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Exploring the Relationship Between Nurse Staffing Levels and Patient Safety in Critical Care Units

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Abstract

Background: According to the results, the levels of nurses' staffing are important for safety of patients, especially in the intensive care units. Lack of staffing is associated with higher adverse outcomes, medical mistakes and higher mortality. However, improving and maintaining staffing ratios continues to be a knowledge deficit in many healthcare organizations.

Aim: Evaluating work hour ratios and expertise of nurses along with patient safety outcomes in care sensitive arenas are the objectives of this research.

Methods: A literature search was performed to evaluate studies on nurse staffing, nurse to patient ratios and impact on patient safety in the adult ICU.

Results: The analysis proves that whenever staffing is too low in a center, there are more adverse events. Stewardship and sufficiency of nursing staff, with regard to skill mix, has a positive effect on patients' outcomes and minimizes adverse effects.

Conclusion: The presence of adequate numbers of staff particularly nurses can greatly enhance or the patient outcome and safety. This evidence supports the concept of staffing and skill mix necessity for decrease of adverse events and for care quality increase in the critical care environment.

Keywords: The topics include nurse staffing, patient safety, critical care, adverse events, nurse to patient ratio, health care outcomes.

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Introduction

For the health consumer keeping patient safe is very paramount especially in the health setting especially the intensive care unit. Among all the imperative aspects that determine patient safety, nurse staffing levels are considered the key drivers. In recent years, the share of focus on understanding how staff numbers impact adverse events, clinical outcomes, and, generally, the quality of health care has grown significantly. There is ample literature substantiating the nature of the connection between safe staffing standards, specifically staffing proportion and patients per nurse, and patient safety outcomes; it emerges that lower staffing ratios are actualized with increased error rates, patients' adverse events, and mortality. This study scrutinizes the context of the evidence-related staffing and safety issues by researching the effects of staffing, nurses' specialty, and workload allocations on patients. Candidly, this present study aims to introduce the significance of fine-tuning staffing ratios across the critical care areas to guarantee threshold-free intervention for patients. It becomes apparent that more healthcare organizations can try to harness the inputs explained in the evidence acquired to enhance staffing needed within healthcare, hence enhancing safety and quality within volatile and sensitive clinical settings.[1,2]

Comparative analysis of staffing ratios and their impact on patients' clinical outcome: A quantitative study

Comparative staff mix and patient outcomes research in sever care areas are important for understanding the effects of specific proportions of nursing personnel with patients. Through research and case studies it has been revealed that when there are compromises in staffing levels of nurses employed the implications that are likely to be witnessed include increased workload, prompt fatigue and at times even burn out nurses hence having reduced ability to provide quality services. Generally, the kind of quantitative work done in this area involves using quantitative data like incidence of adverse events, patient mortality, hospital acquired infections, medication errors etc to establish how staffing levels are associated with result. For instance, it is well established that studies conducted on the impact of number of patients per RN, have established that the increase in the number of patients per nurse, is inversely proportional to the outcomes such as complications, length of hospitalization, and mortality rates characteristic of the increasing complexity of care particularly amongst the critically ill.[2] Regime analysis and correlation analyses that quantify the impacts of changes in staffing ratios are frequently applied to these studies. These methods allow researchers minimize the influence of potential confounding factors including patient severity, organizational capacity, and novice or expert staff nurses; which give the actual picture for the impact of staffing on safety. For instance, a study might compare the outcomes of units staffed at a 1:Two teams of nurses-to-patients ratio to those teams practicing the one nurse to four patients ratio to compare major recovery time differences or pressure ulcer occurrence. Moreover,

quantitative studies are characterized by large sample sizes, long data collection periods to provide reliability and generalizability measures.[3,4,5]Other than establishing the fact that levels of staffing significantly address patient outcomes, quantitative studies also help in furthering analyses of the cost-benefit for healthcare managers. In addition to revealing the negative outcome of inadequate staffing and poor choice of staff, these studies presented the economic loss in terms of enhanced readmissions, legal suits and compensations that result from medical malpractice among others. In summary, using quantitative data, it is possible not only establish staffing ratios as the central determinant of clinical results but also introduce evidence-based changes to those KG recognized as questionable in regard to the proper distribution of personnel in intensive care units.[6]

Determining the Attenuation Properties of Staffing: The Effect of Nurse-to-Patient Ratios on Adverse Outcomes

