Current Insights in Intensive & Critical Care Nursing

COVID-19 and patient safety in intensive care: What can we learn?

Louise Caroline Stayt [a,b,c,*], Jody Ede [c], Cherry Lumley [c]

[a] Oxford Institute of Nursing Midwifery Allied Health Research, United Kingdom
[b] Oxford Brookes University, United Kingdom
[c] Oxford University Hospital Foundation Trust, United Kingdom

Introduction

In March 2020, the World Health Organization (WHO) declared Severe Acute Respiratory Syndrome Coronavirus (COVID-19) a worldwide pandemic. An influx of patients with COVID-19-related critical illness necessitated rapid changes in care strategies to address overwhelming intensive care unit (ICU) service demands, the continued care of non-COVID-19 patients, and mitigate viral spread. These unparalleled challenges highlighted the safety critical nature of nursing, with patient safety being core. As the world recovers from the pandemic, it is vital we reflect on patient using a systems approach, to identify areas of learning (Komashie, et al., 2021). This article outlines key COVID-19 ICU safety impacts to highlight opportunities for learning and inform future ICU patient's care.

Increased nursing workload and missed nursing care

During COVID-19, nursing workload increased (Lumley, et al., 2020; Lake, et al., 2022) with nurse-to-patient ratios of up to 1:5 rather than the traditional 1:1 or 1:2 (Hoogendoorn, et al., 2021). Patients also had higher intrinsic care requirements compared to non-COVID-19 patients, due to complex respiratory and prone positioning requirements (Hoogendoorn, et al., 2021). Because of the stark workload/workforce mismatch, a focus was to deliver the most nursing care to the greatest number of patients, but this meant that many care opportunities such as mobilisation, pressure area care, hygiene, weaning from respiratory support and psychosocial support, were missed (Stayt, et al., 2022). ICU nurses were quick to predict long-term implications of missed care across the whole patient journey such as increased ventilation days, increased length of stay, or poor long-term patient outcomes due to limited opportunities for rehabilitation (Stayt, et al., 2022). COVID-19 care was often rationed, leading to wider system effects such as reduced staff satisfaction and perceptions of safety (Nymark, et al., 2022).

Quantifying ICU nursing workload is a crucial step in improving patient safety and outcomes, by matching workforce to patient care requirement (Hoogendoorn, et al., 2021). Mortality is more strongly associated with workload than crude nurse: patient ratios (Margadant et al., 2020). If adequately measured, workload could be used to geographically group patients according to dependency and the required number of nurses calculated, allowing for leaner workforce planning strategies. However, robust measurement of nursing workload is challenging due to the considerable number of tools available. Of these, the Nursing Activity Score predicts nursing task times more reliably but can still over and underpredict (Margadant, et al., 2021). Mediating workload-related adverse factors may rest on refining and prioritising ICU workload measurement tools to improve patient safety, and efficient workforce planning.

ICU nurse mental health

Unprecedented nursing stressors during COVID-19 arose from significant system-wide factors such as high workloads, missed care, staffing shortages, greater working hours, increased patients' severity of illness, and deaths (Hur, et al., 2022). The additional physical, psychological, and emotional burdens of these stressors have had a profound impact on ICU nurses' mental health with Calkins et al. (2023) poignantly describing nurses as the second victims of the pandemic. Denning, et al., (2021) surveyed 3537 healthcare workers in a multinational cross-sectional study and reported that 67% (n = 2364) screened positive for burnout, 20% (n = 701) for anxiety and 11% (n = 389) for depression. In addition, moral distress arising from a conflict between the nurses' desire to deliver optimal patient care and the inability to do so due to altered workloads has been reported (Romero-García et al., 2022). Levels of moral distress are compounded by anxiety and depression, ineffective team communication and support, restricted resources, clinical uncertainty, and patients dying in the absence of families (Romero-García et al., 2022).

