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LITERATURE REVIEW

# Structured interactions between nurses and patients through intentional rounding: A scoping review

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## Abstract

**Aim:** To synthesize existing literature describing the impact of intentional rounding on patient outcomes among hospitalized adults.

**Background:** Intentional rounding has been described as purposeful therapeutic communication between nurses and patients during regular checks with patients using standardized protocols. Despite the widespread adoption of intentional rounding, the current understanding of the benefits of these structured interactions between nurses and patients is limited.

**Introduction:** The critical role of nurses in ensuring high-quality and safe care in acute hospitals is often noted only when things go wrong. This was highlighted by investigations into the reasons for the failures in patient care at the Mid Staffordshire National Health Services.

**Methods:** A scoping review was performed and reported using the Preferred Reporting Items for Systematic Reviews and Meta-Analyses extension for scoping review guidelines.

**Findings:** Sixteen studies were included in the final review. Various rounding models were noted among different clinical settings; four studies reported a significant reduction in falls, and a further three reported a decrease in pressure injuries. Two studies reported a reduction in call bell usage. Significant improvements in patients' satisfaction with intentional rounding were reported in three studies.

**Discussion:** Promoting intentional rounding without solid evidence of its acceptability, feasibility, and suitability in different clinical settings could compromise nurses' ability to provide safe care.

**Conclusion and implications for nursing:** There is weak evidence of the effectiveness of intentional rounding on patient outcomes because of the diversity of methods employed and methodological limitations in many studies. Our findings identify the need for robust studies to explore the acceptability and feasibility of a rounding protocol that can be implemented in different clinical settings.

KEYWORDS

Clinical outcome, communication in health care, hourly round, intentional round, patient safety indicators, proactive round

## INTRODUCTION

The critical role of nurses in ensuring high-quality and safe care in acute hospitals is often noted only when things go wrong. This was highlighted by investigations into the reasons for failures in patient care at the Mid Staffordshire National Health Services (Francis, 2013; Harris et al., 2019). In his report, Sir Robert Francis recommended the introduction of systematized regular interactions between nurses, patients, and their families through regular ward rounds (Francis, 2013; Sims et al., 2020). This recommendation of structured interactions between nurses and patients has come to be known as intentional rounding (IR) (Harris et al., 2019). These structured interactions between nurses and patients were described by the US Studer Group (2007) as purposeful therapeutic communication, in which nurses provide regular and frequent care to patients. The primary objectives of IR are to provide fundamental nursing care, assess risk, and document patient care, typically on an hourly basis (Brosey & March, 2015; East et al., 2020; Rondinelli et al., 2012; Willis et al., 2016), every 2 hours (Di Massimo et al., 2022; Fabry, 2015; Krepper et al., 2014; Meade et al., 2006; Mulugeta et al., 2020), or every 2 to 3 hours (Shin & Park, 2018). The rounding frequency can depend on patient risk factors and the needs within each hospital ward (Harris et al., 2019). Therefore, IR regularly facilitates patients' observation and anticipation of their needs, reduces harm, relieves pain and anxiety, and provides comfort (Fabry, 2015; Flowers et al., 2016). It is important to note that IR is provided in various ways (Brosey & March, 2015; Flowers et al., 2016; Maddigan et al., 2019). Some hospitals use the rounding model developed by the Studer group which emphasizes common elements of care such as (1) pain (is it controlled?); (2) positioning (is the patient comfortable?); (3) personal needs (does the patient need hydration or nutrition, the restroom, etc.?); and (4) placements (are personal items and the call bell within reach? Is clutter removed from the area?). These elements are referred to as the 4Ps of rounding (Studer Group, 2007), aiding nurses to remember each of the steps (Harris et al., 2019; Meade et al., 2006; Sims et al., 2020).

The evidence suggests that IR improves patient outcomes and experiences by reducing call bell usage, fall incidence, pressure injuries, and medication errors (Grillo et al., 2019). Additionally, IR has been linked to improvements in pain management, the earlier detection of patient deterioration increased patient satisfaction, and the provision of compassionate care (Di Massimo et al., 2022; Mulugeta et al., 2020; Sims et al., 2020). IR has also been found to increase staff productivity (Harrington et al., 2013). There is evidence of improved teamwork and communication between staff and patients related to IR (Fabry, 2015; Harris et al., 2019). On the other hand, some negative outcomes are associated with IR that have been reported to be influenced by factors such as management, education, workload, and patient acuity (Ryan et al., 2019). Despite the reported benefits of IR, conflicting evidence exists regarding its purpose and effectiveness in practice (Harris et al., 2019; Snelling, 2013). Several studies have criticized the effectiveness of IR in ensuring patient safety due to substantial limitations, including unclear implementation strategies, poorly conducted studies, misreporting of findings, as well as a failure to consider broader issues, such as evidence transfer between different healthcare systems (Harris et al., 2019; Sims et al., 2020; Snelling, 2013). As a result of these limitations, several studies have recommended the need for a robust evaluation of the effectiveness of IR in practice (Christiansen et al., 2018; Di Massimo et al., 2022; Hamdan et al., 2022; Harris et al., 2019). Therefore, this scoping review aims to explore the existing literature describing IR and other rounding models and their impact on patient outcomes among hospitalized adults.

