J Nurs Care Qual
Vol. 31, No. 1, pp. 84–89

Missed Nursing Care and Unit-Level Nurse Workload in the Acute and Post-Acute Settings

Sabrina B. Orique, MSN, RN, CNS, OCN;
Christopher M. Patty, DNP, RN, CPPS;
Ellen Woods, BSN, RN, OCN, RN-BC

This study replicates previous research on the nature and causes of missed nursing care and adds an explanatory variable: unit-level nurse workload (patient turnover percentage). The study was conducted in California, which legally mandates nurse staffing ratios. Findings demonstrated no significant relationship between patient turnover and missed nursing care. **Key words:** *missed nursing care*, *nurse workload*, *patient turnover*, *quality care*

THE OCCURRENCE of missed nursing care has a significant negative impact on the delivery of patient care and on patient outcomes. The term "missed nursing care" describes elements of required nursing care that are either omitted or significantly delayed.[1] The Agency for Healthcare Research and Quality has described errors of omission as more problematic and less detectable than errors of commission and a threat to patient safety.[2] Prior research has linked errors of omission to the development of hospital-acquired conditions (infections,[3,4] pressure ulcers,[5] and disability[6-8]; adverse events[9-12]; and decreased staff satisfaction[13,14]).

Over the years, Kalisch and colleagues have investigated both the outcomes of missed nursing care and reasons for it. Kalisch and colleagues[15] reported ambulation, assessment of medication effectiveness, turning, oral care, patient teaching, and timeliness of medication administration as items frequently missed by nurses. Inadequate levels of registered nurse (RN) staffing, inadequate levels of assistive personnel, increasing patient acuity, and increased patient census were reasons for missed nursing care. In a larger-scale study conducted by Kalisch and colleagues,[16] nurses reported ambulation, attendance at care conferences, and oral care as areas most frequently missed. Inadequate levels of staffing resources were cited as reasons for missed care.

Results from previous research examining the amount of, type of, and reasons for missed care have been consistent. However, the vast majority of research pertaining to missed nursing care has been conducted in the Midwestern United States; few studies have been conducted in the western United States. This

Author Affiliations: *Advance Practice Nursing Department (Ms Orique and Dr Patty) and Clinical Education Department (Ms Woods), Kaweah Delta Medical Center, Visalia, California.*

The authors declare no conflict of interest.

Supplemental digital content is available for this article. Direct URL citations appear in the printed text and are provided in the HTML and PDF versions of this article on the journal's Web site (www.jncqjournal.com).

Correspondence: *Sabrina B. Orique, MSN, RN, CNS, OCN, Advance Practice Nursing Department, Kaweah Delta Medical Center, 400 W. Mineral King Ave, Visalia, CA 93291 (sasanche@kdhcd.org).*

Accepted for publication: May 9, 2015
Published ahead of print: June 25, 2015
DOI: 10.1097/NCQ.0000000000000140

study was an attempt to fill in that gap, providing data from a western state. To account for differences in the population sampled (ie, geographic location, RN education level, and staffing laws/regulations), the investigators of this study partially replicated previous research conducted by Kalisch and colleagues.

Currently, California is the only state to have enacted legally mandated staffing ratios on all patient care units, although 13 states have addressed nurse staffing through legislation.[17] Previous research has examined missed nursing care as an independent variable and a predictor of nursing-sensitive outcomes.[4,11,16] The investigators expanded those studies to include analysis of unit-level nurse workload and its impact on missed nursing care. Unit-level nurse workload was expressed as patient turnover percentage. Despite the amount of published research examining missed nursing care, no study has explored the relationship between patient turnover and incidence of missed care.

Prior research has demonstrated strong correlations between nurse staffing, patient turnover, and nursing-sensitive outcomes.[18-21] In 2005, the California Nursing Outcomes Coalition (CalNOC)[22] reported the results of a 2-year descriptive correlational study in which daily nurse staffing and hospital-acquired conditions (eg, falls, pressure ulcers) among medical-surgical patients were analyzed. In that study, 25 not-for-profit acute care facilities in California reported daily staffing, unit-level nurse workload metrics (patient turnover percentages), and safety and quality outcome indicators. Findings demonstrated that hours of care, RN educational preparation, patient turnover, and hospital complexity were significantly associated with nursing-sensitive outcomes. The results of the study provided further evidence that unit-level nurse workload impacts patient outcomes, with high patient turnover compromising patient safety.

