

# Effect of Horticulture Therapy on Level of Stress

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**Abstract:** *A child should grow up in a family. Permanent parental care is the ideal situation for every child. There have been decades of research on the topic of institutionalization and the extreme negative effects on children including stress. Horticulture therapy has been found to be much effective in reducing stress. Considering the importance of nurturing healthy children even in institutions and relieving stress, horticulture therapy was implemented as a complimentary therapy. Aim: To assess the level of stress and effect of horticulture therapy on level of stress among selected institutionalized children at Trivandrum district. Materials and Methods: The study was conducted using equivalent pre-test post-test control group design in the year 2014. Sixty samples between the age group of 10-15 years were selected and assigned into two groups, 30 in experimental and 30 in control group respectively. The level of stress was assessed using self-structured stress questionnaire with interview method. Intervention was given for 45mins daily for a period of 3 weeks to those who found to be having various levels of stress. After 3 weeks of intervention post-test was conducted using the same questionnaire. Findings: Horticulture therapy was found to be effective in reducing level of stress among Institutionalized children. Conclusion: There was significant difference on level of stress before and after horticulture therapy, it can be concluded that horticulture therapy is a cheaper and effortless therapy for reducing stress.*

**Keywords:** Stress, Horticulture therapy, Institutionalized children

## 1. Introduction

Around the world, millions of girls and boys grow up for substantial periods not in their own or alternative families, but under the control and supervision of care authorities or justice systems. The institutions they live in have many names, including orphanages, children's homes, care homes, prisons, juvenile detention facilities, reform schools, etc. They may be open or closed (i.e. where children are locked in), and may be run by Governments, private companies or individuals, or by non-governmental or faith-based organizations. Many are large-scale, and children who enter them can live prolonged periods of their lives inside. Whatever their name, these institutions govern the day-to-day lives, personal development and future life chances of a very large number of children [1]. According to Indian Juvenile Justice (Care and Protection of Children) Act, 2000 "Children's home" means an institution established by a State Government or by voluntary organization and certified by that Government under section 34. That is, for the reception of child in need of care and protection during the pendency of any inquiry and subsequently for their care, treatment, education, training, development and rehabilitation. Majority of the children are admitted to children's home at the age of 0-5 years belong to different family backgrounds irrespective of religion. These government or non-government institutions are run on grants or sponsorship which is not adequate to meet expenses to bring up the children in the children's home, where authorities are forced to cut short many basic facilities to inmates [2]. Causes for a child leaving his/her family may be socioeconomic which include lack of permanent housing, parents' divorce; moral and ethical causes which include social life style practiced by one or both parents, various dependences (drinking, alcohol addiction, drug and substance abuse), forcing children to beg by adult family members, parents' crime bringing them to jail, diverse kinds of child abuse: physical, psychological or sexual; psychological and pedagogical which include early or non-marital motherhood,

dysfunctional family (incomplete, newly formed, many-children, disabled persons' families), unhealthy emotional climate in the family, conflicts between its members [3].

## 2. Need for the Study

Out of more than 4 billion people in the world 29.9% are children under age 15 [4]. Overall, UNICEF estimates that the total number of children in institutional care globally 2.2 million, but they point out that under-reporting and a lack of regulation in some countries indicates that this figure is an under estimate. The UN estimates that up to 8 million children around the world are living in care institutions. However, the actual number is likely to be far higher, owing to chronic gaps in information [5].

The total population of India as recorded by Census 2011 is 1.2 Billion. Approximately 40% of the nation's population is children. The vulnerable categories of children include orphans, abandoned and destitute children, missing or run-away children, street children, children of sex workers, abused, tortured and exploited children, children indulging in substance abuse, children affected by HIV/AIDS, children affected by natural calamities, emergencies and manmade disasters, children with disabilities and children suffering from terminal/incurable diseases [6]. The total number of children in Kerala according to 2011 census is 34,72,955. Among them thousands of children are institutionalized. In Kerala all the non-government children's home are managed by either religious or private organization has a minimum of 50 and a maximum of 175 children living in a space of approximately 30-40 occupants. The child population in Kerala is estimated at 1.27 crores. There are not less than 15,000 street-children in Kerala [7]. Stress is how the body reacts when confronted with a physical or emotional situation that alters life's normal balance, or that presents change. Another way to describe stress is "pressure on the outside that causes pressure on the inside." Early childhood years are often thought to be free of stress but it is a fact that

even the youngest children can be affected physically, emotionally, and behaviorally by stress [8].