## METHODS

This scoping review was performed and reported using the Preferred Reporting Items for Systematic Reviews and Meta-Analyses Extension for Scoping Reviews (PRISMA-ScR) Checklist (Tricco et al., 2018). A scoping review approach was used to map critical concepts, describe existing literature, and identify knowledge gaps to guide future research (Arksey & O'Malley, 2005; Munn et al., 2018).

### Search strategy

There were two phases to the search strategy. The first phase included a systematic literature search of CINAHL Plus, Medline, Psych INFO, and Scopus. Search terms for IR included "intentional round*," "hourly round*," "purposeful round*," "proactive round*," or "comfort round*." These were then combined with the Boolean operator AND, with keywords "patient outcome*" or "clinical outcome*," or "patient safety indicator*" or "adverse event*," or "patient satisfaction" or "patient experience." In the second phase, reference lists of all included studies were examined to identify any additional relevant studies. An initial search was performed with assistance from a university librarian in September 2021 and then updated in August 2023.

### Inclusion and exclusion criteria

Studies were included if published in English, were primary research, examined IR in the acute hospital setting, and if IR was exclusively delivered by nurses at regular intervals and IR was the only intervention being examined (Table 1). Multidisciplinary rounds or rounds that were not nursing-led were excluded. No restrictions were applied to the year of publication, nurses' experience, and background or education levels.

**TABLE 1** Inclusion and exclusion criteria.

| Inclusion criteria | Exclusion criteria |
|---|---|
| • Primary research studies of any design in peer-reviewed publications that examined intentional rounding<br>• Inpatient hospital setting<br>• Rounds were conducted by nurses at regular intervals every day<br>• Papers were published in the English language | • Research addressing rounding as a teaching or learning strategy<br>• Multidisciplinary rounds or rounds that were not nursing-led<br>• Research that examined multiple interventions alongside IR, such as handover or bedside report<br>• Research that focused on a specialist setting (e.g., maternity, pediatrics) |

## Data abstraction

Data were extracted into a summary table (Table 2) by two authors independently. Extracted data included the citation, location, aim, study design, rounding model used, and a summary of the findings.

## Data analysis and synthesis

A descriptive analysis of the extracted information was performed, and the results were presented narratively. Rounding models were categorized based on who performed rounds, the frequency of rounds, and the aspects of care.

## Search outcomes

The papers identified through database searching were managed in Covidence (2021). Initially, 451 articles were imported into Covidence, and 121 duplicates were removed (Figure 1). Two authors (AA and JS) evaluated the title and abstract, leading to 258 papers being excluded. The remaining 72 papers underwent full-text screening by two authors (AA and JS). Fifty-six articles were subsequently excluded. Justifications for exclusion were discussed between authors until consensus was achieved. Following a full-text review, 16 studies were identified as meeting the inclusion criteria and included in the review.

## Quality appraisal

The Mixed-Methods Appraisal Tool (MMAT) was used to appraise all included studies (Hong et al., 2018). MMAT was selected for its validity, reliability, and applicability to qualitative, quantitative, and mixed-methods research (Hong et al., 2018). The quality of each study was determined and given a quality score ranging from 0 (no criteria met) to 5 (all criteria met, recorded as *****). Two reviewers (AA and EH) appraised the included studies. Some minor disagreements were resolved through discussion.

# RESULTS

Of the 16 included studies, most were conducted in the United States ($n = 8$; 50%) and Australia ($n = 3$; 20%), with one study conducted in the UK, Canada, South Korea, Ethiopia, and Italy, respectively (Table 2). Just over half of the included studies ($n = 10$; 63%) used quantitative designs (Brosey & March, 2015; Di Massimo et al., 2022; East et al., 2020; Fabry, 2015; Gliner et al., 2022; Krepper et al., 2014; Meade et al., 2006; Mulugeta et al., 2020; Olrich et al., 2012; Shin & Park, 2018). The remaining studies were qualitative ($n = 3$; 20%) (Rondinelli et al., 2012; Sims et al., 2020; Willis et al., 2016) or mixed-method designs ($n = 3$; 20%) (Harrington et al., 2013; Maddigan et al., 2019; Tucker et al., 2012). Five studies (31%) reported data at the hospital level (Gliner et al., 2022; Harris et al., 2019; Rondinelli et al., 2012; Sims et al., 2020; Willis et al., 2016). The remaining 11 studies (69%) were at the ward/unit level.