Of all the topics related to nursing, concerns on the effects of nurse-to-patient ratios on adverse events remain primary because of its significant connection with the quality of patient care. Patients experience diseases like medication errors, infections, accidents, and pressure ulcers, and their likelihood is high when nursing staff become too busy. Low nurse to patient ratios mean that there are less patients per nurse which means better monitoring and response to patients' needs and more comprehensive initial and ongoing confidential clinical evaluation. On the contrary, rationing of nursing staff results in a large number of patients per one professional, and inadequate attention to a particular patient, which somehow results in severe, and potentially lethal complications.[7] Such studies measuring these ratios serve to underscore the fact that earlier, studies have established that adverse events are tied to higher patient-nurse staff ratios. For instance, the research has revealed that hospitals that employed a small number of nurses per a shift or per a patient had a high incidence of HAIs for instance, catheter-associated urinary tract infections, and central lined associated blood stream infections. Also, the lack of an adequate number of staff is said to raise the incidence of medication errors due to distractions, fatigue, or hurried work. Another way to falls which is considered a common adverse event also increases when nurses do not have adequate time to assess environmental safety or assist with walking.[8,9] Assessments in this area would normally entail cross-sectional as well as longitudinal data analysis. Retrospective studies aim to discover trends and correlations by just looking at documents while prospective studies track outcomes on throughput while changing staffing level. For example, it is possible to set certain evidence-based rules, such as lowering the nurse to patient ratio in pilot sites, and use the information obtained there to compare adverse event rates. In addition, many of these evaluations take into account factors like patient characteristics, staffing skill mix, and the amount of organizational support in order to get an accurate picture of the link between staffing and safety.[10,11] The results of these assessments as we shall see hold significant policy and practice implications for healthcare. They confirm the current staffing strategies that promote patient safety staffing models and assert on value of sufficient staffing to minimize adverse occurrences. It is a proven fact that employing the right number of nurses to patients also leads to lower patient morbidity, increased hospital stay, extra treatments, and even legal actions against the health system. Therefore, it becomes critical for strategies to assess as well as respond to the existing patterns of the nurse-to-patient proportions in order to make healthcare environments safer.[12]

Staffing adequacy as an Independent predictor for patient outcomes and Patient safety

Patients being attended by staff working in adequate staffing numbers are safer than patients managed by tired staff especially in areas that comprise high risk such as ICUs, emergency and surgical wards. Staying staffed is important to providing good quality of care as well as to reducing the occurrence of errors and delays in treatment. Whenever the numbers are low, then the tendency of negative outcomes rises since the number of tasks that a nurse or a healthcare employee faces are too many to provide sufficient consideration to each patient. This can result to delayed monitoring of patients, missed assessments, poor communication and all this makes harm almost inevitable. Perhaps the most important aspect through which staffing adequacy impacts on patient safety is the capacity needed to effectively assess patients and their clinical situations. For instance, patient in Intensive care units will be expected to

be monitored frequently and respond promptly to changes in their health state. Due to the shortage of nurses, most of whom are overwhelmed by the increasing number of patents, then patient's vital signs may not be observed keenly, medication may be given inappropriately, and crucial strategies may take long to be implemented. A shortage of staff also significantly [contributes to] the quality of both preventive care services, including turning patients to prevent pressure ulcers or infection control. On the other hand insufficient staff staffing promotes nursing attention to patients and their problems then administer timely services which may help eliminate unwanted results.[13,14]

However, there is a strong correlation between staffing adequacy and the emotional and mental health of the healthcare workforce. When staff nurses are weak or deprived of staff and resources they are at a higher risk of getting burned out, fatigued or stressed up which in return affects their performance and decision making tactics. It also lowers the quality of patient care delivery, besides generating successive cycles of diminishing job satisfaction and higher turnover rates. Research has established that when nurses remain burnt out their probability of occasions involving patient security incidents goes higher because of their compromised capability to make sound decisions. Lack of meaning staffing also impacts on relations and kind of communication thus compromising the capacity to meet the emergent demands and needs of patient.[15]As a long term strategy and more critically as a short term tactical argument, optimality in staffing cannot be underemphasized as more healthcare institutions seek to achieve patient safety. Multiple studies have shown that hospitals and the care units with the right working nurse staffing levels show better clinical outcomes, less adverse event occurrence, and fewer mortalities. Perhaps one of the biggest areas that require more investment is staff staffing as increased staffing brings not only patient safety returns but economic benefits that Moto et al. Failure to invest enough in adequate staffing not only affects patient safety, but also carries economic costs of increased readmissions, claims for malpractice, and longer hospital stays. One of the most important things to do is to ensure staffing plans are accurate in terms of the number of staff to be appointed, this means that where patient needs are high owing to factors like patient acuity, unit workloads or experience, then more staff should be hired, patient and health care workforce safety should be ensured. Thus, staffing adequacy goes well beyond a mere need for cost effectiveness; instead, it is one of the hallmarks for providing quality patient care that is safe.[16,17]

