



Assessment of the psychopathological effects of a horticultural therapy program in patients with schizophrenia

Yun-Ah Oh^a, Sin-Ae Park^{a,b,*}, Byung-Eun Ahn^c

^a Department of Horticultural Therapy, Graduate School of Agriculture and Animal Science, Konkuk University, Seoul 05029, South Korea

^b Department of Environmental Health Science, Sanghuh College of Life Science, Konkuk University, Seoul 05029, South Korea

^c Happy Our Town Mental Health Clinic, Suwon, 16565, South Korea



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ABSTRACT

Objectives: This study assessed the psychopathological effects of participation in a 10-session horticultural therapy program in patients with schizophrenia.

Design: The study design was pre and post test design of experimental and control groups.

Setting: Twenty-eight Korean patients with schizophrenia, recruited from a mental health clinic and two mental health rehabilitation centers in Suwon, South Korea, were voluntarily assigned to either a control group (average age: 33.4 ± 9.4 years) or a horticultural therapy group (average age: 42.1 ± 13.0 years).

Interventions: The participants in the horticultural therapy group participated in a 10-session horticultural therapy program designed around various plant cultivating activities. The horticultural therapy program involved sessions once a week from April 2017 to June 2017.

Main outcome measures: A psychiatrist evaluated the psychopathological symptoms of schizophrenic patients in both groups. To assess the clinical psychopathological effects, the Korean version of the Positive and Negative Syndrome Scale (PANSS) and Brief Psychiatric Rating Scale (BPRS) were used.

Results: The horticultural therapy group significantly improved in terms of positive, negative, and general symptoms on the PANSS after the 10-session horticultural therapy program. Moreover, the horticultural therapy group significantly improved in terms of clinical symptoms of schizophrenia in BPRS after the 10-session horticultural therapy program. However, there was no change in the PANSS and BPRS scores in the control group.

Conclusions: This study showed the potential of horticultural therapy in improving psychopathological symptoms in psychiatric patients. Future studies should investigate the effects of long-term horticultural therapy program on the chronic symptoms of patients with schizophrenia.

1. Introduction

Schizophrenia is a severe psychiatric disorder that leads to chronic symptoms.^{1,2} The positive and negative symptoms of schizophrenic patients induce thinking disorder, blunted affect, attention or memory problems, due to distortion of reality.³ Consequently, patients with schizophrenia lack coping skills, and have social and occupational functioning failings,⁴ resulting in a low level of quality of life.⁵

Although pharmacological treatment has been used to stabilize mental disease symptoms, a combination of pharmacological and non-pharmacological treatments are considered more effective for the treatment of the chronic symptoms of schizophrenia.⁶ It is important that patients with schizophrenia adapt to the community and that relapse is prevented; therefore, various rehabilitation training programs, such as horticultural therapy, music therapy, dance therapy, art

therapy, physical therapy have been applied to improve daily living abilities and social skills.^{7,8}

The therapeutic use of horticulture has been documented as far back as ancient Egypt, when court physicians instructed royalty to walk among the palace gardens as a prescription for mental illness.⁹ The use of horticulture gradually came to be recognized as an acceptable form of therapy for use in mental health institutions by the late 1700s and early 1800s, in the United States and Europe^{10–12} and by the 1980s, in South Korea.¹³

Horticultural therapy is defined as a complementary and alternative treatment that is provided by trained professionals, and involves horticultural activities in a pre-designed intervention with therapeutic goals and objectives for improving or recovering health. A recent review article about horticultural activity interventions reported that most previous related studies focused on the psychological or emotional

* Corresponding author at: 225 Building of Life and Environmental Science, 120 Neungdong-ro, Gwangjin-gu, Seoul 05029, South Korea.
E-mail address: sapark42@konkuk.ac.kr (S.-A. Park).

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effects of horticultural intervention.¹⁴ In particular, this horticultural intervention led to improved self-esteem and emotional intelligence, and reduced stress and depression.¹⁵

A previous study reported that a 16-session horticultural therapy program improved self-efficacy and reduced psychiatric symptoms in patients with schizophrenia.¹⁶ Cho et al.¹⁷ reported that a 24-session horticultural therapy program improved psychopathological symptom, assertiveness, and interpersonal relationships in patients with schizophrenia. Song and Sim¹⁸ also showed a significant improvement in psychopathologic symptoms of patients with schizophrenia after a 10-session horticultural therapy program. Parvin et al.¹⁹ showed that a 3-month horticultural therapy program significantly improved both positive and negative symptoms in these patients.

However, few studies have assessed the psychopathological effects of a horticultural therapy program on patients with schizophrenia. Therefore, the objective of this study was to assess the psychopathological effects of participation in a 10-session horticultural therapy program, designed around plant cultivating activities, in patients with schizophrenia.