## Rounding models

Rounds were conducted by nurses ($n = 6$; 38%) (Maddigan et al., 2019; Mulugeta et al., 2020; Rondinelli et al., 2012; Shin & Park, 2018; Sims et al., 2020; Willis et al., 2016) or a combination of nurses and nursing assistants ($n = 7$; 44%) (Di Massimo et al., 2022; East et al., 2020; Fabry, 2015; Krepper et al., 2014; Meade et al., 2006; Olrich et al., 2012; Tucker et al., 2012). Three studies (20%) did not indicate what kind of nurses conducted the rounds (Brosey & March, 2015; Gliner et al., 2022; Harrington et al., 2013). Four studies (25%) did not follow a standardized rounding protocol. Instead, they concentrated on delivering essential healthcare and communicating with patients, such as controlling pain, positioning, and providing a safe environment (East et al., 2020; Krepper et al., 2014; Maddigan et al., 2019; Mulugeta et al., 2020). However, two studies (10%) did not provide specific details about the care provided during rounding (Gliner et al., 2022; Harrington et al., 2013).

## Patient outcomes

The effectiveness of IR was evaluated using four outcomes: patient falls, pressure injuries, call bell use, and patient satisfaction (Table 2).

## Patient falls

Falls were reported in 10 studies (62.5%). A significant reduction in the incidence of falls occurred in four (25%) studies (Brosey & March, 2015; Di Massimo et al., 2022; Gliner

**TABLE 2** Characteristics of included studies.

| Reference/country | Aim | Design/methods | Rounding model | Participants/setting | Findings | Stars |
|---|---|---|---|---|---|---|
| Brosey and March (2015)<br>United States | To evaluate the effects of IR on falls, patient satisfaction, and pressure injuries | Quasi-experimental<br>Surveys and event reports | Hourly rounds focused on pain, elimination, environment, and position (PEEP) | 588 patients in a medical/ surgical ward | • Pre ($n = 35$) and post (3 months, $n = 81$), 1 year ($n = 472$).<br>• Pre-intervention compliance (48.4%), monthly compliance reviews demonstrated 69.4%, 44.3%, and 59.2% compliance.<br>• Overall patient satisfaction improved from 48.6% (pre) to 72.3% (post), 72.2% (1 year).<br>• Significant reduction in patient falls (57.7%; $p = 0.015$).<br>Pressure injury rate improved from 4 (pre) to 1 (post). | ** |
| Di Massimo et al. (2022)<br>Italy | To examine the effect of IR on falls, pressure ulcers, call light, and patient satisfaction in internal medical wards | Quasi-experimental<br>IR logs, call bell logs, incident reports, and Survey | Every 2 hours, includes visual safety check while patients sleep focused on 4 Ps, performed by nurses or nursing assistance | 1,822 patients from 26 sites (14 in the intervention group, and 12 in the control group) | • Patients in the interventional groups had a lower risk to fall ($P < 0.03$)<br>• No significant differences in the number of new pressure ulcers between the two groups ($p = 0.98$)<br>• No significant differences in the mean call bell use between the two groups ($p < 0.38$)<br>• No significant differences in the mean patient satisfaction scores between both groups ($p = 0.87$)<br>• Recommends the usefulness of IR for hospitalized patients in internal medical units. | *** |
| East et al. (2020)<br>Australia | To compare nurse and patient satisfaction with IR and identify which aspects predict satisfaction | Cross-sectional descriptive study<br>Survey | Hourly rounds, communicating with patients and/or family.<br>Performed by RN/RM, EN, and AIN | 63 nurses and 66 patients from 5 wards in a rural hospital | • Patients' satisfaction with the care received was predicted by feeling comfortable and safe ($p < 0.001$), nurses' interest in patients' feelings ($p = 0.003$), nurses' visibility ($p = 0.006$), and managing pain ($p = 0.033$) | *** |
| (Fabry, 2015)<br>United States | To explore nurses' perceptions and perspectives of IR | Cross-sectional descriptive study<br>Survey | Hourly rounds (0600–2200) then second hourly (2200–0600),<br>Protocol focused on 4Ps (Meade et al., 2006).<br>Performed by RNs and PCAs (alternating hours during day and together at night) | 52 nurses and 15 PCAs from 6 wards | • IR was introduced 1 year prior to data collection.<br>• Findings varied between nurses' qualification and education level and shift and unit worked.<br>• 77% of RNs and 80% of PCAs agreed that hourly rounding occurs consistently—varied depending on unit, shift and RN education level.<br>• 85% felt that they had received sufficient IR education.<br>• 88% felt confident in incorporating IR into their work.<br>• < 30% felt a sense of ownership in the planning of the IR.<br>• 55.8% of RNs and 66.7% of PCAs reported that IR contributed to improved pain management.<br>• 69.2% of RNs and 80% of PCAs agreed that IR reduces falls.<br>• 76.9% of RNs and 66.7% of PCAs agreed that IR prevents hospital-acquired pressure injuries. | *** |