Searching the Relationship between Staffing Policies and Patient Health

Another important research topic in health care workforce is the link between the staffing policies and patient outcomes This area has important implications for establishing staffing policies since they impact on quality and safety of patient care. The staffing standard specifies the ratio of the client to the amount of human capital designated to attend to them which sets the care benchmarks. They have pervasive impact on patient care since it establishes the level, scope and sufficiency of care required to address patient needs, opportunities for avoiding potentially harm, and potential for achieving good health outcomes. Recent studies have provided evidence linking increases in quality staffing policies to better patient outcomes; suboptimal staffing approaches result in higher risk and unfavorable outcomes.[18,19] Wherever staffing policies have been disappointingly placed or inferior, nurses and other healthcare employees are invariably left to care for additional patients, which can result in increased response times, less monitoring, and consequently worse patient care. Stressed staff may lose track of time as well as fail to conduct necessary assessments and implement timely treatment as well as provide the adequate education to the patients all of which can lead to countless detrimental effects on the health of the patients. For instance, lack of enough human resource in clientele intensive areas such as crucial care units has been closely related to increased deaths since patients who need much supervision and quick attendants may not get the required attention in the required time. For the same reasons the lack of adequate numbers of nurses has been associated with proven increased rates of hospital acquired conditions for example pneumonia and urinary tract infections due to inadequate attention to proper cleaning of surfaces or periodic checks on patients.[20] In contrast, staffing strategies that have been properly planned and regarding the numbers densities by patient need, workload and unit needs has been associated with enhanced health status, fewer deaths, few complications and less time spent in hospital.

Impressive staffing policies also go further in helping institutions have many staffs to work for the benefit of the patients as well as increase health care staffs' satisfaction and reduced staff turnover. When staffing number is sufficient, nurses and other health care staffs are able to do what is expected of them well including communication, interdisciplinary collaboration and timely response of basic needs of patients. They help in averting adverse occurrences that are detrimental to clients' health and enhancing positive health successful health outcomes that will enhance patients' health status.[18]

Some of the major findings found include the following Critical Insight, the staffing levels and the quality of care.

The number of staff include one of the main principles that is closely associated with the quality of treatment and care delivered in specific healthcare facilities that extent especially in Intensive care units, emergency department and operating theatre wards. Sufficient staffing is the key to ensuring that the patients receive the right kind of care at the correct time and kind of care they need to heal. Time and again, the numerous studies indicate the fifth dimension scale that if the staffing levels are low then the quality of care erodes rapidly and more and more patients suffer from medical errors, complications, and entrance of dissatisfaction with the whole healthcare process. Existing knowledge regarding staffing ratios, numbers, and mix demonstrate the complex relationship between workforce sufficiency and care quality; hence, analyzing these consistencies is crucial for patients' protection and successes.[19] One of the ideas is the impact of staffing levels where engagement of many personnel in patient care reduces interaction time with the patient. When the number of patients is high, and nurse-to-patient ratios are tiny, nurses are able to attend to the care of multiple patients at the same time. This is likely to result into acute missed assessments, delayed monitoring of patient's vital signs, failure to note changes in patient's status and missed medications. Many of these missed opportunities for early interventions are linked to adverse patient outcomes which include hospital acquired complications such as infections, longer length of hospital stay and in some instances, mortality. On the other hand, adequate staffing enhances increased direct patient care because the limited number of patients a nurse attends to guarantees that all the required intercessions are provided promptly besides meeting the fluctuating needs of the individual patients.[20] The second important idea is the link between the number of extended care staff and burnout levels and, as a result, the quality of care. Consequently, high workload and few staffing levels predisposes the nurses to fatigue and emotional exhaustion hence the imbalance of a component and a high quality of care, passion, and attention to patients. Nurse turnover: A multidimensional index that reflects the level of work engagement; a decrease in satisfaction, higher turnover and clinical performance.[21]

The evidence also refers to the relation existing between staffing levels and the effectiveness of the overall healthcare setting. A study of hospitals demonstrating the best proportions of staffing revealed that they had less readmission rates, shorter healing periods, and reduced overall costs of treatment. This is so because the efficiency and effectiveness of care decreases complications, and its impact; the patients demand less follow-up care, in turn, from the health systems. In addition, highly staffed units apply effective capacity absorption in meeting variable demands for admissions and in delivering effective treatment for complicated cases therefore increasing the overall efficiency of the health facility.[22]In addition, staffing levels in the wards relate not only to the patient care that the patients receive but also to the communication of the health care teams. Thus, when staff' supply is adequate there is improved flow of information and good co-ordination within the teams. This interaction is particularly crucial in which there is a need for multiple inputs such as in the surgery or the critically ill care team. While in some institutions staffing is inadequate, it becomes challenging for the team to respond positively to teamwork, and this leads to fragmented care and poor outcomes.[23] In conclusion, there is no one on one direct correlation between staffing levels and quality of care. This paper argues that staff sufficiency is a quality indicator since it is a determinant of how much time can be spent with patients, prevents burnout, and fosters interdisciplinary cooperation. If appropriate staffing levels are given a high priority, the clinical staff of healthcare institutions can deliver better quality clinical care and satisfy their patients much better

reducing the overall load on the healthcare system. Lastly, ensuring that staffing was in parallel with the need of patients as a way of promoting high quality and patients centered care.[24]