2. Materials & methods

2.1. Research subjects

A total of 28 Korean patients with schizophrenia participated in this study. To recruit patients with schizophrenia, a flyer containing the information about the study objective, horticultural therapy program, and health measures was distributed at a mental health clinic and two mental health rehabilitation centers in Suwon, South Korea. A consent form for each patient was obtained from the patients and a person in charge of the facilities before starting the study. All of the participants were adult patients and they had no problems in expressing their opinions. The primary care physician diagnosed that all patients had no problem in their decision making. A questionnaire about demographic information, such as age, sex, number of hospitalizations, and other comorbid mental diseases, was administered to the participants in an orientation session. The 28 participants were voluntarily assigned to either the control group or the horticultural therapy group. The average age of patients in the horticultural therapy group was 42.1 ± 13.0 years, and of those in the control group was 33.4 ± 9.4 years (Table 1). There were more men in the horticultural therapy group than in the control group, as male schizophrenic patients were more interested in participating in the horticultural therapy

Table 1
Demographic characteristics of participants.

Variable	Horticultural therapy group (n = 15)	Control group (n = 13)	Significance
Average (SD)			
Age	42.1 (13.0)	33.4 (9.4)	NS (0.057)
Percent (N)			
Sex			** (0.006)
Male	93.3 (14)	46.2 (6)	
Female	6.7 (1)	53.8 (7)	
Number of hospitalization			
None	20.0 (3)	30.8(4)	NS (0.497)
1 – 2	53.3 (8)	38.5(5)	
3 – 5	26.7 (4)	15.4(2)	
5 – 10	0.0 (0)	7.7(1)	
Over 10	0.0 (0)	7.7(1)	
Other mental diseases			
None	60.0 (9)	61.5 (8)	NS (0.724)
Depression disorder	20.0 (3)	15.4 (2)	
Anxiety disorder	0.0 (0)	7.7 (1)	
Others	20.0 (3)	15.4 (2)	

Table 2
A 10-session horticultural therapy program for patients with schizophrenia, designed around plant cultivating activities.

Session	Horticultural activities	Horticultural crops
1	Making vegetable garden plot, fertilizing, planting	Potato (<i>Solanum tuberosum</i>) Lettuce (<i>Lactuca sativa</i> , <i>Cidohorium intybus</i>)
2	Hydroponics	Tiny ardisia (<i>Ardisia pusilla</i>)
3	Mulching, planting	Herbs (<i>Mentha</i> species, <i>Anethum graveolens</i> , <i>Matricaria chamomilla</i>) Eggplants (<i>Solanum melongena</i>) Oriental melon (<i>Cucumis melo</i> var. <i>makuwa</i>)
4	Mulching, planting, harvesting	Tomato (<i>Lycopersicon esculentum</i> , <i>Lycopersicon esculentum</i> Mill) Pepper (<i>Staphylea bumalda</i>) Lettuce (<i>Lactuca sativa</i> , <i>Cidohorium intybus</i>)
5	Setting up plant stakes, weeding, harvesting	Tomato (<i>Lycopersicon esculentum</i> , <i>Lycopersicon esculentum</i> Mill) Pepper (<i>Staphylea bumalda</i>) Eggplant (<i>Solanum melongena</i>) Lettuce (<i>Lactuca sativa</i> , <i>Cidohorium intybus</i>)
6	Planting, harvesting	Sweet potato (<i>Ipomoea batatas</i>) Lettuce (<i>Lactuca sativa</i> , <i>Cidohorium intybus</i>)
7	Suckering, weeding, harvesting, packing	Tomato (<i>Lycopersicon esculentum</i> , <i>Lycopersicon esculentum</i> Mill) Pepper (<i>Staphylea bumalda</i>) Eggplant (<i>Solanum melongena</i>) Lettuce (<i>Lactuca sativa</i> , <i>Cidohorium intybus</i>)
8	Suckering, covering up crops with soil, eco-friendly pest control	Tomato (<i>Lycopersicon esculentum</i> , <i>Lycopersicon esculentum</i> Mill) Pepper (<i>Staphylea bumalda</i>) Eggplant (<i>Solanum melongena</i>) Potato (<i>Solanum tuberosum</i>)
9	Harvesting, weeding, making tea	Herbs (<i>Mentha</i> species) Lettuce (<i>Lactuca sativa</i> , <i>Cidohorium intybus</i>)
10	Harvesting, farm party	Potato (<i>Solanum tuberosum</i>)

program than female schizophrenic patients in this study. The participants in the control and horticultural therapy program groups take medication such as aripiprazole which is common medication for schizophrenia patients. The patients did not change the medication during the study period. All patients in the both groups are chronic patient taking the medication for 3 years or more. The participants in both groups participated in leisure activities such as discussion class with various topics or exercise program such as stretching or ball game depending on their preference.

2.2. Horticultural therapy program

A 10-session horticultural therapy program was designed around various plant cultivating activities, such as making plant beds, planting transplants, watering, weeding, fertilizing, and harvesting (Table 2). Seasonal plants, such as potato (*Solanum tuberosum*), lettuce (*Lactuca sativa*, *Cidohorium intybus*), tomato (*Lycopersicon esculentum*, *Lycopersicon esculentum* Mill), pepper (*Staphylea bumalda*), eggplant (*Solanum melongena*), sweet potato (*Ipomoea batatas*), oriental melon (*Cucumis melo* var. *makuwa*), and herbs (*Mentha* species, *Anethum graveolens*, *Matricaria chamomilla*) were chosen for the horticultural therapy program. A 991.7 m² garden plot on a farm located in Suwon, South Korea, was used for this study. The garden plot was divided into eight sections according to the type of crop, and all participants cultivated it together. The horticultural therapy program was managed from

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