

# Conceptual Modeling Of Evidence-Based Quality Improvement In Public Hospitals (EBD) With A Patient Satisfaction Approach (Case Study: Gandhi Hospital, Tehran)\*

Aida Sadeghi<sup>1</sup>, Azadeh Shahcheraghi<sup>2\*</sup>, Khosrow Daneshjoo<sup>3</sup>, Seyed Behshid Hosseini<sup>4</sup>

<sup>1</sup> Ph.D. Candidate, Department of Architecture, Science and Research Branch, Islamic Azad University, Tehran, Iran.

<sup>2</sup> Associate professor, Department of Architecture, Science and Research Branch, Islamic Azad University, Tehran, Iran.

<sup>3</sup> Associate professor, Department of Architecture, Faculty of Arts, Tarbiat Modares University, Tehran, Iran.

<sup>4</sup> Full professors, Department of Architecture, Faculty of Architecture and Urban Planning, Iran University of Arts, Tehran, Iran.

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## ABSTRACT

### Research Problem:

In recent decades, the design of healthcare environments has undergone significant transformation. However, many public hospitals still suffer from outdated or purely functional spatial arrangements that fail to adequately support the emotional, psychological, and social needs of patients. Traditional hospital designs often prioritize operational efficiency and the treatment process over the holistic experience of patients. This discrepancy between architectural design and patient well-being has raised questions about how hospital environments can be improved to foster healing and satisfaction.

The emergence of the "healing environment" concept has introduced a paradigm shift in healthcare design. Rather than focusing solely on treatment delivery, architects and healthcare planners now emphasize the patient experience, recognizing that the physical environment plays a direct role in patient outcomes. This has led to the adoption of "patient-centered" and "evidence-based" design approaches. Evidence-Based Design (EBD) integrates research findings and empirical data into design decisions, offering a structured and data-informed framework to enhance both the quality of space and the efficiency of care.

Despite the growing recognition of EBD, there remains a lack of clear, conceptual models tailored to public hospital systems, particularly in developing or transitional healthcare settings. The challenge is not only to adopt EBD principles but also to apply them in a structured, measurable way that aligns with local conditions and patient needs. This research seeks to address this gap by conceptualizing an EBD-based quality improvement model with a specific focus on patient satisfaction, using Gandhi Hospital in Tehran as a case study.

Patient satisfaction is a key indicator in evaluating the quality of healthcare services and plays a crucial role in the healing process and patients' perception of the healthcare system. Evidence-Based Design (EBD) is a scientific approach that uses empirical data to optimize healthcare environments. The goals of this research are to promote the principles of designing healthcare centers with an evidence-based approach to improve the quality of space, enhance patient satisfaction, and accelerate the recovery process.

### Research Question:

How can a conceptual model based on Evidence-Based Design (EBD) be developed and applied to improve spatial quality and increase patient satisfaction in public hospitals?

Sub-questions include:

Which architectural and environmental features most directly influence patient satisfaction?

How do psychological and social aspects of hospital design contribute to the healing process?

To what extent is Gandhi Hospital aligned with EBD principles?

### Research Method:

This study adopts an applied, descriptive-analytical research method. It involves both qualitative and quantitative data collection techniques to build a comprehensive understanding of the healing environment and its relationship to patient satisfaction. The main tools used in this research include field observation, literature review, and structured questionnaires.

A questionnaire was distributed to 25 inpatients at Gandhi Hospital in Tehran. The questionnaire was designed around core EBD criteria, including architectural features, interior design, psychological comfort, and social support. The data were analyzed using two software tools:

**ASPECT (A Staff and Patient Environment Calibration Tool):** Used to assess the quality of environmental features based on evidence-based criteria.

**SPSS (Version 26):** Used for statistical analysis, including calculation of mean scores, standard deviations, and comparisons between environmental variables.

This mixed-methods approach allowed the research to explore not only the patients' subjective experiences but also objective data on spatial quality. It helped bridge the gap between design theory and practical implementation, creating a pathway toward a conceptual model of EBD that is grounded in user feedback and contextual relevance.

In this study, data analysis was conducted using regression and correlation methods. Correlation analysis was used to examine the strength and direction of relationships between variables, while regression analysis helped in understanding how one or more independent variables predict the value of a dependent variable.

#### **The Most Important Results and Conclusion:**

The findings of this study revealed a nuanced picture of Gandhi Hospital's environmental performance in relation to EBD principles and patient satisfaction. According to the statistical analysis:

The overall mean satisfaction score related to the healing environment was 3.949 (on a 6-point Likert scale).

The mean score for architectural features was 3.952, and for interior design features it was 3.815.

These values fall close to the mid-point average, indicating moderate satisfaction in terms of physical and spatial qualities. In contrast, psychological and social factors scored above average, suggesting a higher level of patient satisfaction in these dimensions.

These results indicate that while Gandhi Hospital has achieved reasonable success in creating supportive physical environments, greater emphasis is needed on architectural and spatial design to fully align with EBD principles. The relatively high scores in psychological and social categories show that patients are responsive to factors such as noise reduction, daylight access, privacy, and interaction with staff and family members—key elements supported by the EBD literature.

The research concludes that a conceptual model for evidence-based design in public hospitals should prioritize three core domains:

**Environmental Design Factors:** Layout, materials, lighting, acoustics, and wayfinding.

**Psychological and Social Support:** Spaces that promote dignity, autonomy, social interaction, and emotional well-being.

**User-Centered Feedback Loops:** Continuous evaluation through patient and staff surveys to align design decisions with real needs.

By integrating these dimensions, the proposed conceptual model aims to guide hospital planners, architects, and policymakers toward more patient-centered and effective environments. Importantly, this model can be adapted to other public hospitals facing similar challenges in Iran or comparable contexts.

In sum, this study highlights that patient satisfaction is not solely a function of medical outcomes, but is significantly influenced by environmental and experiential factors. The incorporation of EBD into the conceptual modeling of hospital environments offers a scientifically grounded and human-centered path forward for healthcare design.

This study confirms that implementing evidence-based design principles in hospital environments significantly enhances the patient experience, increases satisfaction, and accelerates the healing process.

#### **KEYWORDS**

Treatment centers, evidence-based design, patient satisfaction, patient rights, healing environment

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