Balancing Workloads for Enhanced Safety in Critical Units

In specialized areas of health care including intensive care, emergency or surgical recovery departments, the over/under staffing of workloads is central to the safety of patients. These units are commonly central to the provision of care to high risk patients whose medical conditions demand extensive, immediate and efficient assessment, decision and interventions. Hence, understanding(train) and properly coordinating workloads in these environments can reduce such risks and improve on patient care. Optimal staffing also entails the capacity of staffing levels to addressing patient needs, patient care overload, and establishing patient care organizational safety priorities.[25] As one of the key reasons in handling the work load one cannot overlook the issue of the nurse to patient ration. While in more acute areas where patients need constant observation and fast response, a high number of clients for each nurse jeopardizes safe care. When delegated with many patients, the chances of answering check for changes in the patients' conditions are minimized, treatments as well as medications are delayed, and in some cases, wrong medications will be administered. On the other hand, sufficient staffing to the nursing staff lets the nurses attend to each patient often, repeatedly evaluate his or her condition, and respond when needed promptly. The meta-analysis of the available literature has indicated that an increased number of nurses per patient is inversely related to adverse outcomes, higher mortality and poor overall patient outcomes in Intensive care units.[26] However, workload balance is not restricted to only changing the staffing population. It also needs the critical evaluation of force mix, the extent of care needed by the patients and the abilities of the nurses. Acuity relates to the level of care a patient need, that is, complex and critical patient needed more attention and interventional care than other patients and this leads to higher work load on the side of nurses. In the contexts in which there is a high demand for care on the side of these patients because of their need for intense nursing attention, and scanty provision of adequate staff, the prospects of producing additional errors rises. [27]

Thus, workload management should also incorporate a mix of the type of patients that is present in the particular unit s in terms of cases acuteness level to ensure the right staffing. Also there is need to ensure that competency shall be achieved through staff profile that shall match the roles of the unit. For instance, the nurses that specialize in intensive care unit require advanced education and prior working experience in handling extreme patients. Managing work loads balances imply that in addition to just having adequate numbers of nurses, one also requires qualified nurses to carry out the needed standard of care.[28]Another of the principles of load distribution to increase safety is the issue of time or work schedules and priorities. Time is often a very sensitive factor in critical care setting, and therefore tasks need to be classified according to their urgency to be accomplished. Moderate workload is a favorable situation for the nurse so that a nursing staff can pay enough attention to the patient and so that the quality of interaction does not suffer even if it means giving attention to the improvement of the patient's condition. Lack of enough staff can also lead to situation where nurses will prioritize tasks for the day and in the process essential ones might be left behind or performed rather late. Having the right workload means that the nurses will demonstrate prioritization skills and work effectively to give care to patients that requires urgent attention without compromising on the other patients that require simple basic care.[29]

the optimization of workload distribution creates the favorable store for the health care staff. He noted that nurses are more likely to commit mistakes, to burn out or to quit their job once they are overworked, stressed out or too tired. Working in critical care units is identified to raise the levels of burnout because of the high pressure that is associated with the job. It is demonstrated that through providing staffing levels that are sufficient for maintaining a reasonable workload, the nurse turnover is unlikely to be high and therefore the focus is on patient safety.[30] the assignments of workloads in care units is significant so as to achieve improvement of patient safety and better clinical outcomes. In order to reach this equilibrium appropriate staffing numbers, patient need, skill type and level of expertise along

with administration of time properly are the ways. Balanced patient workload additionally helps in improving the quality of patient care, enhance work relationship with better staff-patient ratio and also eliminates cases of staff burnout. Finally, if workload is evenly distributed, it enhances the whole health care system, yielding safer quality care to the patients in the crucial environments.[31]

The Use of Lean Tools to Enhance the Nurse Staffing for Safety Concern in Intensive Care

The use of efficient methods for staffing critical care units is a key to ensuring requisite patient safety and quality clinical outcomes. Floored-critical care settings including the ICU, the emergency departments, and CCUs are stressful areas where patients need constant surveillance and early intervention. In theses settings, NDs identify nurse staffing levels as key determinants of care quality and the capacity to meet patients' constantly changing needs. Staff optimization can be described as deciding on the right number of nurses to patients, and patients' acuity, nurses' skill level, and workload balancing and developing structures that will help the staff deliver the best quality of care. Hospitals can increase patient safety, decrease the number of errors made and improve the care quality with the help of strategic staffing activities.[32] Foremost among the strategies for improving nurse staffing is relating it to the patient's acuity level because the number of patients that can be effectively cared for by a nurse depends on this factor. Patients in critical care units develop severe, potentially lethal, illnesses that require close observation and constant treatment. When there are inadequate number of workers to address all these needs, overall quality of services delivered is compromised. It specifically notes that nurses lack adequate time to perform some of the most basic tasks such as assessing patient vital signs at regular intervals, or paying adequate attention to monitoring the patients or responding to alarms that could alert them to particular complications that may be having an impact on the health of their patients. Reduced RN staffing means that RNs are able to assess episodes of care with greater frequency, and intervene often and in a timely manner when patients' status changes, and personalize care accordingly. It has been found while differentiating the type and number of employees in a hospital that better staffing ratios contributed towards enhanced results and early recovery, low mortality rates and less complications.[33,34]

