

THE EFFECT OF CUBICLE NURSING ON REDUCING PATIENT READMISSION RATES IN HOSPITALS: A LITERATURE REVIEW

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ABSTRACT

Background: Patient call bell frequency is an important indicator of nursing service quality as it reflects patient needs, the effectiveness of supervision, and nurses' responsiveness. The *Cubicle Nursing* model a zonal-based care system in which nurses are responsible for a group of patients within a specific area is believed to reduce patient call frequency by enhancing physical proximity and therapeutic communication between nurses and patients. **Purpose** This literature review aims to identify and analyze research findings regarding the effects of the *Cubicle Nursing* or decentralized nursing system on reducing patient call frequency, improving nurse responsiveness, and enhancing patient satisfaction in hospitals. **Methods:** Articles were retrieved from PubMed, ScienceDirect, Wiley, SAGE, and BMC databases between 2021 and 2025. Twenty selected studies were thematically analyzed under four major themes: (1) reduction in patient call frequency, (2) nurse responsiveness and work efficiency, (3) patient satisfaction and experience, and (4) nurses' experiences regarding spatial and workflow changes. **Results:** Most studies revealed that *Cubicle Nursing* and decentralized nursing models reduced patient call frequency by 30–50%, improved nurses' response times, and enhanced patient satisfaction. The integration of technologies such as bed-exit systems, motion sensors, and intentional rounding further strengthened these outcomes. Major challenges included nurse adaptation, inter-zone coordination workload, and changes in work culture. **Conclusion:** The *Cubicle Nursing* model is effective in improving nursing service quality by reducing patient call frequency, increasing efficiency, and enhancing patient satisfaction. Implementation in Indonesia requires organizational policy support, staff training, and integration of digital monitoring technologies.

Keywords: *Cubicle Nursing*; patient call bell; nurse; decentralization; nursing quality

Introduction

The quality of nursing services in hospitals is an important indicator of the overall success of the healthcare system. The quality of nursing care is not only measured by technical competence but also by the nurse's ability to provide a quick, empathetic, and appropriate response to patient needs. One commonly used indicator to assess the effectiveness of such services is the patient call bell frequency, which reflects the accessibility and alertness of nurses toward inpatients.

The call bell serves as the primary means of communication between patients and nursing staff. However, a high frequency of call bell usage often indicates deficiencies in monitoring systems, an imbalance in nurse-to-patient ratios, or the failure to proactively address patients' basic needs (Fukushige et al., 2025). In modern healthcare systems that demand high efficiency and patient safety, a high call bell rate can signal that the nursing workflow is suboptimal either in terms of organizational structure or spatial management.

To address these challenges, an innovative nursing care model known as Cubicle Nursing has emerged. The Cubicle Nursing model assigns nurses to specific patient zones or *nursing cubicles* with a relatively fixed nurse-to-patient ratio. Its main objectives are to shorten the physical distance between nurses and patients, speed up response times to patient requests, and enhance the continuity of care through more focused assignments (Jimenez et al., 2021). Through this model, each nurse is fully responsible for a defined group of patients, fostering more effective communication, supervision, and therapeutic relationships.

The Cubicle Nursing model aligns with the decentralized nursing model concept, in which nurses are positioned closer to patients rather than centralized at a main nursing station. This decentralized approach enables nurses to more easily monitor patient conditions without relying solely on central observation. Studies have shown that such models improve time efficiency, reduce fatigue caused by long walking distances, and enhance patients' perceptions of nurse presence (Obeidat et al., 2022; Gliner et al., 2022).

Several international studies have demonstrated the positive impact of Cubicle Nursing on service effectiveness and patient experience. Smith and Lewis (2021) reported that the implementation of zonal nursing reduced patient call bell usage by up to 40% and improved patient satisfaction with response times. Similarly, Cusack et al. (2023), in a mixed-methods study, found that hospitals adopting single-room systems with area-based nurse assignments experienced significant improvements in perceived service quality and patient safety. These findings reinforce the assumption that zone-based systems can foster more personal and effective nurse–patient relationships.

