

RESEARCH NOTE

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Facilitating positive emotions in people with challenges by combining conventional occupational training and a novel farming program: a feasibility study

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Abstract

Objective Japan has a system of occupational therapy programs known as self-reliance training (training for daily living), which helps people with various disabilities lead more meaningful lives. Recently, it has been shown that green care farms are beneficial for dementia care and that agricultural and horticultural work has a positive impact on people with intellectual disabilities and mental disorders. This study examined the health-improving effects of farm activities and developed an attractive program for adolescents with developmental and intellectual disabilities who use independent training facilities. The program comprised agricultural and horticultural activities such as vegetable cultivation and management, flower planting, and flower arrangement.

Results No significant differences were observed in any of the measures for positive mood before and after the usual program (UP). However, anger-hostility and depression-dejection improved significantly after the farm program (FP) ($p < .05$). Self-efficacy improved significantly after both UP and FP ($p < .10$). Free responses were obtained from UP (131 responses) and FP (126 responses) participants; thematic analysis of FP participants' statements revealed that positive comments included "confidence in accomplishing tasks," "anticipation and joy of growing plants," and "motivation for gardening activities."

Keywords Occupational therapy, Developmental disabilities, Autism spectrum disorders, Thematic analysis

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Introduction

The “Convention on the Rights of Persons with Disabilities” was concluded in Japan in 2014; following this, efforts were made to introduce an inclusive education system. Additionally, in the area of employment, the agreement prohibited discrimination against persons with disabilities and encouraged inclusion of persons with mental disabilities in the calculation of the statutory employment ratio of persons with disabilities [1]. Thus, Japanese society aims to include people with disabilities in the community; this requires developing various programs to increase their opportunities to lead meaningful lives in the community [2].

Japan has a system of occupational therapy programs to train people with various disabilities to improve their daily living skills. This system is known as “self-reliance training (training for daily living)” and is provided at welfare facilities; the number of its users has increased to approximately 12,500 and continues to grow [3].

However, the occupational training program in the community is still in its early stages. In independent training settings, many sessions have been conducted for adolescents with developmental and intellectual disabilities to provide them with knowledge and opportunities to discuss communication with others (namely, the usual program: UP).

However, from the clinical occupational therapy perspective, a conventional program may not be attractive for people with developmental and intellectual disabilities. A promising complementary method involves earth-based activities, such as care farms, that offer a more holistic approach. In recent years, it has become clear that green care farms are beneficial for dementia care [4] and that agricultural and horticultural work has health-improving effects for people with intellectual disabilities and mental disorders [5].

In Japan, efforts to employ people with disabilities in agricultural settings began in 2006, and the phrase “Relationship between Agriculture and Welfare” was coined in 2016. As of 2023, 7,179 businesses (farmers, companies, welfare offices, and so on) are involved in the partnership between agriculture and welfare, and policies have been implemented to increase this number in the future [6]. Such a scenario makes it essential to verify the effectiveness of agricultural and horticultural activities for people with disabilities.

Therefore, the authors focused on the health-improving effects of farms and developed an attractive program for adolescents with developmental and intellectual disabilities who use independent training facilities. This program constituted agricultural and horticultural activities, such as vegetable cultivation and management, flower planting, and flower arrangement (farm program: FP) (Fig. 1).

Following its development, the authors verified the program’s feasibility.

Main text

Methods

This study was conducted over 12 weeks from May to August 2022 at Site A in the Hyogo Prefecture. It included seven participants with an average age of 23.7 ± 3.2 years; there were six participants with developmental disabilities and one with an intellectual disability. The six participants were diagnosed with autism spectrum disorder, with full-scale Intelligence Quotients ranging from 65 to 86, and all were independent in daily living. Concerning the intervention, the participants attended the UP conducted by the facility staff at Site A five times a week: Monday to Friday in two time slots (10:00 to 12:00 and 13:00 to 15:00). The content of the UP was different in each session and included group work, watching movies, and lectures on general education. In this study, the UP for Monday was replaced by the FP, and the UP for Thursday was used for comparison. In other words, the UP and FP that formed the subject of our evaluation were conducted once a week for 12 weeks.

Before and after the UP and FP sessions, participants were assessed using the Profile of Mood States-2 (POMS2) for positive mood and the General Self-Efficacy Scale (GSES) for self-efficacy. The POMS2 can subjectively assess human emotions, including mood, feelings, and emotions, and has been used to assess agricultural and horticultural activities [7]. The GSES is also used in Japan, mainly in the field of cognitive-behavioral therapy, and can measure the degree of self-efficacy of adolescents [8]. Both of these measures were used because they are simple and minimally invasive. These results were analyzed using the Wilcoxon signed-rank sum test.

After each session, participants were asked to provide their impressions in an open-ended format; to verify the effectiveness of FP, the obtained impressions were categorized as positive or negative, and the top three responses were excerpted for analysis.

