



KEY POINT SUMMARY

OBJECTIVES

The objective of this study was to examine the successes and failures of the Nacadia® therapy garden by using a DPOE and to examine if the garden and the operations of the NBT program affect patient health outcomes and well-being.

A Diagnostic Post-Occupancy Evaluation of the Nacadia® Therapy Garden

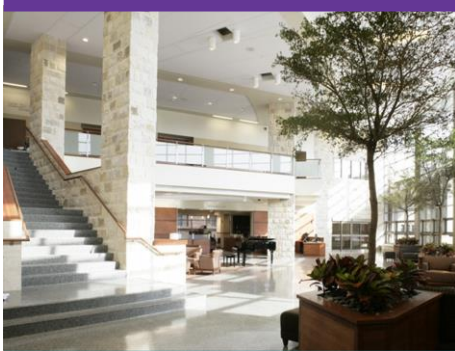
Sidenius, U., Karlsson Nyed, P., Lygum, V. L., Stigsdotter, U. K., 2017 | *International Journal Of Environmental Research And Public Health*, Volume 14, Issue 8, Pages 882

Key Concepts/Context

The Nacadia® therapy garden was built based on the evidence-based health design in landscape architecture (EBHDL) model developed by the University of Copenhagen. The model involved using the expertise and experience of the landscape designer, user needs, and research evidence to formulate the objective of the garden and design it, continuously evaluate the garden, and conduct a diagnostic post-occupancy evaluation (DPOE). This paper presents the findings from the DPOE of the Nacadia® therapy garden where a nature-based therapy (NBT) program involving patients suffering from stress-related illnesses was implemented over a 20-month period. The findings from the DPOE indicated that the participants showed significant improvement in overall health outcomes.

Methods

The Nacadia® therapy garden, built in 2011 inside an arboretum in Hoersholm, north of Copenhagen, was designed for people suffering from stress-related illnesses. A 10-week long (August 2013-March 2015) NBT program was developed for implementation in this garden. A DPOE was conducted to evaluate the success of the program and garden. The DPOE involved the use of multiple methods – interviews (of architect, staff, and patients), landscape analyses, observations (location of patients recorded using iPads), examination of logbooks (maintained by patients as part of the NBT program), analysis of operations, assessment of health and well-being outcomes, behavior mapping (using iPads and GIS), and administration of questionnaires (Euro Quality of Life Visual Analogue Scale (EQ-VAS)) to participants (at the start and end of the program). The surveys were statistically analyzed, and the interviews subjected to content analysis to obtain patient perspectives.



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Findings

The physical elements in the facility key to the therapeutic program included a hut, a wooden elevated deck in a tree, wooden walkway, entrance gate, a pergola, a greenhouse, and an office building; two-thirds of the garden was covered with trees and the rest with grassy meadows; a spring, a stream, a pond, and a lake with an island. The process incorporated individual conversation therapy, garden activities, awareness exercises, participants' own time, and homework (transferring experiences to daily lives). The staff in the program included two certified psychologists, one supervising psychiatrist, and a professional gardener. The 42 participants (divided into seven groups each with four to seven individuals) in the program were between ages 20 through 60 years, unable to work because of stress or stress-related symptoms for three to 24 months, with no untreated physical illness causing the symptoms, and had no suicidal tendencies or substance abuse.

Core points of examination:

Examination of the physical environment of the garden showed that it was sloped with higher points along the periphery and the lowest point in the center along the stream with unmown grass and wilderness-like ground vegetation. The staff and participants made changes to the garden by planting trees and shrubs along the fence, placing wood piles to obstruct views into the garden, creating new paths, and mowing the meadow grass. There were places within the garden identified as spaces where the participants liked to interact in groups or to stay secluded – 'distinctive spaces' (spaces enclosed by a physical boundary like the flower beds and bonfire pit); 'spot spaces' (spaces without a physical boundary – in the grass, between two shrubs, by the stream or beehives, or likewise).

Participants reported their general experience of the garden as feelings of safety, stimulation, relaxation, calmness, and freedom to engage and challenge themselves. They considered the size of the garden to be adequate to partake in group activities and to be alone. Sounds of nature, bird calls, and rippling water, were noted as key experiences. The distinctive spaces were considered as inherent to their positive experience of Nacadia®. Key experience in these spaces was the feeling of being enclosed and protected but with a sense of expanse. Spot spaces were where they could create their personal refuge, the key experience here being small enclosures with views of the garden and the sky and peace and quiet.

The landscape and its features were widely used by the program – awareness activities were conducted on benches around the bonfire or on a circle of cut grass in the meadow; gardeners guided participants through various horticultural activities across the grounds; individual conversational therapy took place at spot-spaces where seating was available; and 'own time' activities took place in both distinctive and spot-spaces (the key criteria for choosing a space was the scope of a high level of sensory experience – scenery, smells, sounds of water, and elements evoking pleasant memories).



The operations in Nacadia® were varied in terms of types of activities and the range of mental and physical challenges they afforded each participant. The voluntary nature of participation in these operations resulted in positive experiences among the patients. Logbook entries revealed that participating in different activities helped the patients to be calm, introspect to recognize negative thoughts, and identify alternative and more positive approaches in accomplishing daily tasks.

The questionnaire findings matched data from interviews and logbooks, where participants reported feeling more relaxed, calm, peaceful, less angry, having better spirit, improved memory, having fewer cognitive problems, and more able to accept. The EQ-VAS responses were analyzed using a paired-sample t-test to assess general health outcomes – participants reported their health had significantly improved over the 10-week therapeutic period ($p < 0.001$).

Successes and Failures: The authors assessed the following to be the successes of the garden and the program: the availability of distinctive spaces and the perception that these were safe and protective; an environment where participants felt comfortable to explore and challenge their personal capabilities; scope for participants to make friendships and also to stay away from fellow participants; year-round availability of physical, mentally restorative, concrete, and symbolic activities; and improved health outcomes.

The following aspects posed challenges to the program:

1. Exposure: The location of Nacadia® inside an arboretum allowed visitors to view the therapy garden and most participants considered this a negative experience.
2. Impact of changes in maintenance: Tall grass in the meadow was favored by participants as a spot-space. Cutting it down led participants to look for other spot-spaces.
3. Sounds caused by the wind: The shaking of metal nametags and the canvas over the bonfire area were described as negative experiences.

Decreased foliage during winter was seen as having fewer well-defined spaces; weather conditions (rainy and cold) were seen as obstacles to operations.

Limitations

Authors identified this study to have several limitations: a. It was difficult to ascertain if the environment, the NBT activities, or both together impacted participants' well-being. Further, other unexamined causes may have contributed to the improved health outcomes; b. The same environment and operation had different impacts on different participants; c. Participants were also required to complete homework assignments; it is not known what factors outside the garden contributed to their health outcomes.



Other limitations of this study include: a. There was no objective assessment of the mental health of the participants after completion of the program; b. The study does not indicate if the participants were using medication to treat their illness.

Design Implications

The authors suggest using the DPOE to evaluate other therapy garden projects. Landscape architects designing therapy gardens may consider the following: a perimeter of trees and shrubbery with dense foliage to maintain the privacy of participants, and design spaces to be potential spot-spaces, providing for both interaction and seclusion.

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