

RESEARCH ARTICLE

Design of hospital healing gardens linked to pre- or post-occupancy research findings



Angeliki Triandafillou Paraskevopoulou*, Emmanouela Kamperi

Laboratory of Floriculture & Landscape Architecture, Department of Crop Science, School of Agricultural Production, Infrastructure and Environment, Agricultural University of Athens, Iera Odos 75, 11855 Athens, Greece

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Abstract

This work examined the evidence-based design (EBD) and post-occupancy research of hospital healing gardens. The lack of statutory design guidelines raises concerns on how such gardens are created and whether they meet the intended design purpose. This issue is particularly important for hospitals because a neutral or even a negative effect on users can be generated. A systematic analysis of the literature in two databases (Scopus and Web of Science) was undertaken. Results showed that pre- and post-occupancy research findings on hospital healing garden design are sparse and design recommendations vary among users. Despite the lack of research on the design of healing gardens, the review showed that while post-occupancy research findings evaluate the effectiveness of design recommendations, pre-occupancy research findings, combined with site analysis, constitute a traditional approach followed in landscape architecture practice and determine the site and user features that must be addressed for each hospital. Pre- and post-research findings must be considered in the design process to create a “successful” healing garden. A summary of EBD recommendations for different users is presented, and the need to enrich the existing amount of EBD recommendations is highlighted.

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*Corresponding author.

E-mail addresses: aparas@aua.gr (A.T. Paraskevopoulou), emmakamperi@hotmail.com (E. Kamperi).

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1. Introduction

Over the years, timeless interest has led to a considerable amount of study on the influence of landscape and nature's effects on human health and well-being (Nightingale, 1860; Appleton, 1975; Ulrich, 1979, 1984; Tzoulas et al., 2014; Ulrich et al., 2008; Kaplan and Kaplan, 1989; Kaplan, 1995; Cooper Marcus and Barnes, 1999a; Ward Thompson et al., 2010; Ward Thompson, 2011; Chawla, 2015). These studies gradually informed the design of contemporary healing gardens, which began to appear in the mid-1990s (Cooper Marcus and Sachs, 2014). The design of the first contemporary healing gardens had no precedent to “consult” and was based on the designers' perspective, which failed at times. Although several authors based on research studies in an attempt to provide design principles for healing gardens and thus fill the gap between research and design practice (Tyson, 1998; Gerlach-Spriggs et al., 1998; Cooper Marcus and Barnes, 1999b), no statutory guidelines have been produced worldwide. Policymakers realized this need and requested evidence-based designs (EBDs) for hospitals and healthcare facilities (Shukor et al., 2012).

Healing gardens are the evolving concept of designing spaces that are intended to heal with predominant greenery; the term consists of two words: “healing” and “garden.” According to the Oxford Dictionary, the verb “heal” means “cause (a wound, injury, or person) to become sound or healthy again” and the noun “garden,” “a piece of ground adjoining a house, in which grass, flowers, and shrubs may be grown.” Researchers' perspectives on the application of the term “healing gardens” vary, thereby leading to a large number of definitions. Ulrich (1999) defined healing gardens as “a variety of garden features that have in common a consistent tendency to foster restoration from stress and have other positive influences on patients, visitors, and staff or caregivers. To qualify as a ‘garden’ the feature should contain prominent amounts of real nature such as green vegetation, flowers, and water.”

Cooper Marcus and Barnes (1999a) referred to healing gardens as “a space to look out at, and a space for passive or quasi-passive activities such as observing, listening, strolling, sitting, exploring, and so on.” Eckertling (1996) defined such gardens as “a garden in a healing setting designed to make people feel better.” Considering the influence of landscape and nature's restorative effects on humans, the lack of a precise definition for “healing garden,” and the definition by the World Health Organization of health as “a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity,” healing gardens today, although predominantly associated with hospitals and healthcare facilities, are not necessarily strictly confined to such environments and are found in other public or semi-public spaces, such as parks and campuses (Alt, 1999; Lau and Yang, 2009; Ivarsson and Grahn, 2012; Grahn et al., 2017). Certain healing gardens in hospitals and healthcare facilities, but more so in public or semi-public spaces, do not meet the basic design principles of healing gardens. With the lack of statutory guidelines, any practitioner and private initiative can, in theory, design and construct an open space and call it a healing garden. This situation is alarming, considering that a supposed

healing garden can generate a neutral or even negative effect instead of fulfilling its intended purpose. Seeing in Enniskillen, Northern Ireland that an important goal for the development of a new hospital is the creation of a site designed as an integral part of the healing process is promising but nonetheless raises concerns (Sullivan et al., 2014). The design and construction of hospital and healthcare buildings worldwide usually conform to statutory guidelines that have been proven effective by research; working toward this direction for the design and construction of healing gardens, which can play a pivotal role in supporting the well-being and health of the people working, staying, or visiting these buildings, is necessary.

Well-designed healing gardens in hospitals and healthcare facilities reduce stress, improve clinical outcomes, provide opportunities for escape from stressful clinical settings, heighten patient/consumer satisfaction with healthcare providers, increase care quality, and consequently improve economic outcomes by reducing the costs of care (Ulrich, 2002). Medicine conceives well-being from a physiological and psychological perspective and in the context of health but has only rarely dealt with the relationship between well-being and landscape or open spaces at the least (Council of Europe, 2006). In recent years, interest in the psychological or emotional needs of patients has been growing along with the traditional concerns, including infection risk exposure and functional efficiency, in the design of hospitals (Ulrich, 2001). Landscape architecture is a multidisciplinary field, individually examining each open space on the basis of site analyses and integrating evidence-based information in the design process of open spaces. Thus, landscape architecture can contribute to the design of healing gardens. Hospitals and healthcare facilities are generally either long or short term (acute care facilities) and address cases that are either routine medical and surgical or specialized, such as trauma, rehabilitation, pediatrics, geriatrics, psychiatry, and so on. Hospitals and healthcare facilities typically cater to the needs of three groups of people: patients, staff, and visitors. The relationship among the type of hospital or healthcare facility, the abovementioned groups of people and their needs, and healing gardens are different. These aspects must be considered in the design of a healing garden.

This research aims to examine the EBD and post-occupancy evaluation of existing healing gardens of hospitals, summarize EBD recommendations for healing gardens for different users, inform landscape architects, healthcare providers, and potential policymakers, and identify any potential need for further research.

2. Methods

This research focused on literature evaluating the design of existing healing gardens for healthcare facilities, primarily hospitals (Figure 1). The online search databases used were *Web of Science* and *Scopus*. The database search took place in the title, abstract, or keyword fields of works published in the past 30 years. The keywords used for the search included exact terms (enclosed in quotation marks “ ”) and combinations of terms (with use of “or”). The terms used were “healing garden,” “healing landscape,”

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