A healthy workforce is integrally linked to the wellbeing of the patients they serve and therefore the implications of psychological and emotional sequelae are great. A systematic review of 22 studies found an association between safety culture, errors, adverse events, and burnout
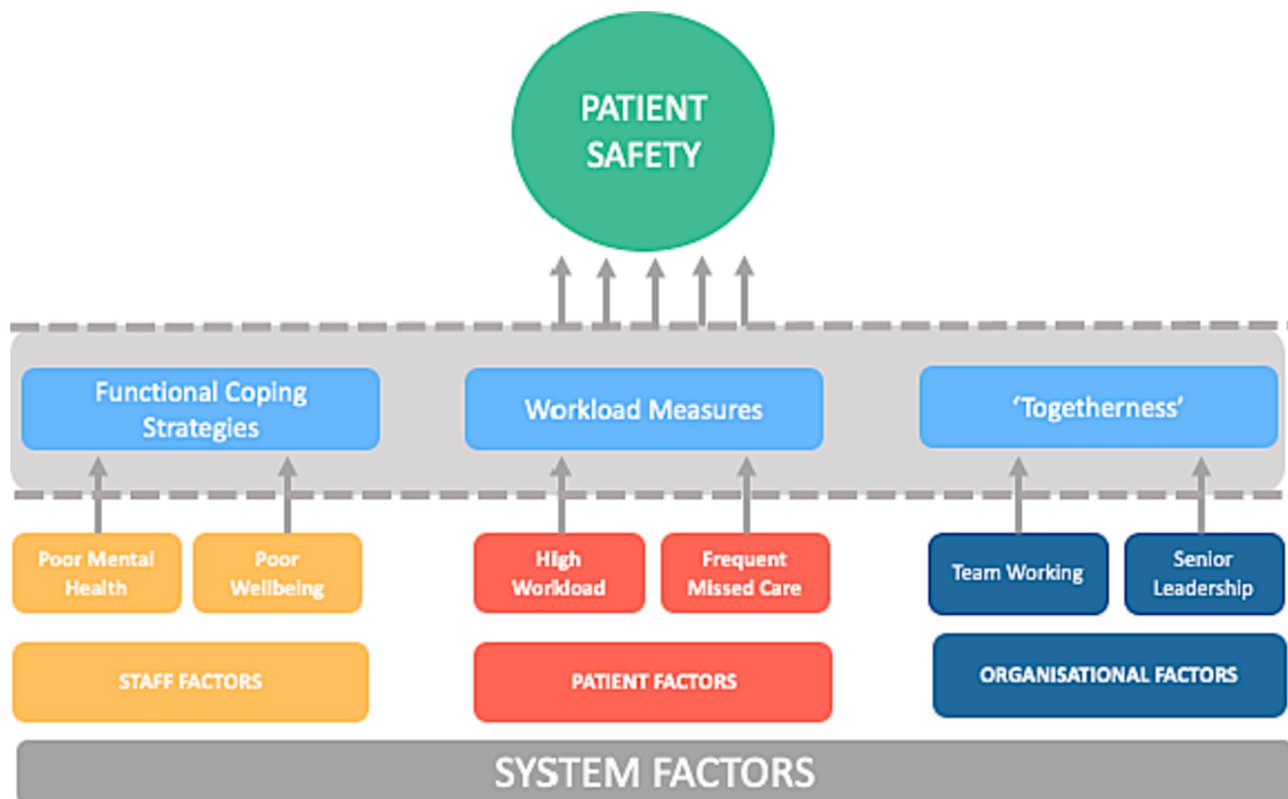

Fig. 1. Lessons about patient safety in ICU.

(Mossburg and Dennison, 2021), while moral distress may erode effective team working and reduces the quality of care (Romero-García et al., 2022). A further consequence of mental ill-health, moral distress and burnout is an exacerbation of the pre-existing challenge of nurse retention in an already depleted workforce. Many nurses have reported an intention to leave ICU and indeed the profession because of experiences during COVID-19 (Hur et al., 2022).

The significance of these negative consequences is undeniable; however, mediating factors of mental ill-health, moral distress and burnout have been identified in the research. Jeong and Shin (2023) correlational study reported that resilience has a mediating effect on the association between secondary traumatic stress and burnout. However, how resilience may be preserved and enhanced remains unclear and highly debated as thriving in the workplace depends on more than the ability to bear a personal burden. Indeed, Romero-García et al. (2022) recommended training in broader, more functional coping strategies to reduce moral distress. In addition to individual factors, organisational factors such as effective teamwork with senior support (Stayt, et al., 2022), open communication and togetherness (Pagnucci et al., 2021) have been reported as highly valued and having a positive influence on wellbeing during the pandemic.

Conclusion

In the aftermath of the pandemic, it is essential to recognise that nurses are fundamental in leading a systems approach to patient safety in ICU. Fig. 1 highlights the systems factors that influenced patient safety in ICU during COVID-19 and identify the antecedents essential to enhance patient safety in the future. A call-to-action arising from COVID-19 reflections is an urgent need to quantify nursing workload to inform workforce planning rather than relying on crude nurse-to-patient ratios. We were also able to identify mechanisms which supported the workforce during times of unprecedented stressors and significant workload. Systems wide interventions to maximise these mechanisms

are essential to patient safety.

To summarise, the recommendations based on the key lessons from COVID-19 are:

1. Tools used to quantify ICU nursing workload require refinement and inclusion in workforce planning
2. Strategies to support and develop functional coping strategies must be implemented
3. Effective teamwork and communication should be prioritised
4. Strong and effective senior leadership should be developed

Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

References

Calkins, K., Guttormson, J., McAndrew, N.S., Losurdo, H., Loonsfoot, D., Schmitz, S., Fitzgerald, J., 2023. The early impact of COVID-19 on intensive care nurses' personal and professional well-being: A qualitative study. Intensive Crit. Care Nurs. 76, 103388.

