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The effect of intentional nurse rounding and nurse prompt response time to Call system on patient satisfaction, patient complaints, and patient clinical outcome: An Audit trial

Hussam Al-Nusair [1], **Rafi Alnjadat** [2] *, **Doreen Macherera Mukona** [1], **Mariezl Fonbuena** [2], **Saleem Perinchery** [2]

[1] Fatima College of Health Sciences, UAE
[2] Al-Balqa Applied University, Jordan

* Corresponding author: Rafi Alnjadat, Assistant Professor, Al-Balqa Applied University, Jordan. **Email:** Rafi.alnjadat@bau.edu.jo

Abstract

Background: Improving patient satisfaction and safety is a critical goal for hospitals around the world. Healthcare providers have increasingly recognized the importance of strategic initiatives and the impact they have on patient outcomes.

Objectives: This study examines the effect of intentional nurse rounding and the call system's response times on patient satisfaction, patient complaints, falls, and hospital-acquired pressure injuries (HAPI).

Methods: This descriptive study was conducted between December 2017 to August 2018 in a hospital in the United Arab Emirates. The Intentional Nurse Rounding (INR) and Prompt Response to Call System (PRTCS) were introduced in December 2017. It comprised of: (1) hourly nurses' rounds between 07:00 hours to 23:59 hours and 2 hourly rounds between 24:00 hours to 06:59 hours daily, (2) measurement of nurses' response time to call bells, (3) leadership rounds to assess patient satisfaction. The outcomes were patient satisfaction, patient complaints, fall rates, and HAPI rates. Baseline data were collected through retrospective reviews of the data on these outcomes in December 2017. The second period of data collection was conducted over eight months after the initiation of the system, from December 2017 to August 2018. The Chi-square test was used to detect significant differences in outcomes pre and post intervention.

Results: The overall adherence to the "Intentional Nurse Rounding and Prompt Response Time to Call System" was 91% while the overall patient satisfaction rate was 97% in August 2018. The average response to call time was 1.2 minutes. Patient complaints decreased from 0.75/month to 0.125/month between December 2017 to August 2018. During the same period, the rates of patient falls and HAPI decreased from 1.17/month to 0.38/month and 0.35/month to 0.24/month respectively. Though the observed differences were not statistically significant, there was a promising difference in patient complaints pre and post intervention (P=0.08).

Conclusion: Integrating nursing-led strategic initiatives such as intentional nurse rounding and reduced response time to the call bell system can positively impact patient satisfaction, complaints, and clinical outcome.

Keywords: Nurse rounding, Patient satisfaction, Call bell system, Fall, Hospital-acquired pressure injury.

Introduction

Quality care, patient safety, and patient satisfaction are very important concepts to uphold for healthcare organizations. According to the World Health Organization (WHO), a considerable focus on the quality of health services to improve healthcare delivery is still required.[1]

This involves providing effective, safe, and people-centered care that is timely, equitable, integrated, and efficient. Quality healthcare increases the likelihood of desired health outcomes and this has been the top priority in the healthcare sector of the Abu Dhabi Government in the United Arab Emirates (UAE).[2]

Consequently, there has been a continuous drive to develop innovative strategies that foster the delivery of safe and high-quality nursing care because nurses have a very important role in maintaining patient safety and offering quality care.[3]

Patient falls in healthcare facilities are common and can result in serious injuries. It is considered one of the global

burdens of disease and injuries in 204 countries and territories according to the Global Burden of Disease Study in 2019.[4]

One of the studies in UAE considered fall as the second cause of trauma deaths from vehicular accident.[5] However, falls can be prevented by identifying patients at risk of falls, implementing fall prevention strategies, and educating patients and their families on fall prevention.[6,7] Hospital-acquired pressure injuries (HAPIs) are also a major healthcare issue affecting patients of all ages, and can lead to significant morbidity and mortality. HAPIs are defined as localized damage to the skin and/or underlying soft tissue usually over a bony prominence or related to a medical or other device. HAPIs are largely preventable through the implementation of evidence-based prevention strategies.[8]

Intentional Nurse Rounding (INR) and Prompt Response Time to Call System (PRTCS) are two innovative approaches that have been shown to promote patient satisfaction and reduce the incidence of HAPIs and falls. INR involves a systematic approach to patient care that includes regular check-ins by nursing staff at specified intervals to assess patient needs, provide comfort measures, and address any concerns. PRTCS is a system that facilitates prompt response to patient call bells, reducing the risk of falls and injuries. INR has been shown to improve patient satisfaction and reduce the incidence of pressure injuries. A study by Spano-Szekely et al.,[9] found that INR led to a significant reduction in the incidence of hospital-acquired pressure injuries in a medical-surgical unit. Similarly, a study by Brosey and March[10] found that INR was associated with higher patient satisfaction scores. PRTCS has also been shown to have a positive impact on patient safety.