(Continues)

**TABLE 2** (Continued)

| Reference/country | Aim | Design/methods | Rounding model | Participants/setting | Findings | Stars |
|---|---|---|---|---|---|---|
| Gliner et al. (2022) United States | To explore the link between the frequency of IR with nurse communication and falls | Cross-sectional descriptive study Administrative data | IR models unclear—patient reported frequency (hourly/2nd hourly/every few hours/infrequent) | 986 patients from 31 military hospitals | • Second hourly round was associated with 39% decrease in fall rates (IRR 0.79; $p < 0.01$)<br>• Hourly rounds were associated with 21% reduction in fall rates compared with infrequent rounding (IRR 0.69; $p < 0.01$)<br>• Poor nurses' communication regarding fall risk and fall prevention increased the rate of patient falls (IRR 8.6; $p < 0.01$)<br>• Nurse leader visits to inquire about care experience did not further affect fall rates once communication and rounding were considered (IRR 1.00; $p = 0.85$). | ***** |
| Krepper et al. (2014) United States | To determine if IR would improve efficiency, quality, safety, and patient satisfaction | Quasi-experimental Surveys, event reports, call light, and pedometer logs | Hourly during day, every 2 hours at night. focused on essential care as: pain, positioning, toileting, food, water, and environment Performed by RNs and PCAs | 2 cardiovascular surgery wards | • Intervention unit had significant reductions in call light use ($p = 0.001$) and in the number of steps taken by the day-shift staff ($p = 0.02$)<br>• Differences in readmission rates, patient falls reported, and patients' perceptions of care were not significantly different after the intervention. | **** |
| Maddigan et al. (2019) Canada | To test the impact of IR on falls, call bell frequencies, patient satisfaction, and the nurses' practice environment | Participatory Action Research Survey, number of call bells, event reports, and focus groups | Hourly rounds, Focused on pain, position, hydration, and environmental safety. Performed by rehabilitation nurses | 3 rehabilitation wards | • Small positive change in all outcome indicators: falls, call bell use, patient satisfaction, and practice environment<br>• The effects of IR on patients and nurses were generally positive: enhanced nurse-patient relationships, better handover report<br>• It was difficult to integrate intentional rounding into a nurse's established routine. | **** |
| Meade et al. (2006) United States | To study the impacts of 1-hour vs. 2-hour nursing rounds on call light use, patient satisfaction, and falls | Quasi-experimental Surveys, call light logs, rounding logs, fall rate | Hourly during day, every 2 hours at night focusing on a protocol consisting of 8 specific nursing interventions. Performed by RNs and AINs | 27 wards in 14 hospitals | • Significant reductions in call light use in the 1-hour rounding ($p = 0.007$) and in the 2-hour rounding ($p = 0.06$) compared with control group.<br>• Significant increase in patient satisfaction scores for both intervention groups ($p = 0.001$).<br>• Significant reduction in falls occurred only during 1-hour rounding ($p = 0.01$). | **** |
| Mulugeta et al. (2020) Ethiopia | To evaluate the effect of hourly nursing rounds on patient satisfaction | Quasi-experimental Surveys | Hourly or every 2 hours, concentrated on pain relief, providing comfort, assistance, and other nursing tasks. IR performed by trained nurses for the intervention group | 104 patients in a medical-surgical ward | • On the second day of hospitalization, patients in the intervention group had higher satisfaction scores than those in the control group ($p = 0.215$).<br>• There was a significant difference in the satisfaction scores by the fifth day of hospitalization ($p = 0.001$). | **** |

(Continues)

