Peer Reviewed Literature on Nurse Staffing and Patient Care Outcomes

Aiken, L. et al. 2011

- Could not access text. Abstract promising.
- "Results: The effect of decreasing workloads by 1 patient/nurse on deaths and failure-to-rescue is virtually nil in hospitals with poor work environments, but decreases the odds on both deaths and failures in hospitals with average environments by 4%, and in hospitals with the best environments by 9% and 10%, respectively. The effect of 10% more Bachelors of Science in Nursing Degree nurses decreases the odds on both outcomes in all hospitals, regardless of their work environment, by roughly 4%."
- Citation: Aiken, Linda H. PhD, RN*; Cimiotti, Jeannie P. DNSc, RN*; Sloane, Douglas M. PhD*; Smith, Herbert L. PhD†; Flynn, Linda PhD, RN‡; Neff, Donna F. PhD, APRN§ Effects of Nurse Staffing and Nurse Education on Patient Deaths in Hospitals With Different Nurse Work Environments, Medical Care: December 2011 - Volume 49 - Issue 12 - p 1047-1053 doi: 10.1097/MLR.0b013e3182330b6e

Ball, J., Murrells, T., Rafferty, A. M., Morrow, E., Griffiths, P. 2014. 'Care left undone' during nursing shifts: associations with workload and perceived quality of care. BMJ Quality & Safety 2014;23:116-125.

- Self-report by nurses, cross sectional study

Brooks Carthon JM, Lasater KB, Sloane DM, et al. 2015. The quality of hospital work environments and missed nursing care is linked to heart failure readmissions: a cross-sectional study of US hospitals. BMJ Quality & Safety 2015;24:255-263.

- Could not access text. Logistical regression shows relationship of nursing environment and readmissions. Does not discuss staffing
- Conclusions Missed care is an independent predictor of heart failure readmissions. However, once adjusting for the quality of the nurse work environment, this relationship is attenuated. Improvements in nurses' working conditions may be one strategy to reduce care omissions and improve patient outcomes.

Bruyneel, L, 2015. Sermeus, W. Organization of Hospital Nursing, Provision of Nursing Care, and Patient Experiences With Care in Europe

- "…patients report better experiences with care in hospitals with more favorable nursing work environments and lower patient-to-nurse ratios. Performing nonnursing tasks, years of experience, type of employment, and performing overtime did not relate to patient experiences with care…. more favorable work environments, lower patient-to-nurse ratios, and performing less overtime significantly relate to fewer clinical nursing care tasks left undone and fewer planning and communication activities left undone... clinical care left undone is associated with patient experiences of their hospitals and their willingness to recommend them,"
- Citation Bruyneel, L, Li, B., Ausserhofer, D., Lesaffre, E., Dumitrescu, I., Smith, H. L., Sloane, D. M., Aiken, L. H., Sermeus, W. Organization of Hospital Nursing, Provision of Nursing Care, and Patient Experiences With Care in Europe. Med Care Res Rev. 2015 December ; 72(6): 643–664. doi:10.1177/1077558715589188.

Griffiths, P., et al. 2018. The association between Nurse staffing and omissions in nursing care: A systematic review. Journal of Advanced Nursing. Available at https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6033178/pdf/JAN-74-1474.pdf

- Downloaded to Z drive
- NEGATIVE: Study results inconclusive d/t lack of strong evidence, inability to correlate survey responses to actual outcomes
- POSITIVE: British study, excluded atypical care eg ICU (positive for arguing for safe staffing across all units)
- Missed care (missed care, unfinished care, implicit rationing, care left undone, task left undone) could be earlier indicator of quality of care before adverse events are detectable
- "In the face of excessive workloads, nurses may be unable to complete all necessary care activities and must, in effect, engage in what is described as "implicit rationing""
- Caution: Missed care, proxy measure for quality of nursing care (personal opinion – be careful that this does not get used against individual nurses as cause for discipline that a nurse did not get all cares done, instead of being an argument for more nursing so that nurses CAN get all cares done)
- Jones, T., Hamilton, P., Murry, N. 2015. Unfinished nursing care, missed care, and implicitly rationed care: State of the science review. International Journal of Nursing Studies. https://doi.org/10.1016/j.ijnurstu.2015.02.012
- "Most nursing personnel (55–98%) reported leaving at least 1 task undone…
- "Patterns of unfinished care were consistent with the subordination of teaching and emotional support activities to those related to physiologic needs and organizational audits. Predictors of unfinished care included perceived team interactions, adequacy of resources, safety climate, and nurse staffing. Unfinished care is a predictor of: decreased nurse-reported care quality, decreased patient satisfaction; increased adverse events; increased turnover; decreased job and occupational satisfaction; and increased intent to leave."