A study by Daniels[11] found that hourly rounding, combined with a prompt response to call bell system, led to a significant reduction in the incidence of falls and call light use.

In addition, PRTCS has been associated with improved patient satisfaction scores.

While there has been research on the effectiveness of fall prevention strategies or programs, there is a need for more research on the long-term sustainability of these programs,[12] and more research on the cost-effectiveness and the use of technology systems to prevent hospital-acquired pressure injuries.[13,14]

Objectives

This study examined the effect of intentional nurse rounding and nurse prompt response time to call system on patient satisfaction, patient complaints, patient fall rates, and HAPI in an acute care hospital in the Northern Emirates.

Methods

Study design and participants

This utilized surveillance of staff nurses on inpatient units in a 132-bed acute care hospital in UAE to assess response times to the call bell and adherence to the nurse rounding system. The project was initiated and monitored for eight months in the Medical-surgical ward (MSW), Pediatric, and Maternity departments of an acute care hospital in the UAE from January 2018 to August 2018. These units are manned by 310 nurses (registered nurses, Charge Nurses, Senior Charge Nurse (SCN) and porters.

Audit interventions

The project comprised several activities. A series of briefings and education were conducted by the SCN during unit meetings, nurse handovers, and safety huddles to increase the staff's awareness of the project and its purpose [Table 1]. Patients in admission were also oriented by the nurses on the concept and its purpose [Table 1]. The adherence of nurses to the rounding system was monitored through leadership rounds and monthly through regular audits. Feedback on trends in performance and outcomes was also published monthly on bulletin boards. These data were presented to all managers and nursing staff during the quarterly quality council meetings.

Data collection

Data were collected in phases as outlined below:

Retrospective record review

The baseline data were collected through a retrospective review of data on call bell response time, patient satisfaction, fall incidents, and HAPI incidence before the intervention period from January 2017 to December 2017. The data on call bells were retrieved from a computerized system, that records the number of calls, response times as well as the percentage of calls, attended to within 3 minutes. Baseline patient satisfaction scores on surveys as well as the number of patient complaints were taken from Patient Services Office (PSO) every month. Monthly data on incident rates of falls and HAPI are routinely submitted to the quality management department where they are routinely reviewed by the Quality Management and Wound Care Specialists for accuracy and appropriateness of actions taken. The monthly incidence rate of HAPI is measured by dividing the total number of HAPI reported

within a month by the total number of patient days of the same month, then multiplying it by a thousand to get the HAPI rate per thousand patient days. The calculation applies to the incidence rate of falls. Results of the HAPI and Fall incidence rates are coming from Quality Department.

Table 1. Education sessions

Area	Participants	No. of educations	Timing	Title	Contents
Education sessions for staff					
Medical surgical ward	37 staff nurses 1 senior charge nurse	4	During handover (07:00 – 07:30) (19:00 -19:30)	- International nurse rounding - Patient response time to call system - Leadership rounding	- Rounding guide - Rounding form - Responsibilities - Monitoring of compliance
Pediatric	14 staff nurses 1 senior charge nurse	2			
Maternity	37 staff nurses 1 senior charge nurse	4			
Orientation sessions for patients					
Medical surgical ward	Patients admitted during study period	Once during admission	Anytime	- International nurse rounding - Patient response time to call system - Patient satisfaction survey form	- Concept - Purpose - Call System
Pediatric					
Maternity					

Intentional nurse rounding

The assigned nurses on duty were expected to do an hourly rounding for every assigned patient regularly. Rounding is done hourly between 07:00 hours and 23:59 hours and 2 hourlies between 24:00 hours and 06:59 hours daily in attending their patient's needs. Using a standardized form which is posted in the patient's room, the nurses logs the patient's needs attended, documents, and sign on the form during each round. The needs attended included bathroom needs, diaper changes, repositioning, transfer and mobility, pain or discomfort, and the patient's safety through a quick environment survey. Patients were oriented about the rounding program during admission to ensure their full participation and understanding. Staff compliance is monitored through the completed form by an audit nursing team on a monthly basis.