However, empirical evidence on the implementation of Cubicle Nursing in Asia, including Indonesia, remains limited. Cultural work characteristics, high nurse-to-patient ratios, and resource constraints may influence the model's effectiveness in real-world settings. Therefore, a comprehensive literature review of global studies is essential to provide a scientific foundation for developing policies and practices related to Cubicle Nursing in Indonesian hospitals. Through such an approach, contextual and evidence-based nursing recommendations can be formulated to enhance the overall quality of national nursing services.

Methods

Design and Search Strategy

This study employed a narrative literature review design, encompassing 20 peer-reviewed articles published between 2021 and 2025. The literature search was conducted across several scientific databases, including PubMed, ScienceDirect, SAGE, JMIR, BioMed Central, and Frontiers. The review focused on identifying research examining the relationship between nursing spatial design, nurse–patient interaction, and care outcomes within hospital settings.

Inclusion Criteria

Articles were selected based on the following inclusion criteria:

1. Studies discussing inpatient room design, particularly *cubicle nursing* or *single-patient room* models.

2. Research evaluating patient call bell frequency, nurse–patient communication, intentional rounding, or technological monitoring systems.
3. Publications written in English and indexed in reputable peer-reviewed journals

Analytical Procedure

All selected articles were analyzed using a thematic approach, categorized into four main analytical domains:

1. Spatial design and unit layout.
2. Nurse–patient communication and interaction.
3. Integration of patient monitoring technologies.
4. Impact on call bell frequency and patient safety.

Table 1. Summary of Included Studies

N o	Authors / Year	Study Title	Study Objective	Research Design	Sample / Participan ts	Method of Analysis	Main Findings
1	Gliner, M. et al. (2022)	<i>Patient Falls, Nurse Communication, and Nurse Hourly Rounding in Acute Care: Linking Patient Experience and Outcomes.</i>	To identify the relationship between nurse communication, hourly rounding, and reduction of patient falls.	Quantitative descriptive	245 acute care patients	Correlation & regression	Hourly rounding significantly reduced call bell frequency and fall incidents.
2	Al-Anati, A. et al. (2024)	<i>Structured Interactions Between Nurses and Patients Through Intentional Rounding: A Scoping Review.</i>	To examine the benefits of intentional rounding on patient experience and care effectiveness.	Scoping review	32 articles	Thematic analysis	Intentional rounding improved communication, satisfaction, and reduced call frequency.
3	Di Massimo, D.S. et al. (2022)	<i>Intentional Rounding Versus Standard of Care for Patients With Fall Risk in an Acute Medical Unit.</i>	To compare the effects of intentional rounding on patients at risk of falls.	Quasi- experimental	120 patients	t-test & pre-post comparison	Intentional rounding reduced patient calls by 50% and decreased fall risk.

4	Shamailov, M. et al. (2021)	<i>A Call Light Responsiveness Program.</i>	To evaluate the effectiveness of fixed nurse assignments in improving call response.	Quality improvement	3 care units	Pre-post data analysis	Patient call frequency dropped by 35% in three months.
5	Cusack, L. et al. (2023)	<i>Comparison of Experiences of Nursing Staff and Patients Before and After Moving to a 100% Single-Bed Room Hospital.</i>	To assess changes in patient and staff experiences after single-room transition.	Mixed-methods	150 patients, 80 staff	Thematic & descriptive statistics	Improved privacy, patient satisfaction, and focus of care.
6	Søndergaard, S.F. et al. (2023)	<i>Nurses' Work Experiences in Hospital Wards with Single Rooms: An Integrative Review.</i>	To review nurses' experiences in single-room settings.	Integrative review	25 studies	Thematic synthesis	Increased autonomy and responsibility but higher social isolation.
7	Obeidat, B. et al. (2022)	<i>Impact of Nursing Unit Layout on Critical Care Nurses' Satisfaction and Walking Behaviour.</i>	To evaluate unit layout effects on nurse satisfaction and walking distance.	Observational quantitative	60 ICU nurses	Spatial behavior analysis	Zonal design reduced walking distance by 30% and increased efficiency.
8	Jimenez, F.E. et al. (2021)	<i>Effects of a Decentralized Nursing Model on Patient Outcomes in Two Rural Community Hospitals.</i>	To measure the impact of decentralized nursing on patient outcomes.	Quasi-experimental comparative	2 hospitals	Comparative analysis	Response speed increased by 50% under decentralized model.
9	Roos, A.K.Ø. et al. (2024)	<i>Present but Absent—Nurses' Experiences of Single-Bedroom Hospital Design and</i>	To explore nurses' experiences in single-room hospitals with new technologies.	Qualitative phenomenological	22 nurses	Thematic analysis	Single-room design improved privacy but reduced team interaction.