**TABLE 2** (Continued)

| Reference/country | Aim | Design/methods | Rounding model | Participants/setting | Findings | Stars |
|---|---|---|---|---|---|---|
| Olrich et al. (2012)<br>United States | To study the effect of IR on falls, call light, and patient satisfaction | Quasi-experimental<br>Surveys, call bell logs, and event reports | Hourly or every 2 hours. IR protocol modeled from Meade et al. (2006).<br>Performed by RNs and UAPs | 2 medical-surgical wards | • Fall rates reduced from 3.37 to 2.6 per 1,000 bed days which equates to a reduction of 23% ($p = 0.672$)<br>• No significant differences in call bell usage (no statistics presented) and patient satisfaction ($p = 0.383$)<br>• There was no statistically significant difference between pre-rounding and post-rounding groups in terms of patient satisfaction ($p = 0.383$). | **** |
| Rondinelli et al. (2012)<br>United States | To describe structures, processes, and outcomes associated with implementing IR | Action research<br>Interviews | Hourly rounds.<br>Focused on 4Ps with variations across hospitals according to clinical situation.<br>Performed by nurses | 11 hospitals | • 15 themes were identified.<br>• bullet-Structural elements led to successful IR implementation. Includes individualizing IR script for specific populations, regular hourly presence in patient room, structured education, and implementation of leadership IRs.<br>• bullet-Processes identified for improvement included sharing of "tools" for IR between wards/hospitals, promoting staff feedback and involving staff/patients in IR processes.<br>• Outcomes from IR included reduction in falls, call bell usage, and reduced HAPIs. Unintended outcomes included improved patient perception of being well cared for, recognition of expert nursing practice and building nursing culture. | **** |
| Shin and Park (2018)<br>Korea | To evaluate the effect of IR on patients' perceptions of nursing quality and satisfaction with care | Quasi-experimental<br>Surveys | Every 2 or 3 hours. IR using Professional Practice Model "ROUNDS" (Tonges & Ray, 2011).<br>Performed by nurses | 2 surgical wards | • Intervention group used multidimensional IR model based on Professional Practice Model (compared with usual care).<br>• Patients' perception of nursing quality was significantly higher in the IR group ($p = 0.041$).<br>• Patients' satisfaction with nursing services were significantly higher in the IR group ($p < .001$). | **** |

(Continues)

**TABLE 2** (Continued)

| Reference/country | Aim | Design/methods | Rounding model | Participants/setting | Findings | Stars |
|---|---|---|---|---|---|---|
| Sims et al. (2020)<br>UK | To evaluate the role of IR in providing compassionate nursing care from multiple perspectives | Qualitative<br>Interviews | Hourly rounds, focused on 4Ps. Performed by RNs | 33 nurses, 17 nurse managers, 34 patients, and 28 family carers from 3 hospitals | • Views from frontline and senior nursing staff:<br>• bullet-IR improves the frequency of interaction with patients but does not necessarily improve the quality of care<br>• bullet-IR does not provide clear evidence that care is delivered in practice as there is evidence of a tick-box culture<br>• bullet-IR does not guarantee compassionate nursing care but rather prioritizes documentation and leads to a tick-box culture<br>• bullet-Nurses use IR to record that care has been delivered as a means of "protecting themselves"<br>• Views from patients and carers:<br>• bullet-Most were satisfied with nursing care but were not aware that IR was occurring.<br>• Patients/carers valued nurses' visibility and presence | ***** |
| Tucker et al. (2012)<br>United States | To evaluate an IR intervention to reduce patient falls | Mixed methods<br>Fall risk assessment, fall rates, and focus groups | Hourly rounds,<br>IR protocol modeled as (Meade et al., 2006)<br>performed by nurses and PCAs | 2,295 patients and 14 nurses in 2 wards | • Fall rates reduced during the IR intervention but there were no significant differences pre, during and post the IR intervention ($p = 0.226$).<br>• Four themes were identified. There was a lack of clarity about the purpose of IR, documentation was found to be burdensome, and the imposition of IR led to unsatisfactory performance, and outcomes from IR were influenced by other change initiatives. | *** |
| Willis et al. (2016)<br>Australia | To explore the impact of IR on nursing work when IR imposed to reduce risk | Case study as part of a larger study<br>Interviews and document analysis | Hourly rounds, focused on 4Ps. Performed by RNs | 15 nurses | • IR was implemented as a risk management strategy and to ensure that care needs were met.<br>• Nurses questioned whether rounding was patient-focused.<br>• Rounding was positioned as a means of improving nursing efficiency and being proactive. However, some perceived it as time-consuming. | *** |