Call bell system

The call bell system refers to the call light that the patient uses in their room to call nurses' attention. The nurses are expected to attend to every activation of the call bell system within 3 minutes. A computerized system automatically records the response time, which is the time from which the call bell is rung to the time it is put off when the nurse attends to the patient. At the end of each month, the data is analyzed and reported by a designated person in the nursing department in terms of the total number of calls

for the month, the response times, and the percentage of response times that are within the recommended 3 minutes.

Leadership rounds

Leadership rounds involved SCN doing visits for 2 main categories of patients: (1) new admissions, and (2) the existing patients. They do twice weekly rounds using a monkey survey in a tablet to assess, follow up, and address other patient needs and concerns. They checked, among other concerns, if intentional rounding was being adhered to by staff nurses, if patients were involved in their plan of care, if medications were given timeously, and if the pain was adequately being managed. Adherence of the SCN to these leadership rounds was monitored through the data received from the monkey survey, data is gathered and summarized by a designated person in the Nursing Quality and reported as monthly Key Performance Indicators (KPIs) of the units.

Outcome variables
Patient satisfaction

A patient survey form in English and Arabic version is used to gather patient/family satisfaction which is given to all patients during their hospital stay or visit. It is a 24 items survey questions in 11 dimensions of nurse's care, doctors care, responsiveness of hospital staff, discharge information, environment, treated with respect and

dignity, allied health care, waiting time, dietary, communication about treatment, and overall hospital rating. Items are scored on a five-point rating scale from 4 "Always", 3 "Usually", 2 "Sometimes", 1 "Never", and 0 "Not at All" and the total score is 0-96, with scores more than 80 shows high satisfaction. This is being collected by the (Patient Services Office) PSO on a monthly basis from the suggestion dropbox. Additional source of patient feedback is through the Nurse leadership rounds conducted by SCN/designee/Unit Head of the department.

Patient complaints

Patient's complaint is gathered through personal, email, or phone, and it is documented in the complaint reporting form. Monthly reports of data related to patients' complaints are shared with the relevant stakeholders for their management.

The data is reviewed by the Patient Experience Committee where the primary focus is on improving patient care, patient outcomes and the patient experience

The incidence of falls

The incidence of fall is measured through the incident reports submitted by concerned departments to the quality department. The incidence is logged by the quality team after careful review and validation of the concerned departments into an excel format with the specific details to the fall incidence. Monitoring is done on a monthly basis.

The incidence of HAPI

Likewise, with HAPI, thru incidence reports submitted to quality and it is routinely reviewed by the quality management and wound care specialists for accuracy and appropriateness of actions taken.

Data analysis

Data analysis was done using Microsoft excel and descriptive statistics were used. Chi square test was used to establish the relationships between the interventions (INR and PRTCS) and the outcome variables. The number of calls was reported as totals, frequencies, and percentages. Data on falls and HAPI were reported as incidence rates while patient satisfaction was reported as rates. Compliance with the intentional rounding system was reported as a percentage. P values less than 0.05 were considered significant.

Ethical considerations

The Human Research and Ethics Committee of Al-Balqa Applied University gave their approval for this project number (244/2/3/6/33). Each participant in the study and research facilitator was informed of its goals and methodology. Data collection was private. Except for a code that the research team devised, the questionnaire had no markings, names, or addresses. No participant was under any duress to participate in this study; they were all given the assurance that they could stop at any time and were under no obligation to answer any questions they did not choose to. The consent form also made it clear that participation in the study had no additional risks beyond those associated with normal life.

Results

Figure 1 presents a summary of the calls as recorded by the computerized system. There was a total of 48605 calls received during January 2018 and August 2018, 45340 (93%) of which, were responded to within 3 minutes.

Figure 2 shows the results of adherence to the rounding system, patient satisfaction, and patient complaints from 2017 to 2018. The average rate for patient complaints was 0.75/month in 2017 and had decreased by 83% to 0.125/month in 2018. The overall rate for patient satisfaction increased from 94% in December 2017 to 97% in August 2018, while the average adherence to the hourly rounding program was 91%.

Table 2 shows that 22.2 % of pre-intervention group had complaint while 9.3 % only from the post intervention group.

