SYNOPSIS

KEY POINT SUMMARY

OBJECTIVES

The multiphase POE comparative study investigated whether the POE findings in a system-wide hospital organization enhanced decisions in subsequent new nurse unit design.

The continuous learning cycle: A multi-phase post-occupancy evaluation (POE) of decentralized nursing unit design

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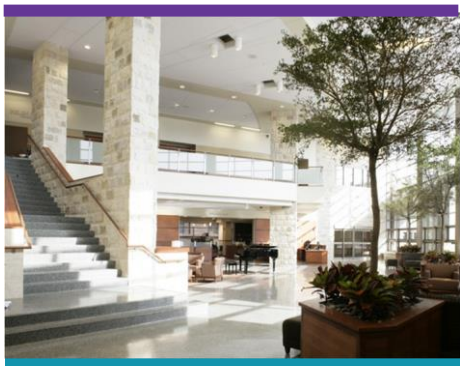
Key Concepts/Context

Post-occupancy evaluation (POE) is viewed as a valuable component of the healthcare design process and can be used in the evidence-based research process to make design decisions. Research is limited that documents findings of POEs to make informed decisions for future projects. A multiphased POE across a system-wide organization demonstrated how the knowledge learned in a nursing unit design project can contribute to continuous quality improvement in a future project.

Methods

The study was conducted within hospitals of the same health system. Unit A from Hospital A, an existing unit, was compared to Unit B from Hospital B that recently implemented new design elements of a decentralized nurse station. The results of POE from Unit A and Unit B were used to inform design decisions for an expansion of Hospital A, Unit C. The three units evaluated shared similar patient populations and a similar organizational culture.

Qualitative and quantitative methods were combined in the POE methodology for both phases of the study. Walk-through evaluations, space syntax analyses, pre- and post-move data from Press Ganey surveys, and nurse interviews were included in the POE assessment. A POE checklist created by The Center for Health Design (CHD) was used by a team of academic researchers and architects as a standardized tool to evaluate units A and B. The CHD POE checklist addresses 23 evidence-based design goals in the four categories of patient safety, worker safety and effectiveness, quality of care and patient experience, and organizational performance. In both phases, the space syntax analysis was conducted with depthmapX to measure nurses' visual connection to the patient room and peers from workstations. Press Ganey scores were used to assess patient satisfaction using questions related to the physical environment and nursing care-related items.



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Two years after the initial POEs for units A and B, and one year after Unit C was constructed and occupied, the research team conducted a follow-up POE using the same standardized tools to compare Unit C with Unit A.

Findings

Phase I

Using the CHD evaluation tool the average rating for Unit A was 2.92.The average rating for Unit B was 4.47. No EBD goals from the CHD tool were rated as exceptional for Unit A, but in Unit B, 14 EBD goals were rated as exceptional. Unit A did not achieve any top priority goals established by hospital leadership and staff, whereas Unit B achieved all seven priority goals. Visibility results from the space syntax analysis demonstrated that Unit B achieved higher visual integration values than Unit A, with an overall higher integration of hubs and alcoves, compared to the average visibility of nurse stations in Unit A.

Patient satisfaction results demonstrated that the average ratings for all facility items increased significantly ($p<.001$) in Unit B. Nursing care remained highly rated, with one item, "promptness to call," ranked significantly lower ($p<.03$). The decrease in response rate to patient calls may relate to longer walking time. The lessons identified in Phase I were adapted to the new Unit C design.

Phase II

Results were compared between Phase I POE units (A and B) and new Unit C. Unit C achieved mean ratings of 4.42 for double rooms and 4.64 for single rooms. The single-room rating in Unit C is higher than Unit B, which demonstrates improvement. Unit C visibility data demonstrated higher integration values than both units A and B. Three team collaboration hubs within Unit C support greater visibility than the single team hub in Unit B. Patient satisfaction scores for physical environment items all improved for Unit C compared to Unit A. Nurses keeping informed and perceptions of skill significantly increased in Unit C compared to Unit A ($p = .039$) and 23.6% ($p = .001$) respectively. The design of multi-team collaboration hubs and alcoves in Unit C was rated higher than for Unit B.

Limitations

The Phase II POE for Unit C was conducted in 2018 after completion and occupation occurred. It is unclear from the article exactly how long after occupancy the POE was conducted. Without knowing the specific time interval, it is hard to determine if there was enough time for staff to have become accommodated in new unit. Additionally, this study used measures from the research team's perspective, the patient perspective, and from visibility analysis. The perspective of the nurses would have strengthened the findings.

Design Implications

Double-occupancy rooms were rated lower than single rooms throughout this study, highlighting the required trade-off between the need for surge capacity and patient/family satisfaction. Additionally, the combination of team collaboration hubs with nursing alcoves improved visual integration. This study has demonstrated the value of longitudinal, multi-phase POE for healthcare organizations, architectural firms, and the healthcare design industry.