

# Horticultural Therapy Activities Reduce Stress Levels: Lessons from Activities Conducted For Adults in Bangalore

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**Running Head:** Horticultural Therapy Activities Reduce Stress Levels

**Abstract:** *Horticultural therapy is an emerging practice in India which is conducted in small pockets. In this paper we focus on determining the importance of horticultural therapy activities in stress reduction, improved productivity and increased self-confidence. The session studied for this purpose was conducted with a group of corporate employees between the ages 22 to 50 (n = 21; male = 11, female = 10). We used the Depression Anxiety and Stress Scale (DASS) to measure levels of depression and stress and another scale for measuring stress at work place. Participants with high stress and anxiety felt happier after gardening and other plant-related activities. All activities aided in reducing stress and tension, and in boosting their self-esteem and self-confidence in the work place. This in turn, encouraged better interaction among family members and friends post work. Participant's creativity and focus improved leading them to solve complex problems. From our study it is clear, that human beings are happier at work and home when they connect to Nature. Senses get sharpened when they are in a plant-rich area. In this study we present that horticultural therapy activities could significantly impact people who are suffering from stress, tension, depression and anxiety.*

**Keywords:** horticultural therapy, human emotional system, gardening activities

## 1. Introduction

Horticultural therapy can be defined as a therapeutic method using plants and plant-related activities to control physical and mental ailments (AHTA, 2012). This therapy is special because it uses living material as a powerful tool to heal people's mind, body and spirit for enhancing physical, mental and social health (Simson & Straus, 2003, Chapter 1). The principle of horticultural therapy is widely accepted and is being practiced worldwide as an effective alternative treatment method. It is used in healthcare facilities, community agencies, schools, nursing homes, rehabilitation, and vocational centers. People of any age or disability can participate and the activities can be customized for each person.

The psychological worth of people-plant interactions is hugely beneficial as it allows individuals to escape from the demands of everyday life permitting them to think about less stressful things, imagine fewer psychological boundaries and recover from the repeated focused attention required when completing stressful work (Simson & Straus, 2003, Chapter 2). A relaxed environment that promotes tranquility can foster achieving of personal goals and aspirations, which in turn can help to increase self-esteem as well as help to improve one's sense of worth (Simson & Straus, 2003, Chapter 11).

ArtyPlantz Nature Revitalisation Private Limited is a social enterprise with the mission to connect people to nature. Horticultural Therapy is one of the enterprises incubated and promoted by ArtyPlantz.

The aim of our study is to present the importance of horticultural therapy activities and to show how this is hugely impacts our senses. The major benefit of horticultural therapy is that it improves cognitive, physical, social, emotional and spiritual wellbeing. When we interact with nature through Horticulture Therapy, we experience natural textures, soothing colours, soft sounds and refreshing smells. This experience calms the mind, triggers positive memories, and leads to tranquility all of which help people with troubled minds. Horticultural therapy sessions consist of a group of activities with specific treatment goals. We use a number of activities both for groups and individuals for therapeutic purpose.

Activities impacting smell and sight appear to have the most impact on participants. The sense of smell is the 'canary in the coalmine' of human health (Pinto, Wroblewski, Kern, Schumm, & McClintock, 2014). Smell is the most powerful sense, which triggers specific memories. It is well used in therapy to help alleviate amnesia. Studies also show that smells can have an effect on what we buy and how much we spend (Rodriguez-Gil, 2004).

Research conducted by The University of Maryland on the fragrance of lavender and its utilization in sleeping disorder, tension, stress and post-surgery period found that the fragrance of lavender can moderate the movement of the sensory system, enhance sleeping quality, peacefulness, and mood enhancement in individuals experiencing different issues, like some food smells helps to restore relaxation and impact on the body and brain (Dobson, 2015). Similarly, another study by the University of Heidelberg found that low intensity exercise before going to sleep results in peaceful sleep with positive dreams. Additionally it was found that the odor helps people feel more refreshed and

Volume 7 Issue 5, May 2018

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focused. A study from Japan (Toyoda, 2012) showed that splashing the aroma of lavender during industrial facility coffee breaks enhanced post-break performance. Moreover, other research has shown that the athletes who sniffed peppermint ran faster and were more focused than others, and youngsters performed better at tests after smelling fresh when presented to the smell of fresh strawberries.