Denning, M., Goh, E.T., Tan, B., Kanneganti, A., Almonte, M., Scott, A., Martin, G., Clarke, J., Sounderajah, V., Markar, S., Przybylowicz, J., Chan, Y.H., Sia, C.-H., Chua, Y.X., Sim, K., Lim, L., Tan, L., Tan, M., Sharma, V., Ooi, S., Winter Beatty, J., Flott, K., Mason, S., Chidambaram, S., Yalamanchili, S., Zbikowska, G., Fedorowski, J., Dykowska, G., Wells, M., Purkayastha, S., Kinross, J., Brenner, M.H., 2021. Determinants of burnout and other aspects of psychological well-being in healthcare workers during the Covid-19 pandemic: A multinational cross-sectional study. PLoS One 16 (4) e0238666.

Hoogendoorn, M., 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 multicentre study. Int. J. Nurs. Stud. 121, 104005 https://doi.org/10.1016/j.ijnurstu.2021.104005.

Hur, G., Cinar, N., Suzan, O.K., 2022. Impact of COVID-19 pandemic on nurses' burnout and related factors: A rapid systematic review. Arch. Psychiatr. Nurs. 41, 248–263.

Jeong, Y.J., Shin, S., 2023. The relationship between secondary traumatic stress and burnout in critical care nurses: The mediating effect of resilience. Intensive Crit. Care Nurs. 74, 103327.

Komashie, A., Ward, J., Bashford, T., Dickerson, T., Kaya, G.K., Liu, Y., Kuhn, I., Günay, A., Kohler, K., Boddy, N., O'Kelly, E., Masters, J., Dean, J., Meads, C., Clarkson, P.J., 2021. Systems approach to health service design, delivery, and improvement: a systematic review and meta-analysis. BMJ (Brit. Med. J.) Open 11 (1) e037667.

Lake, E.T., Narva, A.M., Holland, S., Smith, J.G., Cramer, E., Rosenbaum, K.E.F., French, R., Clark, R.R., Rogowski, J.A., 2022. Hospital nurses' moral distress and mental health during COVID-19. J. Adv. Nurs. 78 (3), 799–809.

Lumley, C., Ellis, A., Ritchings, S., Venes, T., Ede, J., 2020. Using the Systems Engineering Initiative for Patient Safety (SEIPS) model to describe critical care nursing during the SARS-CoV-2 pandemic. Nurs. Crit. Care 25 (4), 203–205. https://doi.org/10.1111/nicc.12514.

Margadant, C.C., de Keizer, N.F., Hoogendoorn, M.E., Bosman, R.J., Spijkstra, J.J., Brinkman, S., 2021. Nurse Operation Workload (NOW), a new nursing workload model for intensive care units based on time measurements: An observational study. Int. J. Nurs. Stud. 113, 103780 https://doi.org/10.1016/j.ijnurstu.2020.103780.

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.

Mossburg, S.E., Dennison, H.C., 2021. The association between professional burnout and engagement with patient safety culture and outcomes: a systematic review. J. Patient Saf. 17 (8), e1307–e1319. https://doi.org/10.1097/PTS.0000000000000519.

Nymark, C., von Vogelsang, A.C., Falk, A.C., Göransson, K.E., 2022. Patient safety, quality of care and missed nursing care at a cardiology department during the COVID-19 outbreak. Nurs. Open 9 (1), 385–393. https://doi.org/10.1002/nop2.1076.

Pagnucci, N., Scateni, M., De Feo, N., Elisei, M., Pagliaro, S., Fallacara, A., Forfori, F., 2021. The effects of the reorganisation of an intensive care unit due to COVID-19 on nurses' wellbeing: An observational cross-sectional study. Intensive Crit. Care Nurs. 67, 103093.

Romero-García, M., Delgado-Hito, P., Gálvez-Herrer, M., Ángel-Sesmero, J.A., Velasco-Sanz, T.R., Benito-Aracil, L., Heras-La Calle, G., 2022. Moral distress, emotional impact and coping in intensive care unit staff during the outbreak of COVID-19. Intensive Crit. Care Nurs. 70, 103206.

Stayt, L.C., Merriman, C., Bench, S., Price, M.A., Vollam, S., Walthall, H., Credland, N., Gerber, K., Calovski, V., 2022. 'Doing the best we can': Registered Nurses' experiences and perceptions of patient safety in intensive care during COVID-19. J. Adv. Nurs. 78 (10), 3371–3384.