Increased complexity of patient care and high patient turnover may be factors contributing to the prevalence of missed nursing care. High patient turnover requires nurses to provide a greater amount of care to more patients in a shorter time period.[19,23] High unit-level nurse workload also results in less time spent with patients and decreased nursing surveillance.[19] Moreover, increased unit-level nurse workload is associated with adverse patient events,[24] increased patient morbidity and mortality,[25,26] and nursing dissatisfaction.[27] Consequently, high patient turnover may result in care that is prioritized, with elements of basic care being missed or significantly delayed.

The purpose of this study was to identify aspects of missed nursing care and their relationship to unit-level nurse workload. Specifically, the investigators sought to answer the following research questions: (1) What are the amount and types of missed nursing care? (2) What are the reasons for missed care? (3) Are the amount, types, and reasons for missed nursing care influenced by demographic characteristics? (4) What is the relationship between unit-level nurse workload and incidence of missed nursing care?

METHODS

Setting and sample

The descriptive study used a survey method. The study took place in a 581-bed acute care medical facility in California. Hospital institutional review board approval was obtained. RNs, licensed vocational nurses, and nursing assistants providing direct patient care in the following areas were invited to participate: rehabilitation, subacute, transitional care, medical-surgical (clinical decision unit, cardiac, oncology, renal, and orthopedic), intermediate critical care, and critical care. Eligibility criteria included a minimum of 18 years of age and ability to read and write English.

Of the 169 nursing personnel who participated, there were 132 (78.1%) RNs, 12 (7.1%) licensed vocational nurses, and 25 (14.8%) nursing assistants. Of the sample, 85.2% were female. A majority of participants were 25 to 34 years old (36.7%), held an associate's degree in nursing (47.3%), worked 12-hour

shifts (95.3%), and were employed more than 30 hours per week (89.2%). Data were collected between February 2014 and April 2014.

Instrument

The MISSCARE survey[28] measures prevalence, type, and reason for missed nursing care. The survey is a 2-part instrument that was developed to assess perceptions of missed nursing care (part A) and reasons for missed care (part B). In part A of the survey, respondents are asked to identify the amount of care missed as either "always missed" or "never missed." In part B, respondents grade each item as a significant, moderate, minor, or not a reason. The survey also contains 20 demographic questions focusing on staff characteristics, work schedules, and staffing. In prior research using the MISSCARE survey, the instrument has demonstrated strong validity and high reliability. Content validity has been reported at 0.89 and test-retest reliability between 0.87 and 0.88 for part A and 0.86 for part B. Internal reliability ranges from 0.64 to 0.86 for Cronbach α coefficients.[15,16,28]

Data collection

Clinical staff completed the paper survey during or after staff meetings. As an incentive to participate, respondents were entered in a drawing to win a $100 gift certificate. Data for unit-level nurse workload were obtained from the institution's finance department. These data included a summary of the total number of patient admissions, discharges, transfers in, and transfers out for the months of February to April 2014.

Data analysis

Data from surveys were compiled into an Excel spreadsheet and imported into the Statistical Package for the Social Sciences (SPSS) (version 22; IBM Corp, Armonk, New York). Frequencies were computed to examine sample characteristics, amount of missed nursing care, and reasons for missed care. Items of care were considered to be missed when identified as "always," "frequently," or "occasionally" missed.

RESULTS

Missed nursing care

Elements of nursing care perceived as missed were similar across units. Ambulation was reported as the most frequent item of missed care. Ambulation was missed 78.8% of the time, followed by oral care (63.3%), timely medication administration (63.4%), bathing (62.7%), attending interdisciplinary care conferences when held (56%), assisting with toileting needs within 5 minutes of request (55%), turning patients every 2 hours (53%), patient teaching (53%), and responding to call lights within 5 minutes (53%). Supplemental Digital Content Table 1 (available at: http://links.lww.com/JNCQ/A196) lists the frequency and percentage for all elements of missed care. To arrive at inferential statistics, a mean missed care score was calculated by averaging the amount of missed care for each element per respondent. The mean missed care score was determined to be 3.65 (SD = 0.55). No significant differences in missed care scores were found among units.