	<i>Technological Innovations.</i>					
	<i>Nurses' Perceptions of the Transition to 100% Single-Patient Rooms.</i>	To explore nurses' perceptions of single-patient room transitions.				Improved safety perception and nurse-patient continuity.
10	Pruijsten, R. et al. (2024)		Mixed-methods	60 nurses	Thematic & quantitative	
	<i>The 24-Hour Usage Patterns and Characteristics of Patients Who Frequently Use the Nurse Call Button.</i>	To analyze 24-hour call usage patterns.				
11	Fukushige, H. et al. (2025)		Big data analysis	5.1 million log data	Descriptive statistics & pattern recognition	Cubicle patients pressed call bells 40% less than centralized systems.
	<i>Nurses' Perspectives and Experiences of Using a Bed-Exit Information System.</i>	To assess nurses' perspectives on bed-exit systems.				
12	Walzer, S. et al. (2025)		Qualitative descriptive	15 nurses	Thematic analysis	System enabled early detection and reduced call frequency.
	<i>Experiences With an In-Bed Real-Time Motion Monitoring System (IRMS).</i>	To evaluate IRMS effectiveness in patient monitoring.				
13	Walzer, S. et al. (2025)		Mixed-methods	40 nurses & patients	Thematic & quantitative	IRMS improved proactive response without reducing interaction.
	<i>Technology Integration to Support Nurses in an "Inpatient Room of the Future".</i>	To identify nurses' views on tech integration in modern patient rooms.				
14	Stevens, E.R. et al. (2025)		Qualitative exploratory	25 nurses	Thematic analysis	Technology enhanced efficiency and reduced cognitive workload.
	<i>Remote Telemonitoring is Associated with Improved Patient Safety and Decreased Workload of Nurses.</i>	To examine telemonitoring effects on safety and workload.				
15	Zubrinic, M. et al. (2023)		Quantitative correlational	10 inpatient units	Regression analysis	Telemonitoring reduced workload and improved clinical readiness.

16	Zhou, Y. et al. (2022)	<i>Value-Based Design of Healthcare Facilities: Review of USA and Japan Literature.</i>	To review applications of value-based hospital design.	Literature review	20 articles	Comparative analysis	Balanced design across physical, social, and technological domains.
17	Loveday, C. et al. (2021)	<i>Nurses' Perceptions and Experiences of Working in a New Decentralised ICU.</i>	To explore ICU nurses' experiences in decentralized settings.	Qualitative phenomenological	18 ICU nurses	Narrative analysis	Decentralization increased accountability but caused staff isolation.
18	Fukushige, H. et al. (2021)	<i>Identifying Periodicity in Nurse Call Occurrence: Analysing Longitudinal Data.</i>	To identify periodic patterns in nurse call occurrences.	Longitudinal analysis	2.8 million call data	Time-series analysis	Call patterns aligned with patients' basic needs at specific hours.
19	Fukushige, H. et al. (2024)	<i>The Influence of Age on Frequency of Nurse Calls.</i>	To analyze the effect of age on call frequency.	Cross-sectional big data	5.1 million patient records	Linear regression	Elderly patients had the highest call frequency; special monitoring needed.
20	Chang, H. et al. (2024)	<i>Perceptions of Distinctions Between Patient and Healthcare Zones Among ICU Nurses.</i>	To assess ICU nurses' perceptions of patient vs. staff zone boundaries.	Cross-sectional study	120 ICU nurses	Descriptive & inferential	Clear zone delineation improved efficiency and reduced fatigue.

