

The Effectiveness of Horticultural Occupational Therapy to Improve The Quality of Life in Schizophrenic Patients

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Abstract

Schizophrenia is the most common mental disorder and is a serious problem in the world. Therapies that use natural systems such as horticultural occupational therapy, have been carried out in the implementation of mental health for centuries. However, in Indonesia, there is no scientific study of its effect on the quality of life (QOL) of those suffering from this illness. The research objective was to determine the effect of horticultural occupational therapy on improving the quality of life in schizophrenic patients at Muhammad Sani Hospital, Karimun district. The research was a quasi-experiment with two group pre-post tests. A total of 28 respondents were selected using the convenience sampling technique, then divided into intervention and control groups. Quality of life values was measured with WHOQOL-BREF, while the bivariate analysis used paired and independent t-tests. The result was a significant difference in the value within the intervention group at $p = 0.000$ ($p < 0.05$), but there was none in the control at $p = 0.189$ ($p > 0.05$). For the independent t-test analysis, p-value physical and social domains were 0.001 ($p < 0.05$) and 0.000 ($p < 0.05$) respectively. This means that there was a significant difference in QOL in the two domains. Conclusion. Horticultural occupational therapy was effective in improving the quality of life in the patients, therefore, it becomes important to apply the results.

Keywords: Horticultural occupational therapy, life quality, schizophrenia.

Abstrak

Skizofrenia merupakan gangguan jiwa yang paling banyak ditemukan dan menjadi masalah yang serius di dunia. Terapi aktivitas yang menggunakan sistem alami seperti *horticultural* telah dilakukan dalam implementasi kesehatan mental selama berabad-abad lampau di dunia dan di Indonesia. Namun di Indonesia belum pernah ada yang mengkaji secara ilmiah pengaruhnya terhadap kualitas hidup pasien skizofrenia. Tujuan penelitian mengetahui pengaruh *horticultural occupational therapy* terhadap peningkatan kualitas hidup pasien skizofrenia di RSUD Muhammad Sani kabupaten Karimun. Metode penelitian *quasi eksperiment* dengan *two group pre-post test*. Sampel diambil dengan teknik *convenience sampling* sebanyak 28 responden, dibagi menjadi kelompok intervensi dan kontrol. Pengukuran nilai kualitas hidup menggunakan WHOQOL-BREF. Analisis bivariat menggunakan uji *paired t-test* dan *independent t-test*. Hasil. Perbedaan signifikan nilai kualitas hidup secara umum *pre-post test horticultural occupational therapy* pada kelompok intervensi p value 0.000 ($p < 0.05$), kelompok kontrol p value 0.189 ($p > 0.05$) tidak signifikan. Analisis *independent t-test* p value domain fisik 0.001 ($p < 0.05$) dan domain sosial 0.000 ($p < 0.05$), artinya terdapat perbedaan QOL yang signifikan pada kedua domain tersebut. **Simpulan.** *Horticultural occupational therapy* efektif meningkatkan kualitas hidup pasien skizofrenia. Menjadi penting untuk mengaplikasikan hasil penelitian ini.

Kata kunci : Horticultural occupational therapy, kualitas hidup, Skizofrenia.

Introduction

Quality of life has to do with the satisfaction of various aspects, meaning the general well-being of individuals and societies, which is multidimensional by combining physical, cognitive, emotional, and social concepts (Preedy & Watson, 2010). Good life quality is challenging to obtain for someone with schizophrenia, because the sufferer experiences distress, including decreased productivity and life quality (Tomotake, 2011). Schizophrenia is the most common mental disorder and is a critical problem globally. Based on data from the American Psychiatric Association, it is estimated that the number of people with schizophrenia is 0.7% of the adult population in the world (Association, 2020). In addition, Indonesian Basic Health Research 2018 reported that the number of serious mental disorders in Indonesia reached 7% (Idaiani et al., 2019). The sufferers are a burden to the state, their social life and families are also affected (Chang et al., 2011). Schizophrenia is characterized by multiple causes (Harvey & Strassnig, 2012), while the signs and symptoms consist of positive, negative, and cognitive dysfunction (Owen et al., 2016).

The treatment of cognitive dysfunction in schizophrenia is divided into two types. First, pharmacological therapy involves the use of various types of drugs (Yang & Tsai, 2017). Second, the non-pharmacological, which have been developed in several forms, including Individualized Occupational Therapy (Shimada et al., 2016). Note that horticultural therapy is a subgroup of the occupational (Detweiler et al., 2015). It is an active or passive process, using plants and gardens for rehabilitation, positively affecting individual health which leads to increased mood, self-esteem, and social interactions (Kilonzi et al., 2019). The combination of pharmacological and non-pharmacological treatments is considered to be more effective for the management of schizophrenia.