Stressed children are vulnerable to sleep disturbances (including nightmares and bed wetting), skin diseases, and infections. Research suggests that even physical conditions with a genetic basis like asthma, allergies, and diabetes can be adversely affected by childhood stress. The physiological consequences of stress build up over years and decades [9]. Therapeutic Horticulture is the purposeful use of plants and plant-related activities to promote health and wellness for an individual or group. A garden benefits people on many levels. One of the seemingly magical effects of gardening is stress relief. Emotional benefits of gardening may derive in part from the sense of the natural rhythm of life that plants and gardens impart [10]. As the K-State horticulture therapy Web site notes, "Getting dirty is a part of growing up" [11]. Digging, chopping, and hitting motions can relieve stress and tension [12].

Gardening can provide a stable setting for kids, as it is something that never gets altered. It imparts that certain feeling that they're always in a safe place. It is a place where they can easily connect to and let their guards down. Tending to gardens also helps the youth to solve certain problems concerning the garden, such as how to do companion planting. It is certainly something that is good for anyone's emotional and physical health [13]. Horticulture therapy is universally acceptable and validated by research. Horticulture therapy is a quiet pursuit that allows temporary freedom from everyday stress. Horticulture Therapy has proven beneficial to many types of people particularly those who are physically or developmentally disabled, mentally ill, elderly, substance abusers and socially disadvantaged [14].

The perceived stress among orphaned children has been portrayed in different studies by researchers. All studies display a grave urgency because the stress which is faced by institutionalized children can cause considerable deviation in the developmental process. The results of studies are alarmingly disappointing and suggest deep insight for further studies. Hence the researcher is interested to provide horticulture therapy to the children for reducing their level of stress.

### **3. Review of Literature**

#### **3.1 Impact of Institutionalization among Children**

A study was conducted at Uppsala University Hospital, Sweden to assess the socio emotional development of orphans in orphanages and traditional foster care in Iraqi Kurdistan. In order to investigate orphans' situation and development in Iraqi Kurdistan, samples from the traditional foster care and the modern orphanages, are examined at an index test and at 1-year follow-up regarding competency scores and behavioral problems at both test occasions. Post-traumatic stress reactions were examined at a 1-year follow-up. Achenbach Child Behavior Check List (CBCL) and two instruments regarding post-traumatic stress disorder (PTSD) were used. While competency scores showed an improvement in both samples at the follow-up test, the

problem scores increased in the orphanage sample and decreased among the foster care subjects. Moreover, the orphanage sample reported higher frequency of post-traumatic stress disorder (PTSD) than the foster care children [15].

#### **3.2 Prevalence of Stress Among Children**

A study was conducted in the capital city of Kerala, the southern state of India to understand the prevalence of stress and stress levels in school children of Kerala. School children between age of 4 and 17, were screened from seven schools of Trivandrum district through purposive random sampling giving due representation to government and private management and to the syllabi (state and central) followed in the schools. Two divisions randomly selected from each class of the identified schools were screened to get a sample of 30 children with stress from each age group giving equal representation to boys and girls. Thus a total of 667 students were screened to get the desired sample. A standardized stress assessment scale was used to collect the data from the sample. The results indicate that 93 to 100% of the children aged 4 to 17 years showed medium to moderate stress while 1.9% severe stress. Only 1.79% came under normal group. This suggests that in every age more than 90% of the school children of the state are facing above normal levels of stress and tension [16].

#### **3.3 Effect of Horticulture Therapy on Stress**

A field experiment study was conducted to assess the Stress-relieving effects of gardening in Amsterdam, Netherlands. Thirty allotment gardeners performed a stressful Stroop task and were then randomly assigned to 30 minutes of outdoor gardening or indoor reading on their own allotment plot. Salivary cortisol levels and self-reported mood were repeatedly measured. Gardening and reading each led to decreases in cortisol during the recovery period, but decreases were significantly stronger in the gardening group. Positive mood was fully restored after gardening, but further deteriorated during reading. These findings provide the first experimental evidence that gardening can promote relief from acute stress [17].

A study was conducted at Sweden in 2004 to assess the effectiveness of gardening in reducing stress at work places. Nine hundred and fifty three randomly selected persons in 9 Swedish cities answered a mail questionnaire concerning their experiences of their own health status and access to and use of gardens at home. Statistical analysis with SAS software the distribution of socio-demographic data is representative for Sweden, meaning no statistically significant deviation regarding socio-economic grouping, sex or age. Results show that having access to a garden has a significant positive impact on stress. There is also a significant positive relationship between frequency of garden visits and stress prevention[18].

