

[Acoustic Comfort in Palestinian Hospitals and Its Implications for Patients' Healing: Evaluation Study and Optimization Models]

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## ABSTRACT

Environmental comfort plays an important role in evaluating patient satisfaction in healthcare facilities when one of the most critical types of comfort is acoustic comfort. The study aims to evaluate and optimize the acoustic performance of the design of sleeping wards in hospitals in Palestine to achieve the recommended noise level. This study employs a quantitative method, and experimental approach to examine the environmental components of acoustics in hospitals, taking into account the social and cultural context of Palestine. The study adopts a methodology to collect data through questionnaires for patients and workers and includes conducting comprehensive acoustic measurements of the selected spaces based on the case study, which is Alia Hospital in the city of Hebron. Moreover, the simulation is used to develop solutions to optimize the acoustic environment. The study extends to examine acoustic design and architectural modifications that would reduce noise entering the building. They were placed in three basic models that depend on the value of external noise caused by traffic, courtyards, and surrounding buildings. The results of the study confirm the possibility of applying acoustic design in healthcare buildings in the future through these models. After reviewing the urban plans for the construction area, models were developed based on the variables affecting noise to determine optimal values for each, including the thickness and composition of external walls. There is a direct link between high noise levels and patient stress levels, increasing the recovery period. The importance of the recommendations lies in their ability to influence the decisions of designers, planners, and decision-makers, which has an impact on the health and comfort of patients inside hospitals. Prioritizing acoustic comfort fosters healing environments, recognizing the interconnectedness between physical spaces, patient experience, and clinical outcomes. Integrating acoustic considerations into hospital design enhances patient satisfaction and overall healthcare quality, ensuring hospitals serve as healing sanctuaries promoting physical and emotional wellness.

### **Keywords:**

Acoustic comfort, Noise pollution, Urban noise, Sleeping wards, Acoustic performance.