The general objective of this research was to evaluate horticultural occupational therapy interventions on improving the life quality of schizophrenic patients at Muhammad Sani Hospital, Karimun district. While, the specific objectives were to determine (1) the value of QOL pre-post test of the therapy for intervention group, and (2) the control, (3) differences in the value after horticultural occupational therapy is given to both groups. Hypothesis: Horticultural occupational therapy is effective for improving the life quality of schizophrenic patients.

Method

The research design was a quasi-experiment with two group pre-post tests. A total of 28 respondents were selected using the convenience sampling technique, and then divided equally as 14 each into the intervention and control groups. The intervention group was given horticultural occupational therapy, but the control was not. The respondents were poly-psychiatric patients at Muhammad Sani Hospital, Karimun Regency. Inclusion criteria were (a) > 18 years of age, (b) a stable schizophrenic patient with a Brief Psychiatric Rating Scale (BPRS) value ≤ 40 according to recommendations, and (c) willing to be a respondent. The exclusions were (a) disability, (b) having a comorbid diagnosis such as mental retardation, epilepsy, and organic mental disorders, (c) uncooperative, and (d) whether the patient relapsed during the intervention process. Horticultural occupational therapy that has been carried out was with gardening activities, namely planting fast-harvesting vegetables such as kale, spinach and mustard greens in polybags. This therapy is carried out for 8 sessions using standard operating procedures that have been tested by experts and guided by researchers.

The quality of life value instrument used the Indonesian version of WHOQOL-BREF which was valid ($r = 0.80-0.95$) and reliable ($R = 0.66-0.87$), consisting of 26 questions with a Linkert scale of 1-5 (1 = very bad, 2 = bad, 3 = fair, 4 = good, 5 = very good). The respondent characteristics consisted of 7 questions on age, gender, job, education, marital status, onset, compliance with treatment, and taking medication. A recommendation letter was obtained from the Ethics Committee of Padjadjaran University on February 7, 2020 number 177/UN6.KEP/EC/2020. Afterwards, explanations about the research were provided to the respondents, filling out their consent, and data was collected, processed, and analyzed. The univariate (respondent characteristics and quality of life) and bivariate analyses (quality of life) used paired and independent t-tests.

Result

The description of the respondents' characteristics according to the inclusion criteria is as follows. The age of those in both groups is in the range of 22-52 years with an average of 38 in the intervention and 37 in the control. This is in accordance with Sadock et al. (2015) which stated that nearly 90% of patients subjected to schizophrenia treatment were aged 15-55 years. Also, older persons have a lower social function (Brissos et al., 2012).

Based on gender, the majority of respondents were 64.3% males in the intervention group

and 78.6% in the control. This is inline with the research of (Siegrist et al., 2015) which involved 1,208 schizophrenic patients that were majorly males (61.8%). Often, male patients experience higher negative symptoms, which impact their social function and quality of life (Patel et al., 2015).

According to the respondents' job status, 57.1% of the control worked, but 71.4% did not. This is in line with the research by Amalina et al. (2014) which stated that the majority of people with schizophrenia did not work (61.7%). Furthermore, most of them were single, both in the intervention (64.3%) and control groups (57.1%). This was similarly found by Siegrist et al. (2015), where the majority of patients were unmarried (61.6%), divorced (16.2%), married (15%), widowed (1.2%), and living as a spouse (6.1%). The educational background of most of the respondents in the intervention group was elementary (42.9%), while the control was senior high school (50%), and a small proportion had a diploma (7.1%). This is different from the research by Jelastopulu et al., (2014) that discovered majority of the patients attended junior (28.63%), and senior high school (35.26%), as well as elementary school (11.01%). The onset of the intervention group was from 15-25 (50%) and 26-35 years (50%), but the control was 15-25 only (57.1%). It is consistent with Sadock, Benjamin, Sadock, (2019) that stated majority of the sufferers had onset between 15-25 and 25-35 for men, and over 40 years for women. Based on treatment compliance, all of them had adherence to taking medication. Low adherence is associated with increased symptoms and a higher risk of relapse and lower quality of life (Adelufosi et al., 2012).

