

# The Nightingale Principles

19<sup>th</sup> century thinking for 21<sup>st</sup> century sustainable practice

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**Abstract:** Florence Nightingale’s dictum to ‘do no harm’ echoes a primary condition for sustainable design. Written in *Notes on Nursing* (1860), she extended the teachings of the Hippocratic Oath to promote her vision of sustainable design through analysis of the household environment and the underlying physical conditions. Her sustainable design principles include adequate ventilation, odor reduction in painted and papered rooms, and windows for natural light and outdoor views. Such elements of sustainable hospital design endure today as a paragon to many design professionals dedicated to creating sustainable healthcare environments. While currently there is much awareness in addressing the importance of sustainable practice in healthcare environments, there is little scholarship devoted to the consideration of historical precedents for using sustainable principles in hospital design. This paper explores the relevance of Nightingale’s 19<sup>th</sup> century guidelines for British hospital construction to 21<sup>st</sup> century sustainable design practice.

**Key words:** *Sustainability, History, Design Theory, Florence Nightingale*

## 1. Introduction

Sustainability, as defined in 1987 by the United Nations World Commission on Environment and Development, is “development that meets the needs of present generations without compromising the ability of future generations to meet their own need.” Unlike sustainability, which incorporates a holistic approach, green design simply comprises materials and strategies. Although the terms sustainability and green design are different in meaning, both encapsulate the doctrine of *doing no harm*.

People often use the words “green” and “sustainable” interchangeably. There are myriad ideas loosely defined as “green” or “sustainable”, as a result many people do not necessarily understand how to achieve sustainability in the true sense of the word. However, Florence Nightingale understood what is recognized today as sustainable design, involving both the health of humans and the vitality of all the interrelated elements and environments.

The indoor quality of the built environment significantly affects occupants. People in the U.S. spend 90 percent of their time indoors, where air quality can be from two to five times worse than outdoor air quality [1]. Many buildings create unhealthy and potentially dangerous interior environments for their occupants. Providing occupants with an interior environment that is physiologically and psychologically healthy emerged as a crucial

issue for sustainable interior design. To achieve this, designers consider both indoor air quality and human comfort.

Indoor air quality in buildings is represented by the concentration of pollutants and thermal conditions, including temperature and relative humidity, which can thus affect the health, comfort, and performance of occupants. Indoor air quality complaints can range from odor to air quality-caused illness. Lighting and noise may also impact the quality of the indoor environment. Strategies to promote human comfort include appropriate thermal conditions, effective lighting, and appropriate acoustical conditions. Integrating the natural environment, such as access to outdoor views and vistas, is another strategy for improving human comfort. The inclusion of such components ought to be considered in creating sustainable healthcare environments.

While they represent current sustainable trends, these components are hardly novel. Florence Nightingale discussed these same elements more than 100 years ago in her book, *Notes on Nursing* (1859). Nightingale pioneered the notion of relating patient recovery to the hospital environment by combining perspectives from environment, health, and environmental psychology. She called attention to the importance of adequate ventilation, sanitation, noise control, and light. She also made instruction available for designing wards to enhance recovery of the patients in another book, *Notes on Hospitals* (1863). This publication has influenced hospital architecture worldwide [2].

## **2. Purpose**

This paper conveys four primary insights. First, it reveals the importance of Nightingale's work in revolutionizing the design of the built and sustainable environment within the hospital setting. Second, this paper presents her principles as a historical subject worthy of further research. Third, it demonstrates that the field of design— particularly principles of sustainability —is a discipline with a historical precedence of academic rigor. Finally, this analysis makes a case for contemporary design professionals to utilize Nightingale's insight and foresight in designing healthcare environment in the 21<sup>st</sup> century.

## **3. Research Questions**

Nightingale's prophetic vision of sustainability, which remains relevant today, included provisions for adequate ventilation, odor reduction in painted and papered rooms, and windows that offered natural light and pleasant views. The impact of her writings, teachings and practice, prompts the following three research questions: What is the relevance of Nightingales' 19<sup>th</sup> century guidelines for British hospital construction for 21<sup>st</sup> century design of healthcare environments? How do her principles affect specific elements of contemporary practice, such as room, wall finishes, lighting, ventilation, and view/perspective design for healthcare environments? Which principles transcend time by remaining relevant to the practice designing for healthcare environments in the 21<sup>st</sup> century?

Since patients spend most of their hospital stays indoors, the interior design of healthcare facilities plays a significant role in patient recovery. Key interior components of contemporary spaces include warm interior colors, comfortable furniture, artwork, artificial lighting, reduced noise level, and a connection to nature [3].