Jones, T., Hamilton, P., Murry, N. 2015. Unfinished nursing care, missed care, and implicitly rationed care: State of the science review. Volume 52, Issue 6, June 2015, Pages 1121-1137. https://doi.org/10.1016/j.ijnurstu.2015.02.012

- Abstract only, review article
- Reviewed literature included 42 quantitative reports; 7 qualitative reports; 1 mixed method report; and 4 scientific reviews.
- Predictors of unfinished care included perceived team interactions, adequacy of resources, safety climate, and nurse staffing. Unfinished care is a predictor of: decreased nurse-reported care quality, decreased patient satisfaction; increased adverse events; increased turnover; decreased job and occupational satisfaction; and increased intent to leave.

Kalisch, B. J., Xie, B., Waller Dabney, B. 2013. Patient-Reported Missed Nursing Care Correlated with Adverse Events. American Journal of Medical Quality. 2014;29(5):415-422. doi:10.1177/1062860613501715

- Could not access text, only abstract
- "Patients who reported skin breakdown/pressure ulcers, medication errors, new infections, IVs running dry, IVs infiltrating, and other problems during the current hospitalization reported significantly more overall missed nursing care."

Kalisch, B. J., Gosselin, K., Choi, S. H. 2012. A comparison of patient care units with high versus low levels of missed nursing care, Health Care Management Review: October/December 2012 - Volume 37 - Issue 4 - p 320-328 doi: 10.1097/HMR.0b013e318249727e

- Could not access text, only abstract
- Study of Focus Groups of units with the most and least missed care – low scientific quality but informative
- **Staffing level one theme identified with missed care**

Kalisch, B. Tschannen, D., Lee, K. H. 2012. Missed Nursing Care, Staffing, and Patient, Falls Journal of Nursing Care Quality: January/March 2012 - Volume 27 - Issue 1 - p 6-12 doi: 10.1097/NCQ.0b013e318225aa23

- Could not access text, only abstract
- 124 patient units in 11 hospitals
- Hours Per Patient Day **negatively associated** with patient falls ($r = -0.36$, $P < .01$), and **missed nursing care was found to mediate** the relationship between HPPD and patient falls.
- Mediate = correlate, play a role in

Lake, E., et al. 2016. Missed nursing care is linked to patient satisfaction: a cross-sectional study of US hospitals. BMJ Quality and Safety. Available at https://www.nursing.upenn.edu/live/files/110-%20lakegermackviscardi2016missed-nursing-care-and

- Study correlating self-reported missed care and HCAHPS results; see Griffiths et all 2018 for systematic review of this issue

Scott Blouin, A., et al., 2019. The Continuing Saga of Nurse Staffing Historical and Emerging Challenges. Journal of Nursing Administration

- PDF available: https://cookcountyhealth.org/wp-content/uploads/SP-discussion-Nursing-article-3-04-16-19.pdf
- Downloaded to Z Drive
- Note: Recent review article with good references, argues staffing shortages are a self-perpetuating cycle and impact bottom line and pt care
- Argument supporting MNA position: adequate nurse staffing reduces readmissions and complication rates -> lost revenue d/t CMS payment penalties for high readmission rates and complications/deaths after discharge -> nurses generate this revenue, which is lost when there are fewer nurses and more readmissions/complications

Shekelle, P. 2013. Nurse–Patient Ratios as a Patient Safety Strategy. Annals of Internal Medicine. Available at https://www.acpjournals.org/doi/10.7326/0003-4819-158-5-201303051-00007

- Findings:
- 2007 meta-analysis data showed consistent relationship b/w increased RN ratios and decreased hospital-related mortality rates; meta-analysis data did not support CAUSAL relationship:
- ”An increase of 1 RN full-time equivalent (FTE) per patient day was related to a 9% reduction in the odds of death in the ICU, a 16% reduction in the surgical setting, and a 6% reduction in the medical setting.”
- Narrative 2011 literature review described 17 studies r/t staffing and mortality

- “14 of 17 studies found a statistically significant relationship between nurse staffing variables and lower mortality rates.”

Sloan, D., Smith, H., McHugh, M., Aiken, L., 2018. Effect of Changes in Hospital Nursing Resources on Improvements in Patient Safety and Quality of Care: A Panel Study. Effect of Changes in Hospital Nursing Resources on Improvements in Patient Safety and Quality of Care: A Panel Study

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Spetz J, Harless DW, Herrera CN, Mark BA. Using minimum nurse staffing regulations to measure the relationship between nursing and hospital quality of care. Med Care Res Rev. 2013 Aug;70(4):380-99. doi: 10.1177/1077558713475715. Epub 2013 Feb 11. PMID: 23401064.