Reasons for missed care

Reasons for missed nursing care were similar across units. Labor resource issues were identified as the most significant reason for missed care (90.9%), followed by issues with materials resources (89.2%) and communication (81.3%). For each of these categories, Supplemental Digital Content Table 2 (available at: http://links.lww.com/JNCQ/A197) lists the frequency and percentage for reasons of missed care.

Missed nursing care and staff characteristics

A 1-way analysis of variance was conducted between missed nursing care and job title, unit staffing adequacy, and position satisfaction. Findings indicated that missed care score was significant between job title ($F_{3,164} = 4.79$, $P = .003$). The post hoc Scheffe test revealed that missed care for nursing assistants ($M = 4.010$, SD = 0.572) was significantly higher than missed care for RNs ($M = 3.576$,

SD = 0.572). Analysis of variance demonstrated that the missed care score was significant between unit staffing adequacy ($F_{3,164}$ = 4.98, P = .002). The proportion of respondents who felt that unit staffing was adequate 100% (M = 3.953, SD = 0.481) or 75% (M = 3.778, SD = 0.526) of the time was significantly higher than the proportion of those who felt that staffing was adequate 50% (M = 3.488, SD = 0.506) of the time. Findings also indicated that missed care score was significant between current position satisfaction ($F_{2,166}$ = 4.63, P = .011). The post hoc Scheffe test indicated that missed nursing care was significantly higher for respondents who were very dissatisfied or dissatisfied (M = 3.712, SD = 0.0541) than for respondents who were neutral in their current position satisfaction (M = 3.360, SD = 0.578).

A Pearson correlation was conducted to determine the strength of the relationship between the missed care score and the number of patients under a single nurse's care. Findings demonstrated a significant positive relationship between missed care and the number of patients under care (r_{167} = 0.246, P = .001, r^2 = 0.06); the missed care score increased as the number of patients under care increased. Educational preparation, age, hours worked, experience, shift worked, overtime, missed shifts, and plans leave to current position were not significantly associated with missed care.

Predicting missed nursing care

Stepwise multiple regression was used to determine whether job title, unit staffing adequacy, current position satisfaction, and number of patients cared for were predictors of missed care. Findings indicated that unit staffing adequacy and number of patients cared for significantly predicted missed care (R^2 = 0.134, R^2_{adj} = 0.123, $F_{2,162}$ = 12.481, P < .001). Missed care was reported to be greater when unit staffing was adequate at least 75% of the time (P < .001) and clinical staff had more patients to care for (P < .001).

Unit-level nurse workload

Unit-level nurse workload (patient turnover percentage) was calculated by summing the number of admissions, discharges, transfers in, and transfers out divided by the total number of patient days. Units with highest patient turnover were intermediate critical care (92.5%), clinical decision unit (91%), medical-surgical (76.7%), and critical care (66.3%). To determine the relationship between unit-level nurse workload and missed nursing care, a Pearson correlation was conducted. Analysis revealed no significant correlation between unit-level nurse workload and missed nursing care (r_{12} = −0.267, P = .401, r^2 = 0.07).

DISCUSSION

Frequency, type, and reasons for missed nursing care reported by staff were similar across units. Although ambulation, oral care, and timely medication administration were reported as items most frequently missed, additional elements of basic care such as bathing, toileting, and turning were missed at least half of the time. Assessment, glucose monitoring, vital signs, reassessments, and hand washing were reported as items of care to be least missed. Respondents cited labor resource issues as the most frequent reason for missed nursing care, followed by material resources and communication. The findings of this study further validate previous research examining the occurrence and reasons for missed nursing care.[4,15,16]

A measure of unit-level nurse workload (patient turnover percentage) generated by calculating the sum of admissions, discharges, and transfers divided by the total patient-days has been described as an explanatory nursing-sensitive variable[29] in predicting hospital-acquired pressure ulcers[21] and medication administration errors.[12] In this study, there was no significant relationship between unit-level nurse workload and the incidence of missed nursing care. A possible explanation for this finding may be that the California-mandated staffing ratios on patient care units with high

patient turnover are more favorable than the standard medical-surgical 1:5 RN to patient ratio. For example, intermediate critical care units are staffed with a 1:3 RN to patient ratio, with the highest unit-level workload intensity (92.5% patient turnover) observed on a step-down unit.