The objectives of the study are as follows:

- 1) To determine the importance of Horticultural Therapy activities in stimulating senses; reducing stress, and depression; and in boosting self-esteem
- 2) To study the effects of Horticultural Therapy activities in the daily life of corporate employees.

## 2. Methods

### Participants

For this study we used a test group with employees from different corporate organizations. There were a total of 21 participants in this study (Table 1). The participants belonged to different age groups and had different professions.

**Table 1:** Distribution of the samples.

Type of sample	Gender	Number
Corporate employees	Male	11
	Female	10
	Total	21

Employees were from the various fields such as architecture, agriculture, art, digital marketing and interior designing. A total of 21 people participated, of which 11 were men and 10 were women between the age group of 22 and 50.

### Procedures

This study was conducted for four months from December 2013 to April 2014. For our analyses we used two scales, DASS and Workplace Stress Scale to assess their stress, depression, anxiety and stress at the work place. DASS, the Depression Anxiety Stress Scales, is made up of 42 self-reporting items to be completed over five to ten minutes, each reflecting a negative emotional symptom. Each of these is rated on a four-point scale. These scores ranged from 0, meaning that the client believed the item 'did not apply to them at all', to 3 meaning that the client considered the item to 'apply to them very much, or most of the time'. It was also stressed in the instructions that there were no right or wrong answers. The Workplace Stress scale is another scale we used for the corporate employees to assess their thinking about their current job. This is a 5-point scale with the following scale points: never, rarely, sometimes, often and very often.

Initially, we engaged the group in general gardening activities. After a primary assessment we added specific activities for each participant. We noticed better participation in the activities. We had two types of sessions indoor and outdoor. For the outdoor sessions we conducted nature connect programs in parks across Bangalore. The activities included tree hugging, gift making, and sensory stimulation games. Indoor activities included potpourri making, leaf print, herbal salad making, flower arranging,

blind fold-plant identification game and leaf identification games.

The participants were subjected to various physical and psychological assessments. The primary measuring methods we employed were observation, video making and standardized scales for measuring their psychological strength. Each stage was assessed by horticultural therapists and volunteers. Continuous observation and assigning each person to different activities throughout the program helped us to understand the kind of therapy that each participant needed.

The study was carried out in the following steps:

- 1) Primary assessment
- 2) Horticultural therapy session and Green connect program
- 3) Post assessment

### I. Primary Assessment (Depression Anxiety and Stress Scale)

The primary data of each employee was recorded. In addition, a psychological assessment was conducted for measuring self-esteem, stress, depression, anxiety and stress levels at workplace.

### II. Horticultural Therapy Session and Green Connect Program

- 1) Sessions were conducted both indoor and outdoor with a mix of group and solitary activities.
- 2) Each employee was given a set of activities and a pet plant to nurture.

The specific horticultural therapy activities conducted for the test groups were:

- Herbal bouquet making
- Leaf printing
- Tree hugging
- Plant identification
- Leaf identification game
- Ikebana arrangement
- People-plant interaction
- Pet plant
- Potpourri

### III. Post Assessment (Depression Anxiety and Stress Scale)

Post-assessment was conducted and the participants were subjected to standardize psychometric tests and rating scales to measure the effects of horticultural therapy.

## 3. Results and Discussion

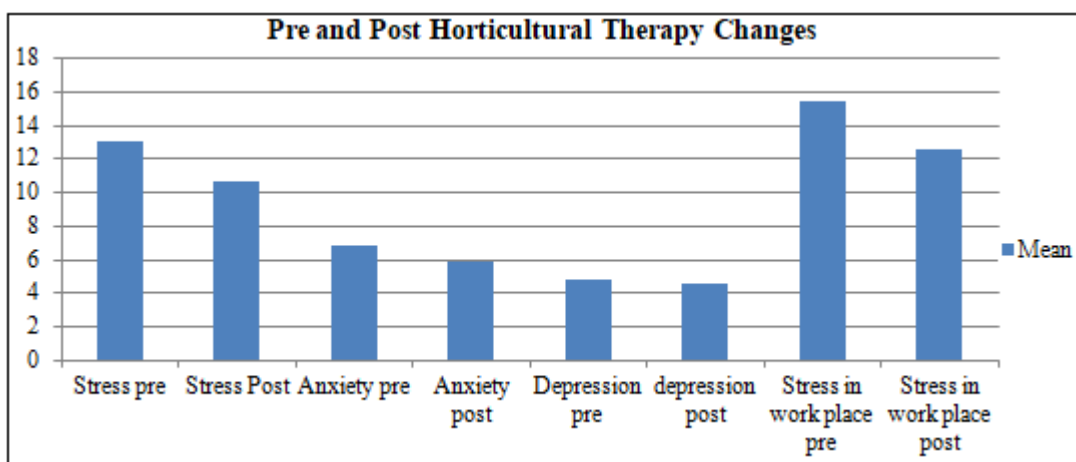
At the start of the sessions, many of the participants showed low energy levels and a general sense of anxiety due to having to meet deadlines and other work pressures. At the beginning the level of involvement from the employees was low, but gradually it improved. Their prime choice of activities included those involving smell therapy. This therapy helped them relax. Indoor activities helped them develop various creative skills. It helped them follow the program and improved their attention span.