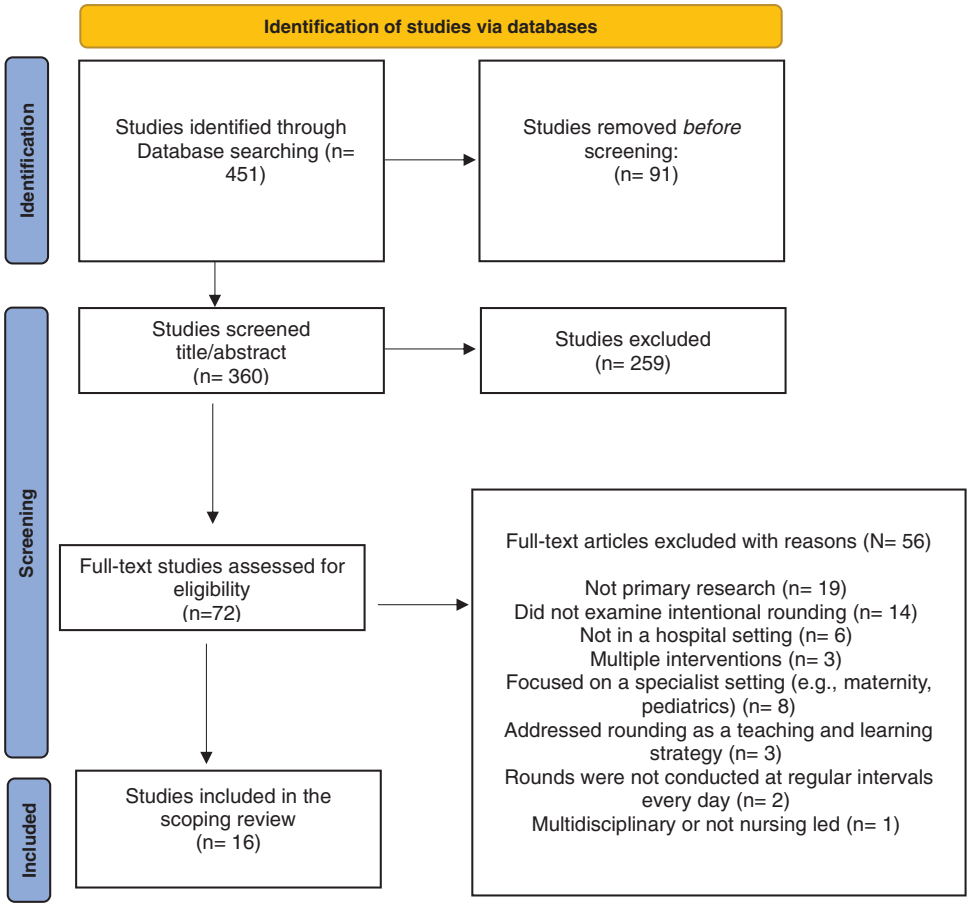


**FIGURE 1** PRISMA flow diagram (Tricco et al., 2018).

et al., 2022; Meade et al., 2006), whereas three (20%) studies reported a nonsignificant reduction in fall incidents (Krepper et al., 2014; Olrich et al., 2012; Tucker et al., 2012). Brosey and March (2015) reported a significant reduction (57.7%) in inpatient falls in one medical/surgical unit, decreasing from 7.02 per 1,000 patient days over four months to 3.18 per 1,000 patient days in the same period the following year ($p = 0.015$). The reduction in patient falls was attributed to re-implementing a fall prevention program six months before IR. Staff compliance with IR was not maintained in this study.

Meade et al. (2006) examined patient falls in 27 clinical units for four weeks before and after IR implementation. Fall rates were significantly reduced when hourly rounding ($p = 0.01$) was used, but not during 2-hourly rounding. Gliner et al. (2022) reported that hourly rounding resulted in a 21% decrease in falls ($p < 0.01$), whereas 2-hourly rounding resulted in a 39% decrease in falls ($p < 0.01$). According to Gliner's study, there were a statistical difference between 1-hourly rounding and 2-hourly rounding, which may be attributed to case mix complexity differences (i.e., acuity/risk differences) or other factors that were not captured within the data collection. Di Massimo et al. (2022) reported that there was a lower risk of falls in the intervention group than in the control group ($p = 0.03$). Even though the IR group had a higher risk of falling than the control group in terms of general characteristics (e.g., age), Morse Scale, and previous falls. However, three (20%) studies reported a nonsignificant reduction in patient falls after IR intervention (Krepper et al., 2014; Olrich et al., 2012; Tucker et al., 2012). Patient falls and fall reporting mechanisms in these studies were not standardized, and there is a wide variety of methods for calculating patient fall rates. A cross-sectional survey by Fabry (2015) found that 70% of nurses and 80% of care assistants perceived that IR reduced patient falls. In addition, nurses described IR as effective at preventing falls in patients in two studies (Maddigan et al., 2019; Rondinelli et al., 2012).

## Pressure injuries

Four studies (25%) examined pressure injuries, and three studies (20%) reported that IR reduced pressure injury rates (Brosey & March, 2015; Fabry, 2015; Rondinelli et al., 2012). Brosey and March (2015) found that the pressure injury rate improved from four per 1,000 patients pre-intervention to one per 1,000 patients post-intervention. Both Fabry (2015) and Rondinelli et al. (2012) reported that nurses perceived that pressure ulcers were reduced following the implementation of IR. Additionally, Di Massimo et al. (2022) found nonsignificant differences in pressure injury rates between the control and intervention groups. In interpreting this finding, it is essential to recognize that the control group used a similar

prevention strategy, e.g., patient mobilization and air mattresses. The fact that participants were aware of being involved in a clinical study may have enhanced their attention to this outcome, especially in the control group.