This study was approved by the Kobe Gakuin University Ethics Committee (SEB23-10). Written and verbal informed consent was obtained from all participants. No participant was injured during the study period, and the sessions were conducted safely.

Results

The average participation rate for both the UP and FP was 88%, as a few participants were absent. In terms of positive mood, there were no significant differences on either scale before and after the UP sessions (Table 1). However, anger-hostility and depression-dejection improved significantly after the FP sessions ($p < .05$). Self-efficacy



Fig. 1 Participants engaged in the farm program

improved significantly after both UP and FP sessions ($p < .10$) (Table 1).

Free responses were obtained from all seven participants, totaling 131 responses for the UP and 126 for the FP (Table 2). Sentence-by-sentence thematic analysis of the FP revealed that positive comments included “confidence in accomplishing tasks,” “anticipation and happiness regarding growing plants,” and “willingness to engage in horticultural activities.” Conversely, negative comments included “difficulty regarding not having the right answer (such as flower arrangement),” “natural conditions such as heat and insects,” and “resistance to the work involved.” These show the necessity of providing examples when conducting the FP and explaining the procedures in an easy-to-understand manner.

Discussion

The contribution of horticultural activities to human health has been reported in numerous studies. In a meta-analysis comparing the impact of horticultural activity on participation and non-participation groups, depression and anxiety were reduced and a sense of community was improved in the participation group [9]. In the present

study, replacing a portion of the UP with the FP improved participants’ positive mood (Table 1), indicating that the latter may foster pleasant feelings that are not evoked by the UP (Table 2). In addition, horticultural therapy with adolescents in juvenile detention centers helped them improve their social skills, explore career avenues, and enhance emotional stability [10]. In the present study, self-efficacy improved after the implementation of both the UP and FP, but the values were greater for the FP; this suggests that horticultural activities helped the participants to acquire roles, which in turn led to self-confidence. Additionally, the participation rate remained the same between the UP and FP, indicating that the program was highly feasible. In the future, we intend to establish a control group and present stronger evidence to support the current findings and promote widespread adoption of the program.

Our results have important policy implications. The Japanese Association of Occupational Therapists reported that out of 50,137 occupational therapists currently working, 73.2% work in medical facilities, 16.8% in geriatric facilities, and 3.0% in professional occupational therapy training schools [11]. This indicates that over

Table 1 Psychological assessment of the UP and FP participants

	UP				FP				P
	N	Pre M	SD	Post M	N	Pre M	SD	Post M	
Total Mood Disturbance	7	28.1	24.6	26.4	7	27.5	23.0	20.1	0.15
Anger-Hostility	7	0.4	0.7	0.3	7	0.4	0.5	0.2	0.04 *
Confusion-Bewilderment	7	0.7	1.0	0.6	7	0.7	1.0	0.3	0.09 †
Depression-Dejection	7	0.5	0.8	0.3	7	0.5	0.7	0.1	0.04 *
Fatigue-Inertia	7	0.8	1.0	0.9	7	0.8	1.1	0.5	0.93
Tension-Anxiety	7	0.7	1.1	0.6	7	0.6	1.0	0.3	0.31
Vigor-Activity	7	1.6	1.8	1.7	7	1.7	1.9	1.9	0.42
Friendliness	7	2.2	1.5	2.2	7	2.3	1.6	2.3	0.67
Self-Efficacy	7	7.3	5.0	7.9	7	7.3	5.0	8.5	0.03 *

Note: p<.10†, p<.05*, p<.01**, p<.001***

UP: usual program; FP: farm program

90% of occupational therapists work outside the community. To address the need for more integrative, complementary, and alternative occupational therapy in the community, we suggest reallocating occupational therapy resources from specialized facilities to the community.

Limitations

This study could have obtained clearer results if all the UPs at the facility could have been replaced with FPs; however, the practical demands of the facility prohibited this. The replacement of a portion of the UP instead of the entire program is a limitation of this study.

Table 2 Free descriptions after the FP

Classification by Thematic Analysis	No. of responses	Percentage of responses (%)
Confidence in accomplishing tasks	21	26.6
Anticipation and happiness regarding plant growth	20	25.3
Willingness to engage in horticultural activities	14	17.7
Total positive opinions	79	
Difficulty regarding not having the right answer (e.g., flower arrangement)	4	26.6
Natural conditions such as heat and insects	4	26.6
Resistance to the work involved	2	13.3
Total negative opinions	15	

Abbreviations

FP Farm program
UP Usual program

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Author contributions

H.K., T.O. and U.C. wrote the main manuscript text and N.H., Y.K. prepared Sheet 1. All authors reviewed the manuscript.

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Data availability

The datasets generated and/or analyzed during the current study are not publicly available due to privacy reasons, but are available from the corresponding author on reasonable request.

Declarations**Ethics approval and consent to participate**

This study was approved by the Kobe Gakuin University Ethics Committee (SEB23-10). Written and verbal informed consent was obtained from all participants.

Consent for publication

Not applicable.

Competing interests

The authors declare no competing interests.

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