However, one more issue inherent in staffing is related not to the proportion of nurses per patients but to the actual skills to provide the level required. Critical care nursing is a specialized sub branch of nursing that deals with more complicated diseases, tools and different sorts of operations. Having adequate ACNS staffs on each shift prevents acute patient care shortfalls that emanate from nursing services shortage. Whereas, new nurses especially newly promoted may be able to handle moderate patients' cases, critical patients need more skilled personnel to administer their medications and handle their conservative complications. Other staffing policies should focus on the supply of senior and junior nurses so that, in each hospital, both casual and professional knowledge are adequate and appropriately distributed.[35,36]Another crucial consideration that is relevant to this analysis is workload distribution, in view of the fact that staff allocation is key to staffing optimization. If staffing is adequate, but the assigning of workload is improper, the nurses will strive to meet the quality care the patients need. Often demand management entails a process of coordinating workflow to ensure that tasks are allocated in the correct manner and that for high-acuity patients, they get the attention they need. For example, a well-coordinated shift schedule means that during some hours the nurses can hardly work due to overworking during other hours. Further, logistic support measures including a supply of nursing assistants, technical persons and administrative services can ease some of the burdens placed on the nurses so that they too can serve as a core Links to an external site. of delivering direct patient care.[37,38]

An activity- as per the evidence- related to Staffing and Safety Issues

The number of staff employed in acute care and especially in intensive care units has been the subject of considerable study for decades, with studies showing that staffing has a vital and growing importance to the safety of patients. Ranging from number of nursing personnel to patient ratio, and the skill composition of nursing staff, staffing adequacy of hospitals and other health care facilities determines the quality, effectiveness and safety of the care being offered. The data supported view of staffing and safety

concerns emphasizes that solutions should rely on facts, decisions should be made based on gathered information, which should be also used to constantly reassess solutions to safety issues. This work is grounded on synthesizing findings for research investigations and clinical trials together with observational data on approaches to enhancing staffing levels and patient safety.[39,40,41]]Lack of qualitative and safe nurse staffing has been enhanced in the current society through research, and investigation, various profession researches have shown the relationship existing inpatient safety. In particular, several studies conducted to date have demonstrated that large nurses' patient proportion significantly increases risk-adjusted adverse event incidence, such as medication mistakes, patient falls, infection, and possibly death. Surgical and medical step down has acuity levels that means patient needs of high attention and quick effective intervention such as Intensive care or Emergency. When staffing levels remain inadequate, nurses fail to devote adequate time to each patient; the care is protracted, some patients' complications are missed, and there is potential for fatal mistakes. Prior research indicates that increased nurse staffing in the above mentioned facilities increases the survival of patients and decreases preventable adverse events such as mortality rates.[42,43]But the task is not limited only to identify how many numbers of the nurses are necessary to recruit but also involves assessing the skill mix LEVEL & EXPERTISE of human resources. Studies suggest that it is not possible simply to equate staffing with the work load distribution of care delivery. A critical care unit for instance calls for specialized competencies to deal with the patients. Researchers have recognized that patient volume is related to nurse staffing, which adds safe patient outcomes and beneficial situations that are highly trained and rich in nursing experience. So staffing policies need to not only consider the total number of the nurses, but the level of skills should also be of concern to ensure that the right units calling for specific level of expertise in the nurses are well staffed for necessary competency in the confirmed high-risk cases.[45,46]

Conclusion

Therefore, efforts should be made to increase the availability of staff nurses in critical care environment in order to increase safety and reduce morbidity. A staffing perspective supported by evidence highlights the relationship between staff mix and nurse-to-patient ratios and the effectiveness of nurses in avoiding complications. In this study Nuri's assertions that enhanced staffing standards were linked to positive results of patient health, fewer complications, and decreased risks of medical mistakes as supported by prior studies. However staffing issues cannot be resolved merely by rooting for more Nurse number but also right number of Nurses, Nurses health and technology in staffing decision making. This is an area that may be negatively influenced by financial factors, though research evidence has indicated that enhancing staffing with the right human resource produces better patient outcomes as well as organizational health care cost savings in the long-run. Hospitals could put in place policies that inform staffing which make hospitals safe, importing quality care in the critical care units. Last but not least, the findings confirm the fact that with staffing patient safety is at risk, which once again calls to attention the importance of effective and safe nurse staffing as a key element to protect patients from harm in healthcare organizations.