Over the past several decades, design professionals have adopted Nightingale's nineteenth-century focus on ventilation, light, noise, variety and stimulation in designing sustainable healthcare environments.

Nightingale claimed that providing a room with light, windows, and a view is essential to both the health and recovery of patients. She also emphasizes that patients from their beds should be able to see out of a window to sunlight. She insisted that windows must not be hermetically sealed, and should not be covered, except by light, thin, washable curtains to ensure that light can enter a room. She did not reference artificial light on the ward, but focused instead on the provision of natural sunlight.

Nightingale, based on her nursing work during the Crimean War, highlighted the importance of the environment on patient care, and defines *environment* as anything that assists in putting the patient in the best possible condition for nature to act. The environment can include those elements entering the body of the patient— food, water and medication — as well as those acting upon the body, i.e. ventilation, light, noise, and stimulation.

Providing a clean and adequately ventilated environment was Nightingale's first priority for care. She wrote, "The very first canon of nursing... is this: to keep the air the patient breathes as pure as the external air, without chilling him [4]." She promotes fresh air through open windows and warmth. Since her audience lived in the cool, damp British climate, she recognized warmth as a primary aspect for maintaining health. Nightingale also challenged the popular notion that night air was bad for patients. "What air can we breathe at night but night air [5]?" Nightingale extended her principles to the home, stating that households also require pure air, pure water, efficient drainage, cleanliness, and light.

Noise, according to Nightingale, is the most deleterious of environmental stressors, whereby "[u]nnecessary noise, or noise that creates an expectation in the mind, is that which hurts a patient. It is rarely the loudness of the noise, the effect upon the organ of the ear itself, which appears to affect the sick [6]. Nightingale advised reducing noise and noise-making activities, such as clanking and loud conversations with or among caregivers. As a result, the potential negative impact of noise, such as interrupted sleep, poor communication and pain perception.

Nightingale believed that providing natural elements, such as flowers and plants, while carefully avoiding those with fragrances, aided patient recovery. She advised nurses to be aware of the effects of nature upon mind and body, to help with pain perception in patients, and to use soothing colors. She wrote, "[t]he effect on sickness of beautiful objects, of variety of objects, and especially of brilliancy of colors is hardly at all appreciated [7]." Then, as now, "the same walls, the same ceiling" were known to make "nerves of the sick suffer [8]." Whether the variety comes from hanging different pictures or by adding bouquets of flowers, the change is a stimulus for patient to turn their thoughts away from their suffering to something external to them. Today's researchers define Nightingale's notion of variety as positive distraction [9].

Florence Nightingale did not specifically call her principles components of sustainable design. However, her approach in nursing demonstrated a holistic approach and implied that the environment, patient, and nurses

(caregivers) are considered key contributors to patients' recovery. Her goal of nursing is to place the patient in the best possible condition for nature to act. Nurses accomplish this goal by altering the environment to reinforce the natural law. Thus, Nightingale's principles could be applied not only to the nurses who care for patients, but also to the designers who create the spaces for the patients. Designers must consider — as did Nightingale— the following: providing adequate ventilation and warmth, maintaining cleanliness of rooms and walls, controlling noise, providing light, and stimulating with variety.

#### **4. Conclusion**

Healthcare has historically led society toward changes that are for its own good. Equally significant, hospitals reach people at a time when they are especially vulnerable and, therefore, educable. Having undergone an experience that often forces them to ponder quality-of-life issues, patients are more apt to adopt a greener attitude of their own once they go home. More hospitals have come to the realization that there is a connection between environmental health and patient health [10]. Hospitals are finding that their mission and values align with sustainability. In less than a decade, design practitioners, facility owners, and managers are beginning to embrace sustainable design and operations.

Nightingale engaged in what we call today “sustainable design”, which has affected how designers now base environmental decisions. The healthcare/healing environment is becoming a sub-specialty in interior design, architecture, and facility planning. Designers need to make educated, evidence-based decisions about the healthcare/healing environment. In order for that to happen, part of their education must be the knowledge of the past, making possible informed decisions for the future. According to Amos Rapport in *House, Form and Culture* (1969), “the assumption behind any historical approach is that one can learn from the past; the past is of value philosophically as well as in making us aware of the complexity and overlapping things [11].” Rapport's claim expresses the relationship between history and current practice. Yet most histories of healing environments in the field of interior design lack any substantive research. This paper provides critical information for today's designers by enlightening them on how Nightingale's principles were used in the past, and can provide guidelines for the design in healthcare/healing environment for any given condition.

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