Figure 3 shows the relationship between the average calls per patient per day and the call bell response time. Call bells were reduced to 8.4%, and the average response time was 1.2 minutes.

Figure 4 shows the average monthly incidence of falls from December 2017 to August 2018. The incidence in December 2017 was 1.17, and it decreased by 68% to 0.38 in August 2018.

Table 3 shows that 22.2% of pre-intervention group had falls while 13.3% only from the post intervention group.

Figure 5 shows the incidence of hospital-acquired pressure injuries from December 2017 to August 2018. The incidence was 0.35/month in December 2017, and decreased by 31% to 0.24/month in August 2018.

Table 4 shows that 7.4% of pre-intervention group had HAPI while 1.3% only from the post-intervention group.

Table 2. Differences between Intentional nurse rounding and prompt response to call system and the Patient Complaints

Variable	Patient complain n (%)		X² (df)	P value
Group	Yes	No		
Pre-intervention	6 (22.2)	21 (77.8)	2.966 (1)	0.085
Post-intervention	7 (9.3)	68 (90.7)		

Table 3. Differences between INR and PRTCS and the Patient Fall

Variable	Patient falls n (%)		X² (df)	P value
Group	Yes	No		
Pre-intervention	6 (22.2)	21 (77.8)	1.186 (1)	0.276
Post-intervention	10 (13.3)	65 (86.7)		

Table 4. Differences between INR and PRTCS and the HAPI

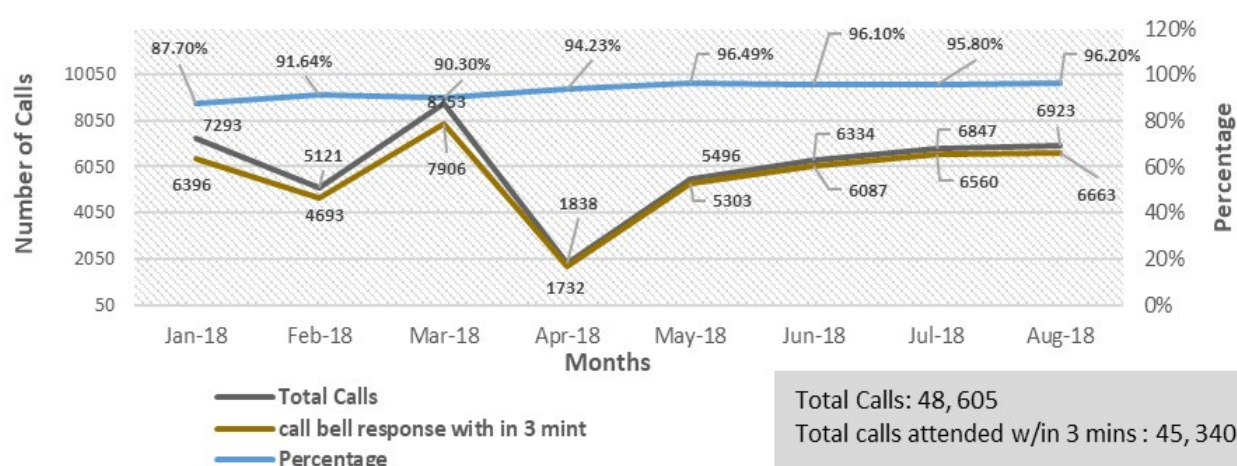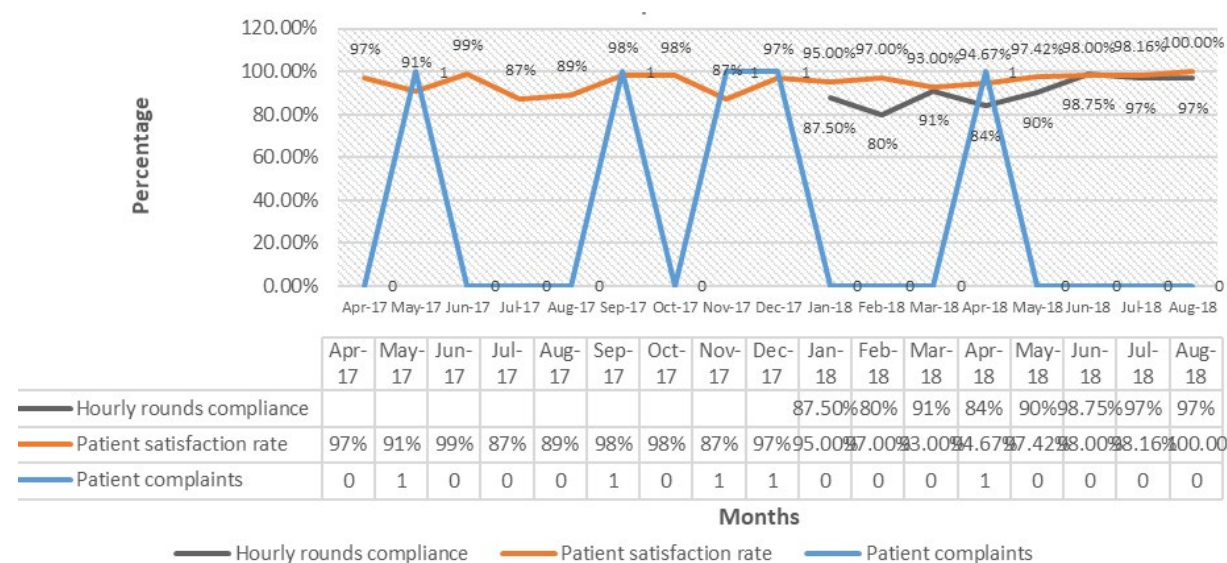| Variable	HAPI n(%)		X² (df)	P value
Group	Yes	No		
Pre-intervention	2 (7.4)	25 (92.6)	2.566 (1)	0.109
Post-intervention	1 (1.3)	74 (98.7)		