References

1. Doyle, B. R., Smith, L. M., Marshall, J. L., Carlisle, B. A., & Perera, A. C. (2024). Consistently exploring nurse staffing and neurocritical care unit turnover. Journal of Neuroscience Nursing, 56(2), 54-59.
2. Bruyneel, A., Bouckaert, N., Pirson, M., Sermeus, W., & Van den Heede, K. (2024). Unfinished nursing care in intensive care units and the mediating role of the association between nurse working environment, and quality of care and nurses' wellbeing. Intensive and Critical Care Nursing, 81, 103596.

3. Labrague, L. J. (2024). Emergency room nurses' caring ability and its relationship with patient safety outcomes: A cross-sectional study. International Emergency Nursing, 72, 101389.
4. Hasselgård, A.-M., Stafseth, S. K., & Kirkevold, Ø. (2024). Nursing workload prediction for upcoming shifts: A retrospective observational exploratory study in the postoperative and intensive care unit. Journal of Nursing Management, 2024(1), 9703289.
5. Uchmanowicz, I., Lisiak, M., Wleklik, M., & Pawlak, A. M. (2024). The impact of rationing nursing care on patient safety: A systematic review. Medical Science Monitor: International Medical Journal of Experimental and Clinical Research, 30, e942031-1.
6. Queen-Lomas, M. (2024). Night shift acute care nurse narratives: Exploring collaborative solutions to reduce burnout, increase morale and engagement, and improve retention.
7. Gehri, B., Ausserhofer, D., Zúñiga, F., Bachnick, S., & René, R. (2024). Nursing care left undone in psychiatric hospitals and its association with nurse staffing: A cross-sectional multi-centre study in Switzerland. Journal of Psychiatric and Mental Health Nursing, 31(2), 215-227.
8. Papathanasiou, I., Tzenetidis, V., Tsaras, K., & Zyga, S. M. (2024). Missed nursing care; prioritizing the patient's needs: an umbrella review. Healthcare, 12(2), 224.
9. Zhang, H.-L., Liu, F., & Lang, H.-J. (2024). The relationship between role ambiguity and anxiety in intensive care unit nurses: The mediating role of emotional intelligence. Intensive and Critical Care Nursing, 81, 103597.
10. Bruyneel, A., Tack, J., Droguet, M., Maes, J., Wittebole, X., Miranda, D. R., Pierdomenico, L. D. (2019). Measuring the nursing workload in intensive care with the Nursing Activities Score (NAS): A prospective study in 16 hospitals in Belgium. Journal of Critical Care, 54, 205-211. https://doi.org/10.1016/j.jcrc.2019.08.032
11. Bruyneel, A., Gallani, M.-C., Tack, J., d'Hondt, A., Canipel, S., Franck, S., Reper, P., Pirson, M. (2021a). Impact of COVID-19 on nursing time in intensive care units in Belgium. Intensive and Critical Care Nursing, 62, 102967. https://doi.org/10.1016/j.iccn.2020.102967
12. Bruyneel, A., Smith, P., Tack, J., & Pirson, M. (2021b). Prevalence of burnout risk and factors associated with burnout risk among ICU nurses during the COVID-19 outbreak in French-speaking Belgium. Intensive and Critical Care Nursing, 103059. https://doi.org/10.1016/j.iccn.2021.103059
13. Bruyneel, A., Bouckaert, N., Maertens de Noordhout, C., Detollenaere, J., Kohn, L., Pirson, M., Sermeus, W., & Van den Heede, K. (2023). Association of burnout and intention-to-leave the profession with work environment: A nationwide cross-sectional study among Belgian intensive care nurses after two years of pandemic. International Journal of Nursing Studies, 137, 104385. https://doi.org/10.1016/j.ijnurstu.2022.104385
14. Bruyneel, L., Li, B., Squires, A., Spotbeen, S., Meuleman, B., Lesaffre, E., & Sermeus, W. (2017). Bayesian multilevel MIMIC modeling for studying measurement invariance in cross-group comparisons. Medical Care, 55(e25-e35). https://doi.org/10.1097/MLR.0000000000000164
15. Chiappinotto, S., Papastavrou, E., Efstathiou, G., Andreou, P., Stemmer, R., Ströhm, C., Schubert, M., de Wolf-Linder, S., Longhini, J., & Palese, A. (2022). Antecedents of unfinished nursing care: A systematic review of the literature. BMC Nursing, 21, 137. https://doi.org/10.1186/s12912-022-00890-6
16. Cho, S.-H., Lee, J.-Y., You, S. J., Song, K. J., & Hong, K. J. (2020). Nurse staffing, nurses' prioritization, missed care, quality of nursing care, and nurse outcomes. International Journal of Nursing Practice, 26, e12803
17. Dall'Ora, C., Ball, J., Reinius, M., & Griffiths, P. (2020). Burnout in nursing: A theoretical review. Human Resources for Health, 18, 41. https://doi.org/10.1186/s12960-020-00469-9
18. Vogelsang, A., Göransson, K. E., Falk, A., & Nymark, C. (2021). Missed nursing care during the COVID-19 pandemic: A comparative observational study. Journal of Nursing Management, 29, 2343–2352. https://doi.org/10.1111/jonm.13392
19. World Health Organization. (2022). Health and care workforce in Europe: Time to act. Geneva.
20. West, J. N. (2019). Safety culture, patient safety, and quality of care outcomes: A literature review. West Journal of Nursing Research.