Table 1. The Results of Paired t-test for Quality of Life Before and After Horticultural Occupational Therapy in the Intervention Group

Horticultural Interventions					
<i>Quality of Life (QOL)</i>	Before		After		<i>P Value</i>
	<i>Mean</i>	<i>SD</i>	<i>Mean</i>	<i>SD</i>	
Quality of life in general	55.71	19.49	72.85	16.83	-6.000 0.000*
General health	55.71	26.22	71.42	17.03	-2.474 0.028*
Physical domain	45.14	16.97	63.50	11.41	-5.434 0.000*
Psychological domain	46.14	11.40	62.57	10.71	-4.458 0.001*
Social domain	39.78	22.59	71.42	11.70	-6.214 0.000*
Environmental domain	52.78	15.11	58.57	10.06	-2.098 0.056

*significant

According to table 1, the average value of the intervention group showed an increase. This was

evidenced by the results of the paired t-test analysis with $p < 0.05$, meaning that there were significant differences in items of quality of life, general health, physical, psychological and social domains before and after treatment.

Table 2 Paired t-test Results Quality of Life Before and After in the Control Group

<i>Quality of Life (QOL)</i>	Before		After		t	P value
	<i>Mean</i>	<i>SD</i>	<i>Mean</i>	<i>SD</i>		
Quality of life in general	65.71	21.38	61.42	21.43	1.385	0.189
General health	64.28	21.01	65.71	16.50	-0.268	0.793
Physical domain	52.78	8.71	49.64	6.58	1.307	0.214
Psychological domain	54.64	10.53	55.14	10.76	-0.622	0.545
Social domain	51.28	13.86	47.71	15.44	1.191	0.255
Environmental domain	56.42	14.19	54.07	10.52	0.974	0.348

According to table 2, in the control group, the pre-posttest QOL value of horticultural occupational therapy interventions tended to experience a decrease in items of quality of life, physical, social, and environmental domains. But, the general health items and psychological domains had a slight increase. The results of paired t-test statistical analysis showed $p > 0.05$, indicating that there was no significant difference in the mean QOL value in the control group before and after the therapy.

Table 3. The Results of Unpaired t-test for Schizophrenia Patients' Quality of Life Score after Horticultural Occupational Therapy Intervention in the Intervention and Control Group

<i>Quality of Life (QOL)</i>	Intervention		Control		t	P value
	<i>Mean</i>	<i>SD</i>	<i>Mean</i>	<i>SD</i>		
Quality of life in general	72.85	16.83	61.42	21.43	1.569	0.129
General health	71.42	17.03	65.71	16.50	.901	0.376
Physical domain	63.50	11.41	49.64	6.58	3.935	0.001*
Psychological domain	62.57	10.71	55.14	10.7	1.830	0.079
Social domain	71.42	11.70	47.71	15.44	4.57	0.000*
Environmental domain	58.57	10.06	54.07	10.52	1.15	0.258

Table 3 showed the difference in the average QOL value in the intervention and control groups after being given horticultural occupational therapy. The statistical analysis results of the independent t-test for the same variant showed there was a significant difference, where p value in the physical domain was 0.001 ($p < 0.05$), and 0.000 ($p < 0.05$) in the social domain. While, the item quality of life had a p value of 0.129 ($p > 0.05$), general health was $p = 0.376$ ($p > 0.05$), the psychological domain $p = 0.079$ ($p > 0.05$) and the environment $p = 0.258$ ($p > 0.05$), meaning there was no significant difference.

Discussion

The results which described in the table 1 are in line with the research which found that involvement in horticultural occupational therapy activities often reduce stress (Lee et al., 2018; Van Den Berg & Custers, 2011) increase the focus of attention (Detweiler et al., 2015), and social health (Harris et al., 2017). Based on horticultural occupational therapy in humans, the observation of foliage plants was shown to induce physiological and psychological relaxation. By reducing prefrontal cortex activity, but increasing parasympathetic activity and emotions (Ikei et al., 2014); (S.-A. Park et al., 2016), plus reducing blood pressure and heart rate (Tsunetsugu et al., 2013). Moving foliage plants in pots decreased sympathetic nerve activity and oxyhemoglobin concentrations in the left prefrontal cortex and affected blood lipid profiles, blood pressure, levels of inflammatory markers, and oxidative stress (S. Park et al., 2017).

Other studies indicated that the program consisting of gardening activities with low to moderate intensity improved physical functional abilities. Moreover, excavation, soil mixing, planting, sweeping, weeding, watering, and harvesting as a way to encourage low and moderate-intensity physical activity often involve both upper and lower body parts. Also, combining sitting, squatting, standing, and movement cushions to increase muscle strength (Kobesova et al., 2020). Based on some of the aforementioned theories, it is concludable that the therapy is capable of improving schizophrenic patients' quality of life in four domains, specifically physical and psychological health, as well as social and environmental relationships.