Figure 1. Number of total calls and response time

Figure 2. The effect of intentional nurse rounding on patient satisfaction rate and patient complaints

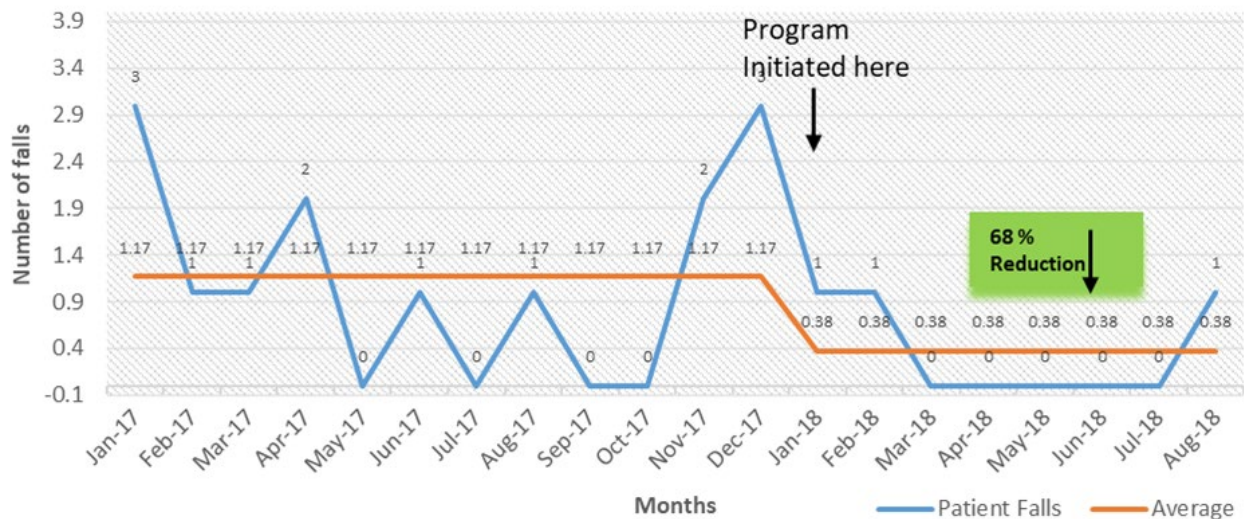**Figure 3.** Average calls, patient, day vs. average call bell response time