Implications for nursing practice

Ideally, all nursing care indicated and planned should be delivered. The inability of nurses to deliver care reduces the "dose" of nursing surveillance, defined as "purposeful and ongoing acquisition, interpretation and synthesis of patient data for clinical decision making."[30(p687)] The activities performed to deliver nursing surveillance are frequently missed by nurses. A familiar example occurs when a missed opportunity to ambulate a patient results in a missed opportunity to monitor the patient's ability to perform activities of daily living. The result of this lower "dose" of nursing surveillance has been linked to an increased incidence of inpatient mortality after the development of certain patient complications (failure to rescue).[31]

The implication for nursing is that if missed care can be reduced, nursing surveillance can be increased with resultant improvement in patient outcomes. The results of this study indicate that the workload intensity of patient turnover is not a predictor of missed nursing care, although this fact may seem counterintuitive and may not be a widely generalizable finding. The implication for nursing practice with respect to this finding is that although this measure of unit-level intensity may be modifiable, efforts to reduce the incidence of missed nursing care might better be directed elsewhere.

Limitations

This study is limited by the fact that it was confined to a single California hospital, which limits the generalizability of the study findings. In addition, the measure of missed nursing care is based on perceptions of nursing staff rather than more direct measurements based on observation or medical record review.

SUMMARY

This study replicates and extends previous research on the nature and causes of missed nursing care, adding an additional explanatory variable: unit-level nurse workload (patient turnover percentage). The study was conducted in California, the only US state to legally mandate nurse staffing ratios.

This study found that elements of nursing care most often missed include ambulation, oral care, and timely administration of medications. Reasons for missed care relate to inadequate labor resources, material resources, and problematic communication. There was no significant relationship between unit-level nurse workload and missed nursing care.

REFERENCES

1. Kalisch BJ, Landstrom GL, Hinshaw AS. Missed nursing care: a concept analysis. *J Adv Nurs*. 2009; 38(2):76-83.
2. Agency for Healthcare Research and Quality. Glossary. http://psnet.ahrq.gov/glossary.aspx?indexLetter=E. Accessed November 4, 2014.
3. Umscheid CA, Mitchell MD, Doshi JA, Agarwal R, Williams K, Brennan PJ. Estimating the proportion of healthcare-associated infections that are reasonably preventable and the related mortality and costs. *Infect Control Hosp Epidemiol*. 2011;32(2): 101-114.
4. Kalisch BJ, Dabney B. Patient-reported missed nursing care correlated with adverse events. *Am J Med Qual*. 2014;29(5):415-422.
5. Sochalski J. Is more better? The relationship between nurse staffing and the quality of nursing care in hospitals. *Med Care*. 2004;42(2)(suppl):II67-II73.
6. Brown CJ, Friedkin RJ, Inouye SK. Prevalence and outcomes of low mobility in hospitalized older patients. *J Am Geriatr Soc*. 2004;52(8):1263-1270.
7. Gill TM, Allore HG, Gahbauer EA, Murphy TE. Change in disability after hospitalization or restricted activity in older persons. *JAMA*. 2010;304(17):1919-1928.