## Call bell use

Call bell use was reported in seven studies (44%) and is conceptualized as an indicator of how nurses proactively address patient's needs (Di Massimo et al., 2022; Harrington et al., 2013; Krepper et al., 2014; Maddigan et al., 2019; Meade et al., 2006; Olrich et al., 2012; Rondinelli et al., 2012). Both Meade et al. (2006) and Krepper et al. (2014) reported a significant reduction in call bell usage following the implementation of IR. Meade et al. (2006) reported a reduction in both the hourly rounding and 2-hourly rounding wards ($p = 0.05$). Krepper et al. (2014) also observed a significant decrease in call bell use ($p = 0.001$). Olrich et al. (2012) reported a statistically significant reduction in call bell usage after week one of the intervention, but this was not maintained in the final week of data collection. In this study, the small sample size made it difficult to validate statistically significant changes. In contrast, Di Massimo et al. (2022) found no significant differences between the IR and control groups ($p = 0.38$). According to Maddigan et al. (2019), call bells were reduced by 18% in three different periods (morning, afternoon, and evening). The most significant decreases occurred in the evenings. Two action research studies that examined nurse's perceptions revealed that nurses reported a reduction in call bell usage with IR (Harrington et al., 2013; Rondinelli et al., 2012).

## Patient satisfaction

Patient satisfaction was reported in 10 (62%) studies. Three (20%) studies reported a significant increase in patient satisfaction scores due to IR (Meade et al., 2006; Mulugeta et al., 2020; Shin & Park, 2018). The result of a large-scale study conducted by Meade et al. (2006) reported that the patient satisfaction scores (4-week period) were significant in hour rounding and 2-hour rounding groups ($p = 0.001$). Patient satisfaction declined throughout the four week intervention. However, it should be noted that patient satisfaction scores were not provided for the control group, and the patient satisfaction tool used in the study was not identified. Shin and Park (2018) studied the effect of IR on patient satisfaction. Patient satisfaction was evaluated using the Patients' Satisfaction with Nursing Care Quality Questionnaire and it was found that patient satisfaction was significantly higher in IR groups ($p = 0.001$). Mulugeta et al. (2020) focused on the effect of IR on patient satisfaction over the length of a patient's stay. On the fifth day of hospitalization, patient satisfaction scores were significantly higher ($p = 0.001$), whereas no significant improvement occurred on the second. Two studies reported initial improvements in patient satisfaction scores using selected questions from the Hospital Consumer Assessment of Healthcare Providers and Systems survey (Brosey & March, 2015; Krepper et al., 2014). Brosey and March (2015) found that patient satisfaction scores improved from 48.6% (pre-intervention) to 72.3% (post-intervention), and this was maintained at 72.2% at one year of follow-up. However, Krepper et al. (2014) noted that initial differences in patient satisfaction scores were not maintained after three months. Maddigan et al. (2019) examined patient satisfaction using a 4-item questionnaire 36 weeks after implementing IR in three rehabilitation units and found mean satisfaction scores were higher after IR implementation. Two studies reported non-statistically significant results on the effect of IR on patient satisfaction (Di Massimo et al., 2022; Olrich et al., 2012). According to Olrich et al. (2012), pre- and post-intervention IR groups in two medical-surgical units did not differ significantly in patient satisfaction ($p = 0.38$). Similarly, Di Massimo et al. (2022) reported that neither the control nor intervention groups showed significant differences ($p = 0.87$). Harrington et al. (2013) found that patients were satisfied with all aspects of care provided through IR.

# DISCUSSION

The purpose of this scoping review was to synthesize the current literature on IR's impact on nursing outcomes among hospitalized adults. It has described the various models of structured rounding and provided details on the evidence of the effectiveness of IR as an intervention. The results of this review have identified inconsistencies in the rounding models used in different clinical settings. Some studies reported that IR improved fall prevention, pressure injuries, reduced call bell use, and increased patient satisfaction following its implementation (Brosey & March, 2015; Meade et al., 2006; Mulugeta et al., 2020). However, the evidence to support the effectiveness of IR is weak because of the diversity of methods employed and the limitations of study design in many studies (Brosey & March, 2015; Gliner et al., 2022; Olrich et al., 2012).

In this review, different rounding models were identified across a variety of acute inpatient settings. The delivery of IR within individual hospitals and across units/wards was also inconsistent. Given these findings, the promotion of IR without strong evidence of its acceptability, feasibility, and suitability for use in different clinical settings could potentially undermine nurses' abilities to provide safe care. Patient surveillance is a crucial role of nurses in acute care to detect changes promptly and intervene to prevent deterioration (Twigg et al., 2021).