21. Juanamasta, I. G., et al. (2021). A concept analysis of quality nursing care. Journal of Korean Academy of Nursing.
22. McQueen, J. M., et al. (2022). Adverse event reviews in healthcare: What matters to patients and their family? A qualitative study exploring the perspective of patients and family. BMJ Open.
23. Eulmesekian, P. G., et al. (2020). The occurrence of adverse events is associated with increased morbidity and mortality in children admitted to a single pediatric intensive care unit. European Journal of Pediatrics.
24. Kim-Soon, N., Abdulmaged, A. I., Mostafa, S. A., Mohammed, M. A., Musbah, F. A., Ali, R. R., & Geman, O. (2024). A framework for analyzing the nursing workload. Journal of Nursing Care Quality.
25. Hessels, A., et al. (2019). Impact of patient safety culture on missed nursing care and adverse patient events. Journal of Nursing Care Quality.
26. Emergency department nurses' reflective thinking and patient safety competency: The mediating effect of patient safety culture. (2024). Applied Nursing Research.
27. The Impact of Clinical Practice Stress on Nursing Professional Competence among Undergraduate Nursing Students: A Cross-Sectional Study. (2024). Florence Nightingale Journal of Nursing.
28. The humanistic care ability of nurses in 27 provinces in China: A multi-center cross-sectional study. (2024). Frontiers in Medicine.
29. Linking patient safety, caring behaviours, and professional self-efficacy with missed nursing care among Filipino emergency room nurses: A structural equation model study. (2024). Journal of Clinical Nursing.
30. Bruyneel, A., Tack, J., Droguet, M., Maes, J., Wittebole, X., Miranda, D. R., & Pierdomenico, L. D. (2019). Measuring the nursing workload in intensive care with the Nursing Activities Score (NAS): A prospective study in 16 hospitals in Belgium. Journal of Critical Care, 54, 205–211. https://doi.org/10.1016/j.jcrc.2019.08.032
31. Hoogendoorn, M. E., Brinkman, S., Bosman, R. J., Haringman, J., de Keizer, N. F., & Spijkstra, J. J. (2021). The impact of COVID-19 on nursing workload and planning of nursing staff on the Intensive Care: A prospective descriptive multicenter study. International Journal of Nursing Studies, 121, 104005. https://doi.org/10.1016/j.ijnurstu.2021.104005
32. Bruyneel, A., Lucchini, A., & Hoogendoorn, M. (2022). Impact of COVID-19 on nursing workload as measured with the Nursing Activities Score in intensive care. Intensive and Critical Care Nursing, 69, 103170. https://doi.org/10.1016/j.iccn.2021.103170
33. Bech, M. H. (2019). Sykepleie Til Den Postoperative Pasienten Målt Med Nursing Activities Score: Analyse Av Parallelle Skåringer. Lovisenberg Diakonale Høgskole, Oslo, Norway.
34. Margadant, C., Wortel, S., Hoogendoorn, M., Bosman, R., Spijkstra, J. J., Brinkman, S., & de Keizer, N. (2020). The Nursing Activities Score per nurse ratio is associated with in-hospital mortality, whereas the patients per nurse ratio is not. Critical Care Medicine, 48(1), 3–9. https://doi.org/10.1097/ccm.0000000000004005
35. Hoogendoorn, M. E., Brinkman, S., Spijkstra, J. J., Bosman, R. J., Margadant, C. C., Haringman, J., & de Keizer, N. F. (2021). The objective nursing workload and perceived nursing workload in Intensive Care Units: Analysis of association. International Journal of Nursing Studies, 114, 103852. https://doi.org/10.1016/j.ijnurstu.2020.103852
36. Moghadam, K. N., Chehrzad, M. M., Masouleh, S. R., Mardani, A., Maleki, M., Akhlaghi, E., & Harding, C. (2021). Nursing workload in intensive care units and the influence of patient and nurse characteristics. Nursing in Critical Care, 26(6), 425–431. https://doi.org/10.1111/nicc.12548
37. Nasirizad Moghadam, K., Chehrzad, M. M., Reza Masouleh, S., Maleki, M., Mardani, A., Atharyan, S., & Harding, C. (2021). Nursing physical workload and mental workload in intensive care units: Are they related? Nursing Open, 8(4), 1625–1633. https://doi.org/10.1002/nop2.785
38. Decock, K., Casaer, M. P., Guïza, F., Wouters, P., Florquin, M., Wilmer, A., Janssens, S., Verelst, S., Van den Berghe, G., & Bruyneel, L. (2020). Predicting patient nurse-level intensity for a subsequent shift in the intensive care unit: A single-centre prospective observational study. International Journal of Nursing Studies, 109, 103657. https://doi.org/10.1016/j.ijnurstu.2020.103657