Results and Discussion

A review of the twenty analyzed studies indicates that the implementation of Cubicle Nursing consistently exerts a positive impact on improving the quality of nursing care. The Cubicle Nursing model not only reduces patient call bell frequency and enhances nurse efficiency but also strengthens the humanistic and professional dimensions of modern nursing practice. Overall, the literature highlights Cubicle Nursing as an innovative approach that

integrates spatial design, technology, and organizational culture within a framework of patient-centered care.

Reduction in Patient Call Bell Frequency

Most studies concluded that implementing Cubicle Nursing directly contributes to reducing the frequency of patient call bells in hospitals. The care environment design allowing nurses closer physical access to patients proved effective in minimizing patients' reliance on electronic call systems. The Cubicle Nursing model facilitates faster interactions, enabling nurses to respond immediately to patient needs without waiting for a call signal.

A study by Fukushige et al. (2025) analyzing over 5.1 million nurse-call data points found that patients cared for under the cubicle system with dedicated nurses pressed the call bell 40% less frequently than in centralized systems. This significant reduction indicates that physical proximity and direct nurse presence are key factors in enhancing patients' sense of security and reducing their dependence on call bells for communication.

Similar findings were reported by Shamailov et al. (2021) through the *Call Light Responsiveness Program*, in which nurses were permanently stationed in designated areas. The program successfully reduced patient calls by 35% within the first three months of implementation. The reduction was attributed not only to improved efficiency but also to patients' perception that nurses were consistently available and ready to assist, which ultimately strengthened trust in the care system.

Furthermore, Di Massimo et al. (2022) demonstrated that the application of *intentional rounding* hourly nurse visits cut patient calls by nearly half compared to baseline. This proactive approach allows nurses to anticipate patient needs such as repositioning, pain control, or mobilization assistance before the patient feels compelled to press the call bell. These findings reinforce the notion that structured, proactive systems reduce reactive communication burdens and enhance operational efficiency.

Al-Anati et al. (2024) and Gliner et al. (2022) emphasized that decreased call frequency not only reflects improved efficiency but also signals more proactive and communicative nursing care. *Intentional rounding* strengthens two-way communication, builds therapeutic relationships, and lowers patient fall rates. Thus, optimal physical presence and visibility of nurses are fundamental to developing responsive, humanistic, and patient-safety-oriented care systems.

Nurse Responsiveness and Efficiency

Spatial design and zone-based workflows in Cubicle Nursing have been shown to enhance operational efficiency and nurse responsiveness to patient needs. The spatial arrangement that positions nurses closer to their assigned area shortens walking distances, resulting in quicker response times. This improvement not only boosts patient satisfaction but also reduces nurses' physical workload. Obeidat et al. (2022) demonstrated that a layout minimizing the distance between cubicles reduced response time by 30% and decreased physical fatigue caused by excessive mobility.

Jimenez et al. (2021) supported these findings by comparing hospitals employing decentralized nursing systems with those using traditional centralized station models. Results revealed that nurses in decentralized systems had 50% faster response times, accompanied by a significant reduction in patient complaints regarding delayed service. This success was linked to greater nurse autonomy and a more balanced workload distribution, as each nurse assumed full responsibility for a defined patient group within a zone.

Technological integration further supports efficiency in Cubicle Nursing. Walzer et al. (2025) reported that the *Bed-Exit Information System* and *In-Bed Real-Time Motion Monitoring System (IRMS)* enabled early detection of patient movements without diminishing direct nurse-patient interaction (Walzer & Stevens, 2025). These technologies

help nurses anticipate patient needs before a call occurs, shortening response time and improving patient safety.