Figure 4. Average incidence of fall pre and post intervention
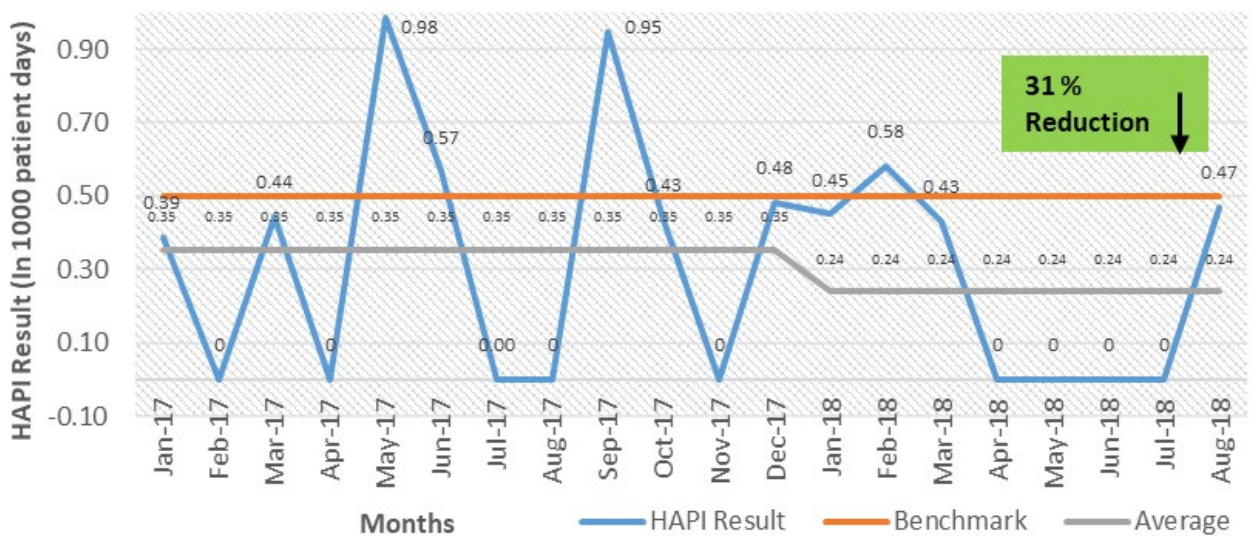

Figure 5. Incidence of hospital acquired pressure injury

Discussion

Patient satisfaction increased after the implementation of the system, while complaints, falls, and HAPI rates decreased; however, it was not statistically significant. Call response times also decreased to consistently under 1.5 minutes and 93% of them were attended within 3 minutes.

Several factors could have been responsible for the generally positive outcomes in our study. This prompt and alert response to call bells might as well explain reduced patient complaints and increased patient satisfaction. Another possible enabler could have been enhanced by the physical layout of the inpatient care areas in the hospital. With three proximal nursing stations within the departments, nurses are well-spread and are always near patient rooms. This enables them to respond promptly to call bells. In support of this finding, Varghese and Punjotre pointed hospital infrastructure as an enabler of prompt response to call bells with 94.88% of call bells in their study being responded to within a minute and fewer call bells due to nurse rounding.[15]

The high adherence rate of 91% to the nurse rounding system by staff nurses might also have resulted in the observations made onpatient complaints, satisfaction, falls, and HAPI rates. The effect of the nurse rounding was found not only significant for patients but also for staff. The 8.4% reduction in call bells also led to reductions in miles walked by nurses while on duty. This is particularly important for nurses as it also has benefits for their physical health. This will prevent fatigue, and low back pain and increase the productivity of the workforce. This also promotes efficient use of time as nurses tend to attend to patients' needs during the hourly rounds rather than entering and exiting patients' rooms multiple times during their shifts. Subsequently, they will have more time for other important tasks such as patient education.[9,10,16] Several studies have shown similar findings regarding the positive impact of nurse rounding on patient satisfaction, falls, and call light use. For instance, Mitchell et al.[17] found that hourly rounding programs improved patients' perception of nursing responsiveness, reduced patient falls, and call light use. Similarly, a study by Brosey and March[10] reported decreased rates of patient falls and HAPI during the project period. Another study by Daniels[11] also demonstrated that nurse rounding improves fall rates. However, not all studies support these findings. For example, Farndale and Murrer[18] found no significant difference in patient falls with the implementation of hourly rounding, and Nelson and Staffileno[14] reported no impact on fall rates but exhibited improvement in the patient satisfaction score.

