental exercises, could enhance the quality of life of nursing home residents. In the same vein, horticultural therapy, found in this study to have engaged the participants physically and mentally by giving purpose and meaning to their lives, should be used more widely in local communities.

One of the residents stated that she disliked the programme because it clashed with her other routines. Although here was an isolated case, her opinion should not be taken lightly, but rather should remind healthcare providers of the need for person-centred care. The re-engineering of tasks could be relevant to identifying solutions for rearrangement of residents' daily activities.

5.1 | Limitations

One limitation of this study is that the sample was restricted to participants from only four homes run by the same NGO. This may affect the transferability of the study's findings to other residential care settings. However, this study provides unique insights into how older people who were frail and institutionalized perceived horticultural therapy. The results would be of value to complement the gap in the existing literature and could be used in future research for global comparisons of how horticultural therapy can be used to maintain or improve the health and perceived well-being of frail older nursing home residents.

5.2 | Conclusion and implications for practice

The findings showed positive influences and expanded the existing state of knowledge on the use of horticultural therapy in long-term residential care. They are also of importance in enabling healthcare providers to develop appropriate and meaningful nursing practice to improve frail residents' perceived quality of life in the institution they now call "home."

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CONFLICT OF INTEREST

The authors declare no conflicts of interest.

AUTHOR CONTRIBUTIONS

CL and JL: Study design. CL, SL, MT, RK and WL: Data collection and analysis. CL, SL and WL: Manuscript writing. CL, SL, MT, JL, RK and WL: Critical review of the manuscript.

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