39. Hoogendoorn, M. E., Margadant, C. C., Brinkman, S., Haringman, J. J., Spijkstra, J. J., & de Keizer, N. F. (2020). Workload scoring systems in the Intensive Care and their ability to quantify the need for nursing time: A systematic literature review. International Journal of Nursing Studies, 101, 103408. https://doi.org/10.1016/j.ijnurstu.2019.103408
40. da Silva, R., Baptista, A., Serra, R. L., & Magalhães, D. S. (2020). Mobile application for the evaluation and planning of nursing workload in the intensive care unit. International Journal of Medical Informatics, 137, 104120. https://doi.org/10.1016/j.ijmedinf.2020.104120
41. Ricci de Araújo, T., Papathanassoglou, E., Gonçalves Menegueti, M., Grespan Bonacim, C. A., Lessa do Valle Dallora, M. E., Carvalho Jericó, M., Basile-Filho, A., & Laus, A. M. (2021). Critical care nursing service costs: Comparison of the top-down versus bottom-up micro-costing approach in Brazil. Journal of Nursing Management, 29(6), 1778–1784. https://doi.org/10.1111/jonm.13313
42. Witczak, I., Rypicz, Ł., Karniej, P., et al. (2021). Rationing of nursing care and patient safety. Frontiers in Psychology, 12, 676970. https://doi.org/10.3389/fpsyg.2021.676970
43. Dhaini, S. R., Simon, M., Ausserhofer, D., et al. (2020). Trends and variability of implicit rationing of care across time and shifts in an acute care hospital: A longitudinal study. Journal of Nursing Management, 28(8), 1861–1872. https://doi.org/10.1111/jonm.13035
44. Al-Jabri, F., Kvist, T., Sund, R., & Turunen, H. (2021). Quality of care and patient safety at healthcare institutions in Oman: Quantitative study of the perspectives of patients and healthcare professionals. BMC Health Services Research, 21(1), 1109. https://doi.org/10.1186/s12913-021-07152-2
45. La Regina, M., Guarneri, F., Romano, E., et al. (2019). What quality and safety of care for patients admitted to clinically inappropriate wards: A systematic review. Journal of General Internal Medicine, 34(7), 1314–1321. https://doi.org/10.1007/s11606-019-05008-4
46. Jarosz, K., Zborowska, A., Młynarska, A. (2022). Rationing care, job satisfaction,

استكشاف العلاقة بين مستويات التوظيف التمريضي وسلامة المرضى في وحدات العناية المركزة

الملخص

الخلفية: تشير النتائج إلى أن مستويات توظيف الممرضين تعتبر مهمة لسلامة المرضى، وخاصة في وحدات العناية المركزة. يرتبط نقص التوظيف بزيادة النتائج السلبية، والأخطاء الطبية، وارتفاع معدلات الوفيات. ومع ذلك، يظل تحسين والحفاظ على نسب التوظيف أحد أوجه القصور المعرفية في العديد من المؤسسات الصحية.

الهدف: يهدف هذا البحث إلى تقييم نسب ساعات العمل وخبرة الممرضين إلى جانب نتائج سلامة المرضى في مجالات الرعاية الحساسة.

الطرق: تم إجراء بحث أدبي لتقييم الدراسات حول توظيف الممرضين، ونسب الممرضين إلى المرضى، وتأثيرها على سلامة المرضى في وحدات العناية المركزة للبالغين.

النتائج: تثبت التحليلات أنه كلما كانت مستويات التوظيف منخفضة في المركز، زادت الحوادث السلبية. إن إدارة الكفاءة ووفرة الموظفين التمريضيين، فيما يتعلق بتنوع المهارات، له تأثير إيجابي على نتائج المرضى ويقلل من الآثار السلبية.

الخلاصة: إن وجود عدد كافٍ من الموظفين، وخاصة الممرضين، يمكن أن يحسن بشكل كبير من نتائج المرضى وسلامتهم. تدعم هذه الأدلة مفهوم ضرورة التوظيف وتنوع المهارات من أجل تقليل الحوادث السلبية وزيادة جودة الرعاية في بيئة العناية المركزة.

الكلمات المفتاحية: توظيف الممرضين، سلامة المرضى، العناية المركزة، الحوادث السلبية، نسبة الممرضين إلى المرضى، نتائج الرعاية الصحية.