- Abstract only, could not access text;
- Can’t tell, does not seem like support for ratios, maybe neutral/negative
- Compares before and after ratios implemented in California
- California Patient Discharge Data from 2000 through 2006 with Agency for Healthcare Research and Quality Patient Safety Indicators (PSI)

Research Articles on Racial Disparities and RN Staffing

1. **Racial Disparities in Postoperative Readmission May Be Reduced By Improving Nurse-to-Patient Staffing**

   https://www.nursing.upenn.edu/details/news.php?id=645

   "What is striking about these findings is that we find this relationship even in a

   cohort of relatively healthy adults undergoing an elective surgery. The protective benefit of higher nurse-to-patient staffing for minorities may be related to gaps in health care access, financial flexibility, and social support systems. If individuals lack resources to mobilize ongoing support following discharge, the quality and intensity of care received during the hospitalization may help to address such gaps," says Lasater.

2. **Reducing Hospital Readmission Disparities of Older Black and White Adults After Effective Joint Replacement**

   https://agsjournals.onlinelibrary.wiley.com/doi/full/10.1111/jgs.14367

   Conclusion Older BIPOC individuals are more likely than their white counterparts to experience an unplanned readmission after elective orthopedic surgery. More-favorable nurse staffing was associated with lower odds of readmission of older black and white patients, but better-staffed hospitals had a greater protective effect for older black patients.

3. **Better Nurse Staffing Is Associated With Survival for Black Patients and Diminishes Racial Disparities in Survival After In-Hospital Cardiac Arrests**

   https://pubmed.ncbi.nlm.nih.gov/33201082/#:~:text=A%20significant%20interaction%20was%20found,CI%2C%200.93%2D1.00)

   Conclusions: Our findings suggest that disparities in IHCA survival between black and white patients may be linked to the level of medical-surgical nurse staffing in the hospitals in which they receive care and that the benefit of being admitted to hospitals with better staffing may be especially pronounced for black patients.

4. **Racial Disparities in Stroke Readmissions Reduced in Hospitals With Better Nurse Staffing**

   https://pubmed.ncbi.nlm.nih.gov/34534185/

Results: Our sample included 98,150 ischemic stroke patients (87% White, 13% Black). Thirty-day readmission rates were 10.4% (12.7% for Black patients, 10.0% for White patients). In models accounting for hospital and patient characteristics, the odds of 30-day readmissions were higher for Black than White patients. A significant interaction was found between **race** and nurse staffing, with Black patients experiencing higher odds of 30- and 7-day readmissions for each additional patient cared for by a nurse. In the best-staffed hospitals (less than three patients per nurse), Black and White stroke patients' **disparities** were no longer significant.

5. **Distinguishing High-Performing from Low-Performing Hospitals for for Severe Maternal Morbidity: A Focus on Quality on Equity**

https://www.ingentaconnect.com/content/wk/aog/2022/00000139/00000006/art00012

Results: Six themes distinguished high-performing from low-performing hospitals. High-performing hospitals were more likely to have: 1) senior leadership involved in day-to-day quality activities and dedicated to quality improvement, 2) a strong focus on standards and standardized care, 3) strong nurse-physician communication and teamwork, 4) adequate physician and nurse staffing and supervision, 5) sharing of performance data with nurses and other frontline clinicians, and 6) explicit awareness that racial and ethnic disparities exist and that racism and bias in the hospital can lead to differential treatment.

6. **Nursing Care Disparities in Neonatal Intensive Care Units**

https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6056573/#hesr12762-sec-0008title

Nurses in high-black hospitals missed nearly 50 percent more required nursing care activities than nurses in low-black hospitals ($p = .03$). Further, a significantly higher percentage of nurses in high-black hospitals missed at least one required activity (52 percent vs. 38 percent). Although the differences in mean activities missed were numerically small (1.05 in the low-black cohort to 1.51 in the high-black cohort), research has shown that small differences can have a significant impact on patient outcomes (Schubert et al. 2009). The results from this sample, comprising 16 percent of U.S. NICUs, generalize principally to NICUs in large teaching hospitals.

The disparities in missed care were principally due to poorer nurse staffing in high-black hospitals. The patient-to-nurse ratio was significantly higher in high-black hospitals (2.5 and 2.2 patients-per-nurse, respectively). The odds of missed care increased by 40 percent in units with poorer staffing (one patient more per nurse). It is likely that staffing is worse in the high-black hospitals because many treat a disproportionately high percentage of Medicaid and unfunded patients, which creates financial strain. Financial strain may affect clinical processes through allocation of staffing resources

7. **Effect of Nurse Staffing and Education on the Outcomes of Surgical Patients With Comorbid Serious Mental Illness**

https://www.ncbi.nlm.nih.gov/pmc/articles/PMC2596648/

Records indicated that 4.7% (N=10,666) of the sample had a diagnosis of serious mental illness. A higher level of nurse staffing had a stronger effect on prevention of death among patients with serious mental illness than among those without it. Length of stay for patients with serious mental illness was shorter in hospitals with higher proportions of baccalaureate-prepared nurses.

Conclusions Better nurse staffing and higher education level mitigated poor patient outcomes among highly vulnerable patients with serious mental illness.