8. D'Ambruoso S, Cadogan M. Recognizing hospital-acquired disability among older adults. *J Gerontol Nurs*. 2012;38(12):12-15.
9. Rasmussen HH, Kondrup J, Staun M, Ladefoged K, Kristensen H, Wengler A. Prevalence of patients at nutritional risk in Danish hospitals. *Clin Nutr*. 2004;23(5):1009-1015.
10. Anselmi ML, Peduzzi M, Dos Santos CB. Errors in the administration of intravenous medication in Brazilian hospitals. *J Clin Nurs*. 2007;16(10):1839-1847.
11. Kalisch BJ, Tschannen D, Lee KH. Missed nursing care, staffing, and patient falls. *J Nurs Care Qual.* 2012;27(1):6-12.
12. Donaldson N, Aydin C, Fridman M. Predictors of unit-level medication administration accuracy: microsystem impacts on medication safety. *J Nurs Adm.* 2014;44(6):353-361.
13. Tschannen D, Kalisch BJ, Lee KH. Missed nursing care: the impact on intention to leave and turnover. *Can J Nurs Res*. 2010;42(4):22-39.
14. Kalisch BJ, Lee KH. Staffing and job satisfaction: nurses and nursing assistants. *J Nurs Manag*. 2014;22(4):465-471.
15. Kalisch BJ, Landstrom G, Williams RA. Missed nursing care: errors of omission. *Nurs Outlook*. 2009;57(1):3-9.
16. Kalisch BJ, Tschannen D, Lee H, Friese CR. Hospital variation in missed nursing care. *Am J Med Qual*. 2011;26(4):291-299.
17. American Nurses Association. Nurse staffing plans & ratios. http://www.nursingworld.org/MainMenuCategories/Policy-Advocacy/State/Legislative-Agenda-Reports/State-StaffingPlansRatios. Accessed November 4, 2014.
18. Kalisch BJ, Tschannen D, Lee KH. Do staffing levels predict missed nursing care? *Int J Qual Health Care*. 2011;23(3):302-308.
19. Park SH, Blegen MA, Spetz J, Chapman SS, De Groot H. Patient turnover and the relationship between nurse staffing and patient outcomes. *Res Nurs Health*. 2012;35(3):277-288.
20. Hughes RG, Bobay KL, Jolly N, Suby C. Comparison of nurse staffing based on changes in unit-level workload associated with patient churn. *J Nurs Manag*. 2013;23(3):1-11.
21. Aydin C, Donaldson N, Stotts NA, Fridman M, Brown DS. Modeling hospital-acquired pressure ulcer prevalence on medical-surgical units: nurse workload, expertise and clinical processes of care. *Health Serv Res*. 2015;50(2):351-373.
22. Donaldson NE, Brown DS, Bolton LB, et al. *Final Report: Impact of Unit Level Nurse Workload on Patient Safety. Results From the Center for Research and Innovation in Patient Care*. San Francisco CA: Center for Research and Innovation in Patient Care, School of Nursing, University of California, San Francisco; September 30, 2001-April 30, 2005.
23. Unruh LY, Fottler MD. Patient turn-over and nursing staff adequacy. *Health Serv Res.* 2006;41(2):599-612.
24. Weissman JS, Rothschild JM, Bendavid E, et al. Hospital workload and adverse events. *Med Care*. 2007;45(5):448-455.
25. Needleman J, Buerhaus P, Pankratz S, Leibson CL, Stevens SR, Harris M. Nurse staffing and inpatient hospital mortality. *N Engl J Med*. 2011;364(11):1037-1045.
26. Trinkoff AM, Johantgen M, Storr CL, Gurses AP, Liang Y, Han K. Nurses' work schedule characteristics, nurse staffing, and patient mortality. *Nurs Res*. 2011;108(6):1-8.
27. Aiken LH, Sermeus W, Van den Heede K, et al. Patient safety, satisfaction, and quality of hospital care: cross sectional surveys of nurses and patients in 12 countries in Europe and the United States. *BMJ*. 2012;344(e1717):1-14.
28. Kalisch BJ, Williams RA. Development and psychometric testing of a tool to measure missed nursing care. *J Nurs Adm*. 2009;39(5):211-219.
29. Patrician PA, Loan L, McCarthy M, Brosch LR, Davey KS. Towards evidence-based management: creating an informative database of nursing-sensitive indicators. *J Nurs Scholarsh*. 2010;42(4):358-366.
30. Dochterman J, Bulechek G. *Nursing Interventions Classification (NIC)*. 4th ed. St Louis, MO: Mosby; 2004.
31. Shever LL. The impact of nursing surveillance on failure to rescue. *Res Theory Nurs Pract*. 2011;25(2):107-126.