### **4. Research Question**

"A quasi experimental study to assess the effect of horticulture therapy on level of stress among

institutionalized children in selected institutions, Trivandrum District (Kerala)”

#### 4.1 Objectives

- 1) To assess the level of stress among institutionalized children.
- 2) To assess the effect of horticulture therapy on level of stress among institutionalized children.
- 3) To find out the association between level of stress and selected socio demographic variables.

#### 4.2 Hypothesis

H1: There is a significant reduction in the level of stress among institutionalized children after providing horticulture therapy.

H2: There is a significant association between level of stress and selected demographic variables.

### 5. Research Methodology

**Research Approach** – Quantitative approach, equivalent pre-test post-test control group design.

**Independent variable**- In this study independent variable is horticulture therapy.

**Dependant variable**- Level of stress is dependent variable.

#### 5.1 Setting of the study

The study was conducted in Balikamandiram 4 and Balikamandiram 5, cheruvarakonam, an institutional setting for children at Thiruvananthapuram district. Total number of children in the setting was 65 and 53 respectively.

#### 5.2 Population

Population of the present study comprises of institutionalized children between age group 10-15 years.

#### 5.3 Sample Size

The total sample size comprises 60 institutionalized children, 30 in experimental and 30 in control (treatment waitlist group).

#### 5.4 Sampling Technique

Purposive sampling technique was used to select the subjects with moderate to severe stress.

#### Inclusion Criteria

- Female children with age group of 10-15 years who are having mild to severe level of stress as assessed by perceived stress scale.
- Children who are willing to participate in the study.
- Children who are not exposed to the same therapy previously

#### Exclusion Criteria

- Children who have any mental disorders.

#### 5.5 Data Collection Tool

1. Demographic data sheet
2. Stress assessment questionnaire

#### 5.6 Data collection procedure

Data collection was done in Balikamandiram 4 and 5, cheruvarakonam, Trivandrum district, Kerala. The researcher conducted the study in the month of March from 1<sup>st</sup> to 30<sup>th</sup>. Formal permission for data collection was obtained from the authorities of the institution to conduct the study. The researcher introduced herself and established a rapport with the children. The researcher explained the purpose of the study and reassured that the data collected would be kept confidential. After that the researcher obtained oral consent from the children. The researcher assessed the level of stress with the help of a structured stress questionnaire through interview method. The children with mild, moderate and severe level of stress was allotted for both experimental group and control group (30 samples each). Then horticulture therapy has been given. Horticulture therapy which include the activities like selecting a garden space ,preparing the soil, planting the plants, replanting , repotting, removing dry leaves, watering the plants were provided to the experimental group daily in the evening for 45 minutes for a period of 3 weeks. No intervention was given for the control group. After 3 weeks level of stress was again assessed by using the same stress questionnaire for both experimental and control group. After the study same intervention was given to treatment waiting/control group.

#### 5.7 Plan for data analysis

Descriptive statistics (mean, standard deviation, frequency and percentage) and inferential statistics (independent ‘t’ test) were used for analysis. Chi-square test was used to determine the association of level of stress with selected demographic variables.

### 6. Findings

#### 6.1 Description of sample characteristics

Majority (43.3%) of children belongs to the age group of 12-13 years, 40.0% of them belongs to the age group of 14-15 years and 16.7% belongs to the age group of 10-11 years. Most (43.3%) of children studied in 7<sup>th</sup>-8<sup>th</sup> std, 40.0% of them studied in 7<sup>th</sup>-8<sup>th</sup> std, 16.7% studied in 5<sup>th</sup>-6<sup>th</sup> std. Regarding hobbies, majority (41.7%) of children had hobby of watching TV, 31.7% of them had hobby of reading stories, 18.3% had hobby of gardening, and 8.3% had other hobbies. Majority (50%) of children resides in institution due to financial problem, 16.7% of them reside in institution due to orphanhood, 10% reside in institution due to homelessness and 23.3% reside in institution due to other reasons. Duration of stay in institution, most of the children (35%) were staying in institution for 5-6 years, 28.3% of them were staying in institution for 3-4 years, 21.7% of them were staying in institution for 1-2 years and 15% were staying in institution for more than 6 years. Majority (41.7%) of children had both parents, 28.3% of them had mother only, 15% of children had mother only and the other 15% had none

of them. Regarding presence of siblings, most (51.7%) of the children had one sibling, 21.7% of them had 2 sibling, 18.3% had no sibling, 8.3% had more than 2 sibling. Majority (51.7%) of children have parent or sibling visit once in a month, 6.7% of them had parent or sibling visit once in a week, 11.7% had parent or sibling visit more frequently, 28.3% of them had parent or sibling visit less frequently and 1.7% had no parent or sibling visit. Concerning the interpersonal relationship, most (60%) of children maintained good inter personal relationship with inmates and care givers and 40% of them did not maintain good inter personal relationship with inmates and care givers.