Additionally, Zubrinic et al. (2023) found that remote telemonitoring reduced nurse workload while enhancing readiness for critical events. The system enabled real-time tracking of patient condition changes, improving team preparedness. Thus, efficiency in Cubicle Nursing stems not only from optimal human resource distribution but also from the synergy of functional spatial design, effective communication, and adaptive information technology all aligned with patient safety principles in modern hospitals.

Patient Satisfaction and Experience

Patient satisfaction is a key indicator of nursing service quality, and numerous studies reveal that Cubicle Nursing positively enhances the patient experience in hospitals. The model enables a more personal approach, as nurses have clearly defined responsibilities within specific zones or rooms. Consistent and easily accessible nurse presence helps patients feel cared for and safe, thereby improving their perception of service quality.

Cusack et al. (2023) found that transitioning from shared rooms to single rooms with dedicated nurses improved patients' perceptions of attention, privacy, and comfort during hospitalization. A quieter, more personalized environment fostered patients' feelings of being valued as individuals rather than as part of a busy system. This strengthened therapeutic relationships between nurses and patients, as consistent, intensive interaction nurtures trust and open communication.

Similarly, Pruijsten et al. (2024) emphasized that consistent nurse assignment within the same area builds stronger patient trust and safety perceptions. Patients who interact daily with the same nurse find it easier to communicate their needs or symptoms, feeling understood by someone familiar with their habits and characteristics. Psychologically, such interpersonal continuity provides comfort and accelerates recovery.

Digital technology also plays a crucial role in improving the patient experience. Zubrinic et al. (2023) found that telemonitoring systems enhanced patient perceptions of nurse readiness even when nurses were not physically present. Patients felt nurses were "always there," either directly or through active digital monitoring systems. Gliner et al. (2022) similarly reported that *hourly rounding* improved patient perceptions of service reliability, reducing anxiety and uncertainty.

Conceptually, Cubicle Nursing aligns with the principle of patient-centered care, emphasizing that patients are at the core of all healthcare processes. It optimizes not only physical aspects such as privacy and safety but also emotional and psychological needs through more humanistic and continuous interactions. By fostering a warm, communicative, and responsive environment, Cubicle Nursing enhances the overall patient experience, satisfaction, and hospital reputation as a quality- and life-centered institution.

Nurse Perception and Experience

The implementation of Cubicle Nursing transforms work dynamics and nurses' professional perceptions. This zone-based system grants greater autonomy and accountability for nurses in managing their areas of responsibility. Søndergaard et al. (2023) and Loveday et al. (2021) found that zonal systems increased nurses' sense of responsibility, independence, and job satisfaction due to greater control over patient care. However, reduced interteam interaction occasionally led to feelings of professional isolation and diminished cross-unit collaboration.

To mitigate this, Roos et al. (2024) emphasized the importance of mobile communication tools and digital nursing information systems to maintain inter-zone coordination. Real-time tools such as *nurse mobile devices* or *integrated nurse call dashboards* effectively sustain information continuity among nurses and medical teams, preserving collaboration without

compromising zone-based focus. These tools balance autonomy and teamwork, supporting seamless care coordination.

Zhou et al. (2022) argued that hospital design should incorporate value-based design, emphasizing human values, efficiency, and sustainability. In Cubicle Nursing, this means creating layouts that support both therapeutic nurse–patient interaction and social spaces for professional peer engagement. This balance among physical (layout), social (team interaction), and technological (information systems) elements sustains positive, productive nurse experiences.

Chang et al. (2024) highlighted the importance of proportionate zone delineation to ensure balanced workload distribution. Unequal workload across zones can cause stress and reduce morale. Overall, research indicates that Cubicle Nursing enhances nurse job satisfaction, accountability, and professionalism but its long-term success depends heavily on organizational culture, adaptive leadership, and inclusive management policies. Without these supports, such structural innovation risks losing its positive impact on nurse well-being and performance.

