



KEY POINT SUMMARY

DESIGN IMPLICATIONS

Design of the physical environment for children's hospitals should consider the factors that help relieve children's and parents' stress to reduce the psychological sequelae after discharge.

The comfort of overnight facilities for parents and the temperature of the room should be improved for higher ratings of accommodation.

Provide more art in the public area and family center.

Provide more spaces and design features in both public area and patient rooms that can afford family activities.

Understanding the Role of Hospital Design on the Psychological Trauma of Hospitalization for Children

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Key Concepts/Context

Hospitalization can be psychologically traumatic for children. Limited research has studied the impact of hospital design on hospitalized children. The move of the Ann & Robert H. Lurie Children's Hospital of Chicago to an entirely new replacement facility offers an excellent opportunity to study the effect of hospital design on patient and family experiences during hospitalization.

Objectives

To better understand the impact of hospital design on child and family stress during and after hospitalization. The goal is also develop valid and reliable psychometric and behavioral measures that can accurately evaluate the impact of design features on child and parent stress and anxiety. More detailed objectives include:

1. Develop valid and reliable psychometric and behavioral measures that would assess the stress and anxiety for children during hospitalization.
2. Develop valid and reliable psychometric and behavioral measures that would predict the likelihood of post-hospitalization psychological sequelae for children.
3. Develop valid and reliable psychometric measures that indicate the extent to which parents are able to adequately support their child during their child's illness or injury.
4. Develop valid and reliable means of measuring specific hospital design features that correlate with the child's and family's capacity to avoid potential psychological sequelae of hospitalization.



Methods

The study is designed as a pre-post study that will examine the impact of hospital design on child and family stress during hospitalization before and after the Lurie Children's hospital moves to the new facility. This report details findings from a pretest study conducted in the previous hospital facility. The same tools will be used to assess changes in the child and parent hospitalization experience as a result of the move and the new child-centered design features.

The pre-test study used two assessment methods—an Inpatient and Follow-up Survey and a Health Design Photo Questionnaire. The Inpatient and Follow-up survey was completed by parents (with hospitalized children age 3 or older) and hospitalized adolescents (age 12 to 17). The survey was conducted in person during the third to fifth day of hospitalization, and the same survey was completed by phone six weeks following discharge.

The Photo Questionnaire was conducted on hospitalized children (age 5 to 17) during their stay in the former hospital. They were asked to take photos, and describe their reactions to their hospital room, the Brown Family Life Center (a medical-free play zone for inpatient children and adolescents), and their bedtime experience.

Findings

The chosen psychometric measures identified children with elevated anxiety during and after hospitalization and parent stress during and after hospitalization. Whether the child had experienced previous hospitalizations or had been admitted through the emergency department are correlated with anxiety, stress, and other sequelae. Children with more social/mental impairment experienced a higher level of anxiety in the hospital and at follow-up, relative to their typical anxiety level. Parent stress during hospitalization was strongly associated with the child's having anxious feelings in the hospital and with the parents' stress score at follow-up. Parents who reported less stress also reported a higher satisfaction with staff and with the accommodations for the child and family in the hospital.

Reactions to specific design features in the hospital were collected through both parent interviews and photo questionnaires. The results of the interview demonstrated that the most frequently used spaces of the hospital were: the hospital hallways, art hanging in the hospital, the Siragusa Lobby, and the Brown Family Life Center. Among six spaces/features, the Brown Family Life Center and the chapel achieved the highest restorative experiences scores. The result of photo questionnaires showed that art was the most photographed favorite thing followed by activities and the space in the Brown Family Life Center. In the patient room the most photographed favorite things were activities, followed by TV and objects taken from the patient's home. Children photographed their least favorite things in the room as medical equipment. Children's and parents' emotional responses to



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specific design features were measured and correlated with the child's social and mental capacity and anxiety levels. Restorative experience scores were generally not associated with child anxiety, child anxiety difference scores, or parent stress. However, for more mentally/socially-impaired children, the more the Brown Family Life Center and hospital art provided a restorative experience. Parent stress was strongly associated with parents' reported satisfaction both with staff performance and with the accommodations available for families.

Limitations

Some limitations identified by the authors include:

- The factors used to determine the extent of psychological sequelae are quite varied, and the study didn't fully capture it. A broader assessment is needed of socioeconomic status, social resources at home, family functioning, and parents' capacity to manage their child's complex medical condition.
- Current choice of measurement and the timing of the measurement of anxiety can be refined to capture more accurate level of anxiety of hospitalized children.
- Lack of data regarding what parents do for their own respite and their use of the hospital's spaces and amenities

Some additional study limitations include:

- A portion of the follow-up surveys was conducted on children after they re-admitted into hospital, which may lead to differences in survey results.