The results of paired t-test statistical analysis showed $p > 0.05$, indicating that there was no significant difference in the mean QOL value in the control group before and after the therapy. Some schizophrenic patients enter a stable phase with varying degrees of symptom resolution, and few of them achieve complete remission of positive and negative symptoms. In addition, the degree of

cognitive decline varies and is not associated with psychotic symptoms. Some also experience nonpsychotic dysphoric symptoms such as pressure, anxiety, depression, and insomnia. The gradation of their level of independent function ranges from being fully able to live without dependence to needing a lot of help from other people to carry out daily activities (Sadock, Benjamin J. Sadock, Virginia Alcott. Ruiz, 2017).

Cognitive dysfunction is a core feature of schizophrenia, and according to previous research, this term is highly correlated with other social and operational functions (Green & Harvey, 2014). Because of the importance of cognitive impairment in the illness, it has been proposed as an appropriate target for intervention (Kurtz, 2011). Sadock, Benjamin J. Sadock, Virginia Alcott. Ruiz, (2017) explained that schizophrenic patients had premature intellectual decline or dementia praecox. Also, many of them experienced impaired cognitive function (Yang & Tsai, 2017).

Cognitive dysfunction affects the sufferer's normal life performance over a long period (Negrón-Oyarzo et al., 2016). According to (Bagge et al., 2017) on "*Cognitive Screening and Behavioral Functional Ability in Patients With Multiple Episode of Schizophrenia: An Exploratory Study*", the patients have a high probability of experiencing cognitive dysfunction, behavioral disorders, decreased executive function, and problems with *Activity Daily Living* (ADL). It also affects the ability to work, adhere to medication, and social skills (Yang & Tsai, 2017).

Horticultural occupational therapy focuses on work and personal strengths rather than problems, thus promoting the development of self-determination, self-confidence, the understanding of health and well-being needs (Therapists, 2006). The development and maintenance of these skills have been shown to reduce patients' return to the hospital (Smith & Beitzel, 2014). Therefore, to improve the quality of life in schizophrenia patients, apart from being given pharmacological therapy, nursing interventions are also needed for enhancement of their cognitive and functional abilities, hence becoming more productive and independent.

This research proved that horticultural occupational therapy is effective in improving the QOL of schizophrenic patients in the physical and social domains. The quality of life is a condition in which individuals feel healthy physically, psychologically, socially and environmentally. It is also a satisfaction in various aspects of life, which is multidimensional by combining physical, cognitive, emotional and social concepts (Preedy & Watson, 2010). The results are in line with the findings of Tse (2010), which stated that indoor horticulture is effective for improving sleep, agitation, and cognition as well as the quality of life of the elderly in nursing homes.

However, Kam & Siu, (2010) research in Hong Kong with the title "*Evaluation of a horticultural activity program for persons with psychiatric illness*", used an experimental method with 10 sessions in 2 weeks, and stated that the program was effective in reducing stress for people with disorders, but had no significant impact on work behavior and quality of life. Further research on horticultural activities needs to have a longer duration, in order to examine the potential benefits of work behavior and quality of life. Outcome measures are divided into short (less than 6 months), medium (7- 12 months), and long term (more than 1 year) (Morris et al., 2018).

The quality of life in schizophrenia has a broad scope, and besides demographic factors, it is also influenced by the patient's self-stigma. There is a possibility that this is why horticultural occupational therapy intervention is not significant in all domains of quality of life within one month. Self-stigma in the context of mental health is interpreted as the process of a person with schizophrenia losing hope of showing a personal identity before agreeing to other people's negative judgments (Widianti et al., 2018).

Negative feelings hinder the recovery process of the patients, thus, individual therapy programs are needed to reduce stigma within groups and communities in order to improve their quality of life (Hill & Startup, 2013). But, optimism, happiness, acceptance of sick conditions, and an enthusiastic attitude towards life are descriptions of positive behaviors that arise from them to fight against stigma. This condition is useful as a reference in managing self-stigma in schizophrenia to accelerate the recovery process and improve the QOL (Yılmaz & Okanlı, 2015).

Conclusions and Recommendations

In conclusion, horticultural occupational therapy was effective in improving the quality of life of schizophrenic patients at Muhammad Sani Hospital, Karimun Regency. Hopefully, this will be used as research material in the development of nursing science related to the selection of interventions to improve the patients' QOL. Hospital and community nurses need to be able to apply this type of therapy to those suffering from the illness as one of the rehabilitation processes.

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