



## KEY POINT SUMMARY

### OBJECTIVES

The purpose of this study is to explore the methods for assessing psychological and physiological outcomes associated with natural environments.

## Influence of an Outdoor Garden on Mood and Stress in Older Persons

Rodiek, S. 2012 | *Journal of Therapeutic Horticulture Volume XIII, Pages 13-21*

### Key Concepts/Context

Research conducted in healthcare settings shows that the presence of plants and natural environments in healthcare environments has a positive impact on patient outcome. The value of nature and gardening to the older adult is also reported in literature. Evidence shows that the presence of healing gardens and therapeutic landscapes at residential care facilities increases the creditability of horticulture-related treatments. However, little empirical research has measured the effect of plants and natural elements on health outcomes in elderly populations.

### Methods

- The study tested methods for comparing environmental effects on patients' positive and negative mood, anxiety, and salivary cortisol by randomly assigning subjects to the same activities in either an indoor or outdoor setting.
- Seventeen residents ranging from 71 to 98 years of age participated in this study.
- Residents were recruited from a residential complex for aging, comprised of a single-story nursing facility (private-pay) with adjacent low-rise senior apartments (HUD-financed).
- In this study, 44% of the recruits came from the nursing home and 56% from the apartments.
- The outdoor setting consisted of an umbrella table set up near a tree at a university horticulture garden.
- The indoor setting consisted of two indoor treatment environments: a classroom located at the horticultural garden and an activity room at the subjects' residential facility.
- To maximize the difference between the two types of environments, nature elements like flowering plants were added to the outdoor setting. In the indoor settings all plants and nature paintings were systematically removed



### DESIGN IMPLICATIONS

The design of facilities that have therapeutic programs for aging may be designed with outdoor gardens to keep patients' anxiety, negative mood and stress level low.

and the windows were covered with sheer white paper that allowed natural light but no direct views to the outdoors.

- Study settings and instruments were designed to accommodate physical and sensory limitations common in older adults.
- Both environmental settings were examined for safety hazards.
- Research assistants were trained to give verbal instructions slowly and clearly.
- Questionnaires were presented in large type (Arial 14 point) and formatted for maximum legibility.
- Pre-treatment measurements were taken about one hour after breakfast in the dining hall.
- Subjects were divided into three groups and taken to an experimental site, guided by non-participatory facility staff member for physical assistance and by a trained research assistant.
- In the experimental setting each group of subjects was allowed to sit comfortably around a table and maintain awareness of their surroundings.
- In the first stage, subjects were asked to observe the surrounding environment and describe it using a semantic differential scale.
- In the second stage, subjects were asked to spend a few minutes looking through photo books of either built or natural environments, to match the treatment setting at a leisurely pace, and then fill out the second set of questionnaires.
- The entire process took about two and a half hours overall, with measurements taken about one and a half hours apart.
- Wilcoxon Rank Sum test was used to test for differences in the four dependent variables between garden and non-garden populations.

### Findings

- The anxiety level and negative mood level showed more positive change for the garden group (outdoor) than for the combined non-garden groups (indoor), but the change was not statistically significant.
- The mean positive mood level remained constant in outdoor environments while declining slightly indoors.
- Cortisol was significantly lower in the garden environment compared with the indoor settings, indicating greater reduction in stress level.

### Limitations

Limitations identified by author include:

- The study did not select subjects and setting randomly; therefore it is not appropriate to use these data to generalize to a greater population.



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- The study did not examine whether higher light level or the presence of plants can reduce the cortisol level.
- The study assigned three groups of subjects to three different environmental settings. The study design would be greatly strengthened if subjects were assigned to opposite environmental treatments at alternating sessions, to serve as their own controls.

The reviewer identified additional limitations in the study including:

- To maximize the difference between the two types of environments the study removed all plants and nature paintings from the interior settings and blocked all direct views to the outdoors. It is totally unknown from this study that if indoor settings having direct views to nature have any effects on patients' positive and negative mood, anxiety, and salivary cortisol level.
- The study did not identify whether environmental features such as flower gardens, outdoor sitting area, and having nature can contribute to lower cortisol level.