April, 2017

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Anjali Joseph
Sara Bayramzadeh, Clemson University
Zahra Zamani
Bill Rostenberg, Architecture for Advanced Medicine

Available at: https://works.bepress.com/zahra_zamani/21/
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Anjali Joseph, PhD¹, Sara Bayramzadeh, PhD¹, Zahra Zamani, PhD², and Bill Rostenberg, AIA³

Abstract
Objective: This review of empirical literature focuses on the design of operating rooms (ORs) by investigating the physical environmental features of ORs associated with patient and staff outcomes. Background: Many ORs built more than 30 years ago remain operational today. However, most are inadequately designed to handle the equipment, processes, and people that a contemporary OR needs to accommodate. However, the evidence base for designing ORs has been sorely lacking, and little guidance exists on how OR design can improve safety and performance outcomes. Method: A literature search was conducted using PubMed and the university’s linked databases. The inclusion criteria included peer-reviewed journal articles that reported some aspect of the physical environment of ORs along with outcomes. The study included empirical studies as well as nonempirical best practice papers. Results: This literature review uncovered 211 articles. The main themes that emerged include OR design-related factors, ventilation, temperature and humidity, acoustical environment, lighting, and materials. Some environmental threats to patient safety in the OR include frequent door openings, clutter, poor air quality, surface contamination, and noise. Further, staff performance and satisfaction were impacted by factors such as the OR layout and equipment and furniture ergonomics. Conclusion: This literature review provides an overview of the research organized into design-focused topic areas to support decision-making by architects and designers. This article highlights gaps in the research and identifies areas where best practice and design assumptions need to be evaluated using rigorous design research.

Keywords
operating room design, patient safety, staff satisfaction, staff performance

The operating room (OR) is a high-risk, problem-prone patient care environment. According to the World Health Organization’s (WHO) Guidelines for Safe Surgery, in developed countries, patients undergoing inpatient surgeries experience major complications at a rate of 3–22% and a death rate of 0.4–0.8%. Roughly, half of these incidents

¹Clemson University, Clemson, SC, USA  
²EwingCole, Raleigh-Durham, NC, USA  
³Architecture for Advanced Medicine, San Francisco, CA, USA

Corresponding Author: Anjali Joseph, PhD, Clemson University, Lee 2-141, Clemson, SC 29634, USA. Email: anjali@clemson.edu