



Nurse Collaboration and Teamwork in a Redesigned Neonatal Intensive Care Unit



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Introduction

This study, part of a larger project examining the impact of a neonatal intensive care unit (NICU) redesign from open bay (OPBY) to single-family rooms (SFRs), aims to determine the redesign's impact on nurse collaboration and teamwork.

When nurse collaboration and teamwork are inconsistent or lacking, patient care and outcomes suffer (Fay, et al., 2022; Kohanová, et al., 2024).

The growing trend of NICU designs from OPBY to SFRs makes understanding the impact on nurse collaboration and teamwork essential.

Open Bay



Single-Family Room



Systematic Review Results

The systematic review found mixed evidence of the impact of a NICU design change from OPBY to SFRs on nurse collaboration and teamwork.

Favorable Findings

- No significant differences in support from colleagues or perceptions of team effectiveness (Feeley et al., 2019)
- Significantly higher job satisfaction and lower stress reported in SFRs (Shepley, 2008)
- Significantly lower nurse anxiety in SFRs (Stevens, et al., 2012)

Non-Favorable Findings

- Fewer colleagues available for help in emergent and routine situations in SFRs (Walsh, et al., 2006)
- Greater communication challenges and less interaction with colleagues (Walsh, et al., 2006)
- More positive comments about teamwork in the OPBY design (Winner-Stoltz, et al. 2018)
- Higher nurse anxiety in SFRs because of lack of peer support, decreased teamwork, and poorer communication patterns (Soni, 2022)

Methods

Systematic Review of the Scholarly Literature

- Literature search using 4 databases: PubMed, CINAHL, Cochrane, and PsycInfo
- Review of 151 abstracts to assess if studies met inclusion criteria
- Risk of bias assessment of 67 articles meeting inclusion criteria
- Grade and summarize overall findings based on strength of evidence

Nurse Satisfaction Surveys

- **Secondary Data**
 - Surveys provided by third-party vendor
 - Sample included one-year of OPBY and one-year of SFR
 - Measures reported here relate to intra-professional collaboration and communication
- **Analytic Technique**
 - Descriptive statistics
 - Kruskal-Wallis bivariate statistical analyses to examine differences in intra-professional collaboration and communication in SFR compared to OPBY

Nurse Qualitative Interviews

- **Recruitment**
 - Flyer on NICU bulletin boards
 - Word of mouth by nurse champions
 - Announcements via emails and huddles
- **Interviews**
 - Screener using Qualtrics
 - Informed consent
 - 60-minute semi-structured interview on Zoom
- **Analytic Technique**
 - Open coding to inform codebook development
 - Interrater reliability
 - Content analysis of coding reports

Qualitative Results

Theme

Theme Description

Example Quote

Knowledge Sharing

- Nurses reported more opportunities for knowledge sharing on OPBY than in SFRs.

"So I feel like for learning purposes, that the OPBY was just easier because you could hear people talking to families... nurses doing discharge education."

Helping Other Nurses

- Nurses considered it easier to help one another on OPBY compared to SFRs.

"It was easy to help others because you were right there."

Continuity of Care and Shift Hand-Offs

- Nurses described the difficulty giving report on the OPBY.

"Giving report was a challenge because unfortunately, there are things that you need to say, but you don't necessarily want to say, because you don't want other people hearing..."