Integrated Findings and Conceptual Analysis

Synthesis of the four themes above reveals that Cubicle Nursing is a multidimensional innovation that combines spatial efficiency, personal responsibility, and strong nurse–patient relationships. It represents not merely a spatial reconfiguration but a paradigm shift from reactive to proactive and collaborative care systems.

The reduction in patient call frequency indicates that nurses successfully establish therapeutic relationships and fulfill patient needs preventively. This demonstrates that *anticipatory care* can be achieved through active presence, continuous observation, and empathetic interaction. Moreover, implementing intelligent technologies such as IRMS and bed-exit monitoring signifies advancement toward *smart wards* work environments integrating human, spatial, and digital systems to enhance safety and care quality (Walzer et al., 2025; Stevens et al., 2025).

From a managerial perspective, Cubicle Nursing requires restructuring in quality supervision, staff training, and cross-zone communication systems. Evaluation of success should include not only quantitative indicators like call frequency but also qualitative measures such as patient satisfaction, occupational safety, and nurse well-being (Cusack et al., 2023; Zubrinic et al., 2023).

Globally, the concept aligns with value-based care policies emphasizing efficiency and empathy simultaneously (Zhou et al., 2022). In Indonesia, this model holds potential as a solution to high nurse workloads and limited hospital resources. Gradual implementation with unit-based trials and digital support systems could improve response times, reinforce patient safety culture, and enhance nurse well-being.

In conclusion, Cubicle Nursing represents more than a work model it is a transformational strategy in modern nursing care. It balances efficiency with humanism, merges technology with empathy, and fosters adaptive, safe, and patient-centered work environments. With proper adaptation, Cubicle Nursing can become a leading model for the future of nursing reducing call bell rates while strengthening professionalism and nurses' quality of life worldwide.

Conclusion

This literature review confirms that Cubicle Nursing makes a significant contribution to improving the quality of nursing services in modern hospitals. The cubicle-based ward design has been proven to reduce patient call bell frequency, enhance nurse work efficiency, and strengthen therapeutic communication between nurses and patients. A spatial layout that

allows physical proximity and optimal visibility makes nurses more responsive to patient needs, resulting in a more proactive rather than reactive service approach.

The findings also demonstrate that Cubicle Nursing significantly improves patient satisfaction and experience. Enhanced privacy, continuity of care with the same nurse, and a quieter environment all contribute to patients' sense of safety and comfort during hospitalization. Patients perceive that consistent and easily accessible nurse presence makes them feel personally cared for. These conditions reinforce therapeutic relationships and foster trust, which are the foundation of patient-centered care.

From the nursing workforce perspective, the implementation of Cubicle Nursing increases autonomy, responsibility, and job satisfaction, though it also introduces new challenges. Some nurses report social isolation due to reduced inter-team interaction. This challenge requires hospitals to balance nurse independence with the need for collaboration through strategies such as digital communication systems, adaptive training, and team culture reinforcement. In this way, structural efficiency can be achieved without sacrificing the social and emotional dimensions of the work environment.

The successful implementation of Cubicle Nursing also depends heavily on organizational support and technological readiness. Hospitals must ensure that single-room designs are complemented by effective digital monitoring systems such as bed-exit systems, motion sensors, or telemonitoring to maintain patient safety without increasing nurse workload. On the other hand, continuous training and adaptive nursing leadership are key factors in maintaining consistency of care and facilitating the adoption of new technologies.

Future research is recommended to explore the optimal combination of spatial design, technology systems, and nursing work patterns to achieve a balance between operational efficiency, patient safety, and nurse well-being. Longitudinal evaluations are needed to assess the long-term impact of Cubicle Nursing on care quality, operational costs, and patient satisfaction. Through a multidisciplinary approach that integrates design, technology, and human resource management, Cubicle Nursing can become an ideal model for hospital care systems that are safe, efficient, and truly patient-centered.

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