### 6.2 Effect of horticulture therapy on the level stress among institutionalized children

	Experimental			Control			t	P
	Mean	SD	N	Mean	SD	N		
Pre test	75.7	10.1	30	76.6	11.6	30	0.32	0.750
Post test	64.9	7.1	30	76.7	11.6	30	4.74**	0.000

\*\*Significant at 0.01 level

Unpaired 't' test was done to find out the effect of horticulture therapy on the level of behavioral problems among institutionalized children. It was found that there is a significant difference between the pre test and post test scores. Test revealed that there is a significant reduction on level of behavioral, emotional, academic, physical problems among institutionalized children after providing horticulture therapy. For the experimental group, mean pre test score of 30 samples was 75.7 and mean post test score is 64.9. For the control group, mean pre test score of 30 samples was 76.6 and mean post test score was 76.7. The 't' calculated value was 0.32 in pre test and 4.74 in post test. This is significant at 0.01 levels.

### 6.3 Association between the level of stress among institutionalized children and selected demographic variables.

Chi square test was used to find the association between level of stress and selected demographic variables. There was only significant association between pre test level of stress among institutionalized children and demographic variable of parent or sibling visit. Hence the research hypothesis  $H_2$  is rejected except in the demographic variable of parent or sibling visit.

## 7. Discussion

The present study showed a significant difference between mean post test scores of experimental group (64.9) and control group (76.7) after providing horticulture therapy. The t-value was 4.74 which are significant at 0.01 level. Hence the research hypothesis,  $H_1$ —there is a significant reduction in level of stress among institutionalized children after providing horticulture therapy is accepted. Horticulture therapy has a significant effect on level of overall stress among institutionalized children. The findings were supported by a study conducted at Sweden in 2004 to assess the effectiveness of gardening in reducing stress at work

places. Results show that having access to a garden has a significant positive impact on stress [18].

## 8. Conclusion

From the study findings it is concluded that there is significant differences in level of stress before and after horticulture therapy. This shows that horticulture therapy do have an effect on reducing the level of stress among institutionalized children.

## 9. Future Scope

### 9.1 Nursing Education

The nurse educators need to be equipped with adequate knowledge regarding complementary and alternative therapy for stress management. The students should be provided with adequate clinical exposure in relation to practice various psychosocial interventions for stress management. Strengthen the curriculum for nurses with knowledge and skill to develop qualified nurses to manage the problems like stress, aggression and violence

### 9.2 Nursing Service

The findings of the study implied that institutionalized children had moderate and severe level of stress and there was a strong need for stress management. As health professionals, the nurses who are in hospitals have a responsibility in providing information regarding various stress management modalities. Nurses working in the child psychiatric department adopt the programme and implement it for better outcome of the children's stress.

### 9.3 Nursing Research

Disseminate the findings of research through seminars, workshops and publishing nursing journals. Nurses should be encouraged for conducting further research in the area of horticulture therapy and stress management. Nurse should take initiative to conduct research on effect of horticulture therapy on cognitive impairment among institutionalized children

### 9.4 Nursing Administration

Nurse as an administrator has a role in planning and implementing various stress management programmes. Administrators should take provision for in-service education programme regarding stress management for staff to update their knowledge and skill. Nurse administrator should implement outreach programme to make the public aware about influence of institutionalization on children.

## 10. Limitations

1. The study was confined to a specific geographical area which imposes limits on generalization.
2. Long term effect of the intervention was not assessed due to lack of time.
3. The study was limited to female children.

## 11. Recommendations

1. Study can be conducted to find out the effectiveness of horticulture therapy on different psychiatric conditions.
2. Study can be done to assess the effect of horticulture therapy on other variables such as self-esteem.
3. Similar study can be conducted by strengthening or modifying the interventions.
4. Similar study can be conducted on a large sample and different setting.
5. Study can be conducted with longer duration of intervention to assess long term effects.

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