The pre and post test scores for measuring stress for this sample showed a change after conducting horticultural therapy programs as indicated in Table 2.

**Table 2:** Pre and post horticultural therapy changes in stress, anxiety, depression and work related stress of the corporate employees

		Mean	N	Std. deviation	Std. error mean
Pair 1	Stress pre	13.0476	21	5.18147	1.13069
	Stress post	10.5714	21	3.34023	.72890
Pair 2	Anxiety pre	6.7619	21	3.96112	.86439
	Anxiety post	5.8571	21	2.90320	.63353
Pair 3	Depression pre	4.8095	21	3.91943	.85529
	Depression post	4.5238	21	3.26526	.71254
Pair 4	Stress at work place pre	15.3810	21	3.72124	.81204
	Stress at work place post	12.5714	21	2.44073	.53261

The variables that showed significant changes between pre and post scores were stress, and stress at workplace while anxiety and depression indicated only a slight variation (Figure 1). The data shows a high level of correlation between pre and post test scores (Table 3). A paired t test showed that there was a significant positive change in stress and stress at work place between pre and post score as indicated in (Table 4). Anxiety and depression levels show slight positive differences. These activities have the potential to exhibit more significant results when extended to a longer period of time.



**Figure 1:** Pre and post horticultural therapy changes in corporate employees

**Table 3:** Paired samples correlations

	N	Correlation	Sig.
Pair 1 Stress pre & Stress post	21	.929	.000
Pair 2 Anxiety pre & Anxiety post	21	.927	.000
Pair 3 Depression pre & Depression post	21	.965	.000
Pair 4 Stress at work place pre & Stress at work place post	21	.933	.000

**Table 4:** Paired Samples Test.

		Paired differences					t	df	Sig. (2-tailed)
		Mean	Std. deviation	Std. error mean	95% Confidence interval of the difference				
					Lower	Upper			
Pair 1	Stress pre – Stress post	2.47619	2.42114	.52834	1.37410	3.57828	4.687	20	.000
Pair 2	Anxiety pre – Anxiety post	.90476	1.67047	.36453	-.14437	1.66515	2.482	20	.022
Pair 3	Depression pre – Depression post	.28571	1.14642	.25017	-.23613	.80756	1.142	20	.267
Pair 4	Stress at work place pre – Stress at work place post	2.80952	1.69172	.36916	2.03946	3.57958	7.611	20	.000

#### 4. Conclusion

From our analyses it is clear that horticultural therapy has a positive impact on self-esteem, stress, anxiety and work related stress. Nature is a powerful tool which can impact not only over stressed corporate employees, but also benefit a range of people suffering from new age diseases such as autism, hypertension, depression, obesity, etc. Horticultural therapy should be practiced at all levels of healthcare

especially in cities, where people are cut off from nature and its healing properties.

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## Author Profile

**Karthikeyan V.** is a Horticultural Therapist working at ArtyPlantz Nature Revitalization Pvt Ltd, Bangalore, India. Karthikeyan started his career in Horticultural Therapy from 2010 onwards. He joined in this institute, ArtyPlantz, on 2012 as horticultural Therapist and conducting sessions for the special children in different schools in Bangalore, India.

**Radha Eswar** is the Co-Founder of ArtyPlantz. We together had done this research by conducting Horticultural Therapy sessions in different places.

This research was conducted to aware the participants about the healing power of Nature and make them understand about, how they can enhance their quality of life by connecting with Nature.