Studies included in our review indicate that patient falls and patient satisfaction are among the most reported nursing outcomes. However, findings on the impact of falls and patient satisfaction with IR were mixed. Several issues related to the implementation of IR as a process were identified (Gliner et al., 2022; Meade et al., 2006; Olrich et al., 2012). Some included studies had limitations in study methods. For example, patient falls and fall reporting mechanisms in some studies were not standardized, and methods for calculating

patient fall rates varied (Krepper et al., 2014; Olrich et al., 2012; Tucker et al., 2012). Similarly, in terms of patient satisfaction, some studies only used selected questions from different tools and built their conclusions based on data that may be considered unreliable (Brosey & March, 2015; Krepper et al., 2014; Maddigan et al., 2019; Meade et al., 2006). The findings from this scoping review are consistent with other research which found that the evidence base for IR is built on poor quality studies and selective reporting (Christiansen et al., 2018; Hamdan et al., 2022; Snelling, 2013). This scoping review has found some benefits of IR on patient outcomes. However, there were other issues identified regarding the barriers that may influence the effectiveness and sustainability of implementing IR, such as poor communication between nurses (Gliner et al., 2022), lack of clarity about the purpose of rounding (Tucker et al., 2012), and documentation challenges (Ryan et al., 2019). Factors that are known to support the successful implementation of IR and improve patient outcomes were also identified, such as teamwork, staff engagement, a sense of ownership, and a clear implementation strategy (Flowers et al., 2016; Sims et al., 2020). Importantly, communication and interactions between nurses and patients are essential determinants of patient safety (Bridges et al., 2019). Gliner et al. (2022) indicated that effective communication between nurses and patients about fall risks and fall prevention improved patient outcomes by reducing the falls rate. Although poor communication between nurses may increase the incidence of falls. Olrich et al. (2012) found that consistent implementation of IR on all shifts and communication with staff about positive outcomes led to improvements in fall prevention, call bell use, and patient satisfaction.

Overall, our findings identify the need for robust studies to explore the acceptability and feasibility of a rounding protocol that can be implemented in different clinical settings. Recommendations for future studies include considering the factors that affect the effectiveness of IR implementation, by determining the barriers to and facilitators of successful IR implementation (Ryan et al., 2019). Most importantly, using consistent data definitions and indicators for measuring falls and pressure injuries and reliable and valid instruments to assess patient satisfaction would enhance the evidence base for evaluating IR.

## Limitations

There are some limitations to our review that should be acknowledged. Although a comprehensive search strategy was employed, not all relevant studies could be retrieved. Half of the studies were conducted in the USA, so further international research is required. Variability and inconsistency between the tools for measuring patient outcomes and the source of patient outcomes data were noted between studies. Secondly, different metrics were used to evaluate pressure injuries, call bell use, and fall rates in some studies, and there were low response rates in others. The methodological quality of many studies and weak study designs could have had a detrimental effect on the credibility of this review's findings. The reviewed studies often lacked information that enabled assessment of research rigor, but all studies were included regardless of their quality score, so the results must be interpreted cautiously.

## Implications for nursing and health policy

Leaders in nursing and policymakers need to engage nurses in IR implementation and listen to frontline nurses about their experiences of providing care using IR. Many argue that IR creates a safe environment where nurses can be more productive and effective in addressing fundamental nursing care (Flowers et al., 2016; Sims et al., 2020). In this context, Al-Anati et al (2024) indicated that political and economic pressures must be avoided when it comes to patient safety. Evaluation of the effectiveness of IR on patient outcomes is therefore essential and must consider the acceptability, feasibility, and sustainability of the practice. Since rounding models vary across hospitals and wards, creating a flexible rounding protocol that works in different clinical settings is necessary.

# CONCLUSIONS

The evidence on the effectiveness of IR for improving patient outcomes is weak because of the diversity of methods employed and the methodological limitations in study design. Previous studies on IR do not provide details on how to implement a flexible approach to IR to ensure fundamental nursing care is provided to all patients. The results of this scoping review suggest the need for a high-quality study to evaluate the characteristics of IR models that may work in different clinical settings.

### AUTHOR CONTRIBUTIONS

*Conceptualisation:* Jenny Sim, Luke Molloy, Elizabeth Halcomb, Abdelrahman Al-Anati. *Data collection:* Jenny Sim, Luke Molloy, Elizabeth Halcomb, Abdelrahman Al-Anati. *Data analysis:* Jenny Sim, Luke Molloy, Elizabeth Halcomb, Abdelrahman Al-Anati. *Supervision:* Jenny Sim, Luke Molloy, Elizabeth Halcomb, Steven A. Frost. *Final approval:* Jenny Sim, Luke Molloy, Elizabeth Halcomb, Abdelrahman Al-Anati, Steven A. Frost.

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