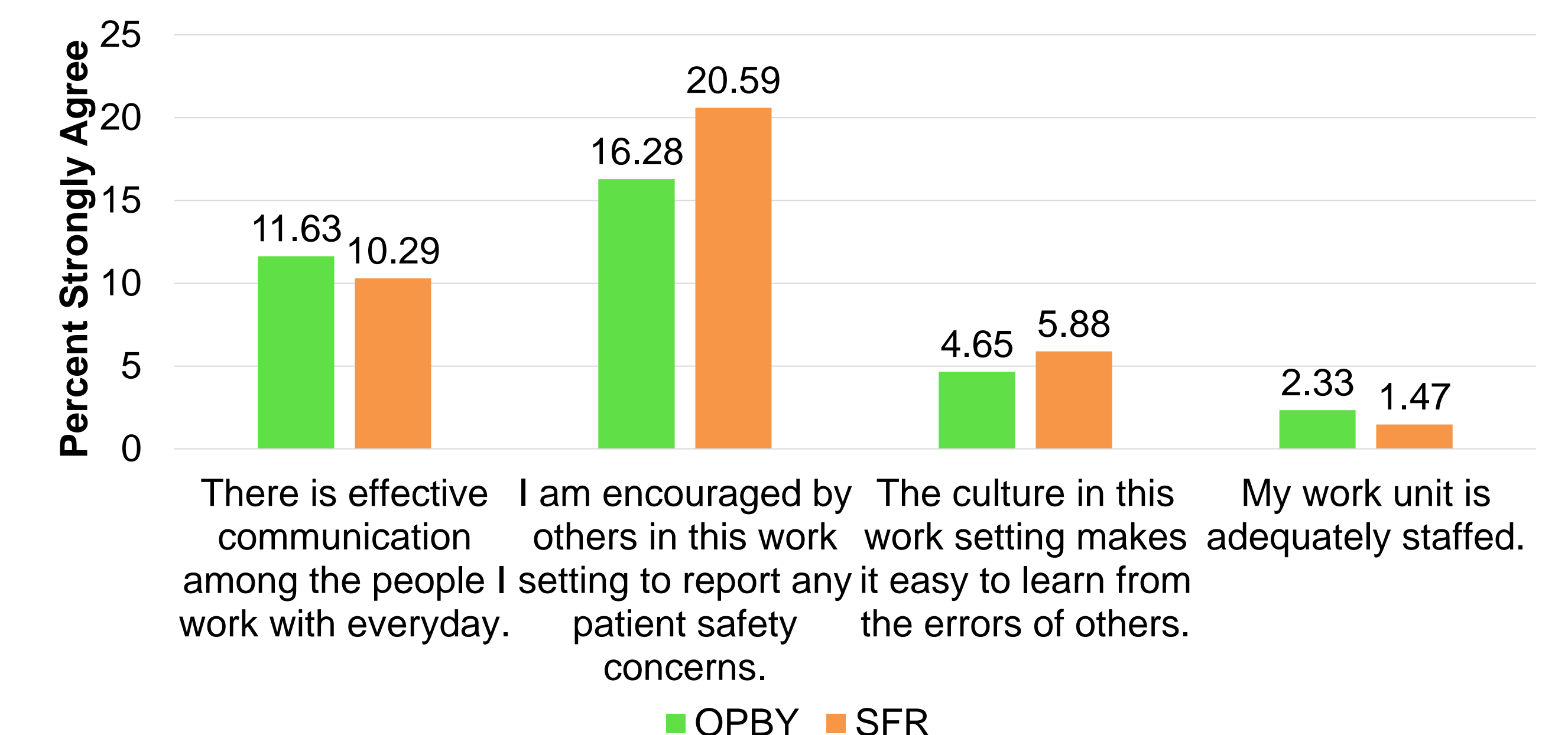
Workload

- For workload, some nurses felt staffing shortages existed in the SFRs.

"The magic wand would be more nurses."

Quantitative Results

Nurse satisfaction surveys completed pre- and post- redesign showed no significant difference in items for nurse collaboration and teamwork. Kruskal-Wallis tests showed no difference in these items comparing OPBY to SFR.



Discussion

The quantitative findings were consistent with the results of Feeley et al. (2019) who found no impact of the NICU design on nurse collaboration and teamwork. The qualitative findings were divergent from the quantitative findings, providing rich detail on changes to nurse collaboration and teamwork resulting from the NICU transition to SFRs. These findings were consistent with the "non-favorable findings" in the systematic review.

Although SFRs offer a number of benefits (less noise, better lighting, improved privacy), they can hinder nurse collaboration and teamwork. To fully realize the benefits of SFRs, NICU leadership and staff nurses can address these challenges through changes in unit policies and processes, such as implementing a buddy system, ensuring a charge nurse or other role has no patient assignment, adding routine huddles during the shift, adopting a hands-free and integrated communication system, and monitoring workload processes to ensure adequate staffing. An extended orientation for new nurses and informal education events will further add to staff's comfort with the SFR design.

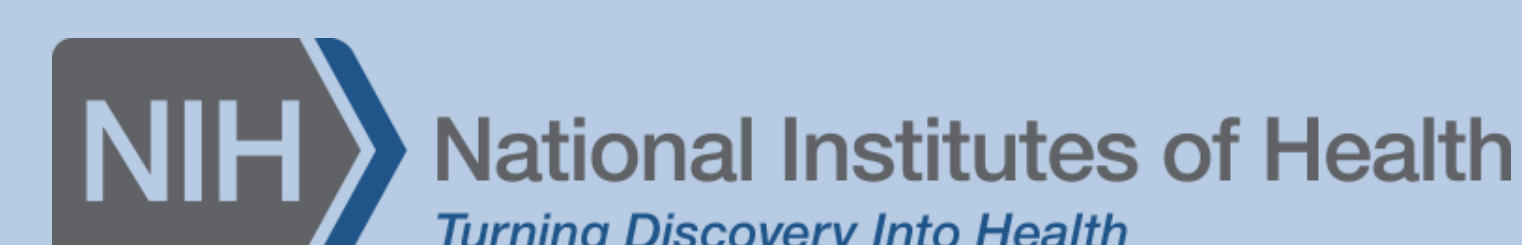
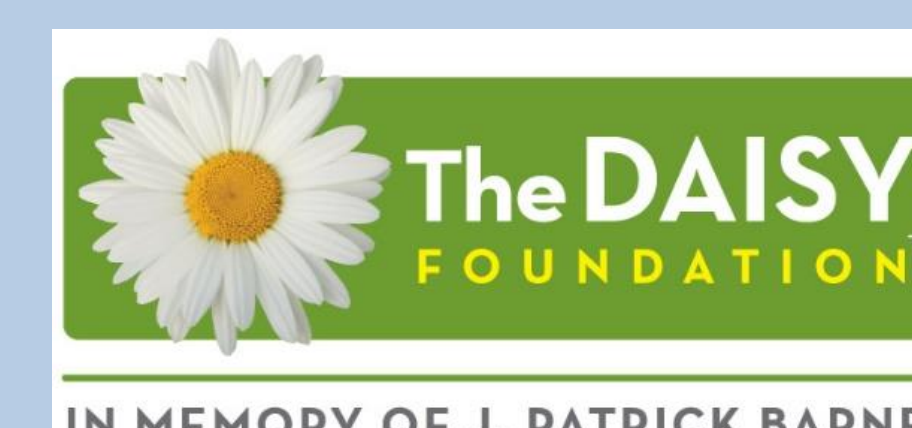
Supporting collaboration and teamwork helps nurses grow clinically and ensures high-quality, compassionate care—ultimately improving outcomes for both patients and families.

References



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