Patient falls remain to be a collective adverse event in acute care facilities. However, several studies prove that nurse rounding improves fall rates.[11,19] A study in an adult medical unit found a 10% reduction in call bell use and inpatient falls when the staff asked specific questions to the patient about comfort and their basic needs.[20] Another study found moderate-strength evidence that hourly rounding programs improve patients' perception of nursing responsiveness, reduce patient falls, and call light use.[17] However, the study of Brown et al. found no significant difference in patient falls with the implementation of hourly rounding.[21] Likewise, no impact on fall rates but exhibit improvement in the patient satisfaction score was noted in the study by Nelson and Staffileno.[22] The decrease in hospital fall rates (68%) of the present study may be attributed to the high adherence rate to nursing rounding and the call bell system. Regarding the impact of nurse rounding on staff engagement, the literature suggests that staff education and engagement are essential in promoting their level of engagement.[23] Leaders who implement employee engagement strategies are noted to have higher employee engagement,[24] improved customer satisfaction, productivity, and profit.[25] In the current study, all staff was briefed and educated before the initiation of the program, which may have contributed to the increase in adherence of the staff in the nurse rounding and call bell systems.

Furthermore, discussing with the staff to keep them aware of their performance during meetings might have contributed to the increase in their adherence to the hourly rounding and prompt response to call bells. Posting the data such as falls, pressure ulcers, and patient satisfaction will allow the nurses to see the tangible difference and will appreciate the result and benefits of what they are doing, thus will eventually make hourly rounding a success. Nurses in other studies have reported intentional rounding as an additional, unnecessary task, however, the effectiveness of intentional rounding depends on external factors such as leadership and formal rounding education, workload, ward layout, staffing, and experience level.[26]

The intervention implemented led to an increase in patient satisfaction and a decrease in complaints, falls, and HAPI rates. The prompt response to call bells and physical layout of the inpatient care areas could have played a role in achieving these outcomes. Nurse rounding not only had positive effects on patients, but also on staff, reducing call bells and improving their physical health. Staff education and engagement were essential in promoting adherence to the nurse rounding and call bell systems. The study highlights the importance of nurse rounding in improving

patient outcomes and staff engagement.

To minimize potential biases, our study has employed consistent and standardized data collection methods. This includes using the same data collection tools pre and post-intervention phases, as well training the data collectors by the primary investigator to ensure consistent application of the tools.

This study was conducted in a single hospital and during a specific time period, which may limit the generalizability of the findings to other hospitals or different time periods. Also, the data on patient satisfaction and complaints were based on self-reported surveys, which may be subject to bias or inaccuracies. There may have been other factors, such as changes in staffing levels or patient acuity, that could have influenced the outcomes. The SCN's adherence to the Leadership rounding was not presented in this study.

Conclusions

The implementation of the intentional nurse rounding and nurse response time to call system resulted in decreased complaints, falls, and HAPIs, and increased patient satisfaction. The prompt response to call bells and the physical layout of the inpatient care areas in the hospital were identified as possible enablers. The high adherence rate to the nurse rounding system by staff nurses resulted not only in significant improvements in patient outcomes but also for staff, leading to reduced call bells, miles walked by nurses, and promoting efficient use of time. The impact of nurse rounding on staff engagement was also identified as essential in promoting adherence to the system. The findings suggest that nurse rounding is an essential strategy to reduce inefficient use of call lights and promote patient and staff satisfaction.

Acknowledgment

Competing interests

The researchers declare no conflicts of interest exist for this research work.

Abbreviations

hospital-acquired pressure injuries: HAPI
Intentional Nurse Rounding: INR
World Health Organization: WHO
United Arab Emirates: UAE
Prompt Response Time to Call System: PRTCS
Medical-surgical ward: MSW

Senior Charge Nurse: SCN
Patient Services Office: PSO
Key Performance Indicators: KPIs

Authors' contributions

Hussam Al-Nusair is responsible for the study concept, design, literature search, data collection and analysis, manuscript preparation. Rafi Alnjadat, Doreen Mukona, Mariezl Fonbuena and Saleem Perinchery assisted in literature search, data collection, data analysis, and manuscript preparation and editing.

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Availability of data and materials

Data related to this study are available upon reasonable request. Please contact the corresponding author for inquiries regarding access to the data.

Ethics approval and consent to participate

The Human Research and Ethics Committee of Al-Balqa Applied University gave their approval for this project number (244/2/3/6/33). The consent form also made it clear that participation in the study had no additional risks beyond those associated with normal life.

Consent for publication

All authors have reviewed the final version of the manuscript and have provided their consent for its publication.

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