

## An Investigation of Pediatric Healthcare Environments in the United States

Healthcare facilities in the United States may be hindered by a lack of evidence-based design and available funds. Studying existing conditions and querying end-users and other stakeholders can inform responsive and affordable design solutions. If healthcare facilities' resources do not allow for the use of best practices, the resulting design may not optimize care for the human body. It is hypothesized that light, comfort, and color within an interior environment affects the human body. The proposed study will gather existing evidence at current facilities and query stakeholders regarding their experiences and health in the period between Fall 2015 and end before the Spring 2016 semester. The proposed study will attempt to identify which factors contribute to pediatric patients' and their families' health while being restricted to hospital environments for extended periods of time. According to one expert, Richard J. Wurtman, a nutritionist at the Massachusetts Institute of Technology, "...light is the most important environmental input, after food, in controlling bodily function" (Gruson, 1982, p.1). "As designers... have discovered, color sets a mood; this in turn, Mr. Birren said, affects health because as many as half of modern man's diseases may have a psychosomatic component" (Gruson, 1982, p. 2). Since an evidence-based design solution is only as effective as the qualitative and quantitative research informing it surveys, interviews, and limited site visit case studies at multiple children's hospital facilities in the United States will be the methods of the proposed study (Nussbaumer, 2009). The applicant has completed the necessary Responsible Conduct of Research training and will submit the study for IRB approval before data collection commences. Surveys will be distributed to target fifty pediatric patients and their families or caretakers that have spent more than two weeks at a hospital. Similar surveys will be sent to associated healthcare professionals at the studied hospitals. Surveys will be distributed electronically throughout the United States, and hardcopy surveys will also be distributed in person at the time of the site visits. Questions will address considerations such as the following: length of stay at hospital, reason for hospital stay, waiting room comfort, patient room attributes, availability of accommodations for overnight relatives, comfort level of patient, and patient's health status. Demographic questions will also be included. Site visits are also a large component of this proposed study since analyzing existing conditions at top-rated pediatric hospitals is of utmost importance in gathering data for an evidence-based design solution. Light Reflectance Values (LRV) of major interior surfaces will be examined. Existing room color selections, lighting, and furniture will also be documented. An Extech LT300 light meter will be borrowed from the faculty mentor and existing lighting levels will be measured and compared to industry recommendations. It is anticipated that this study will support the person-environment theory. Anticipated sites include industry leaders: Cincinnati Children's Hospital Medical Center, Boston Children's Hospital, and Children's Hospital of Philadelphia. Transportation and lodging accommodations are proposed to be covered by this grant in order to travel to these healthcare facilities. During site visits, interviews with healthcare professionals are also proposed to expand on the previously administered surveys. Findings from the proposed study will be integrated into a new design solution to be created by the applicant for the pediatric area of Integris Baptist Hospital in Oklahoma City with the objective to make their facility more innovative in these practices, including adherence to Illuminating Engineering Society (IES) recommendations. Integris Baptist Pediatric Center has been a significant factor in the applicant's life and that is why this location was chosen. The applicant has spent months in this hospital caring for their sibling with cancer, as well as friends who have genetic disorders, after seeing the affects the interior environment had on everyone there the applicant was inspired to focus on this location. After the completion of the surveys, site visits, and interviews an evidence-based, optimized design will be developed by the applicant to integrate the findings into the pediatric floor of Integris Baptist Hospital in Oklahoma City. Final deliverables include the following for the new proposed design: an itemized budget, a floor plan, a furniture plan, furniture schedule and specifications, a reflected ceiling plan, a lighting plan and lighting specifications, room elevations and 3-d perspectives of each area, all created through the use of computer-aided design software such as AutoCAD and REVIT.

Gruson, L. (1982, October 18). Color Has a Powerful Effect On Behavior, Researchers Assert. Retrieved March 12, 2015, from <http://www.nytimes.com/1982/10/19/science/color-has-a-powerful-effect-on-behavior-researchers-assert.html?pagewanted=1>

Leonard, K. (2014, June 10). Best Children's Hospitals 2014-15: Honor Roll and Overview. Retrieved March 12, 2015, from <http://health.usnews.com/health-news/best-childrens-hospitals/articles/2014/06/10/best-childrens-hospitals-2014-15-honor-roll-and-overview>

Nussbaumer, L.L. (2009). *Evidence-Based Design for Interior Designers*. New York: Fairchild Books.