Since January 2020 Elsevier has created a COVID-19 resource centre with free information in English and Mandarin on the novel coronavirus COVID-19. The COVID-19 resource centre is hosted on Elsevier Connect, the company's public news and information website.

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Editorial

Nursing workload in the COVID-19 era

Since the early 1970, tools and procedures for measuring nursing workload in the intensive care unit (ICU), were tested and improved according to clinical, technological and organisational developments and also the evolution of the nursing role (Greaves et al., 2018). The idea behind the implementation of nursing workload measurement tools was to deliver an evidence-based decision-making process, guaranteeing transparency of policy and achieving a higher level of efficiency. However, the concept of "nursing workload" is still complex and difficult to define.

Currently, the main validated tools for nursing workload monitoring are: 1) Simplified therapeutic intervention scoring system (TISS 28) (Miranda et al., 1996), 2) Nine equivalents of man power score (NEMS) (Miranda et al., 1997) and 3) Nursing Activities Score (NAS) (Miranda et al., 2003). The staff skill mix should be adjusted on the basis of the resulting scores. The patient's clinical complexity could be, in selected cases, a good proxy for measuring nursing complexity. An example of this correlation is represented by patients undergoing extracorporeal membrane oxygenation (ECMO). The Extracorporeal Life Support Organization (ELSO) guidelines suggest that these patients should be centralised in referral centres where, an adequate nurse-to-patient ratio could be guaranteed in addition to the technical equipment. The use of NAS in an Italian ECMO centre, demonstrated that the nurse to patient in ECMO ratio was between 1:1.5 and 1:1 (Lucchini et al., 2019)

Padilha et al. (2008) investigated the associations between NAS and patients' variables such as gender, age, length of stay, ICU discharge, ICU management, Simplified Acute Physiology Score II (SAPS II) and TISS-28. This study shows that the highest NAS scores were associated with increased mortality, length of stay, severity of the patient illness (SAPS II) and particularly to TISS-28 in the ICU. Recently Stafseth et al. (2018), showed that NAS highlights nurses' workload and may be a helpful classification system to be used in planning and budgeting of intensive care resources. A statistically significant association was found between monthly costs, NAS and NEMS; therefore, the cost of care should be reckoned on the individual patients' nursing care needs.

However, the greatest challenge related to nursing workload is represented by the levels of nursing complexity management in ICU patients. Rengeiné et al. (2020), have used the "King's-TISS" score to evaluate the nursing workload and the ideal nurse-to-patient ratio, in the first 48 h perioperative period after blood product free liver transplantations. The authors found that the absence of blood product administration in liver transplantations decreased the total and organ specific workload, with the exception of metabolic, haemostasis, immunology conditions and for basic support requirement. The basic nursing care items remained unchanged in the 48 h after blood product free liver transplantations (Rengeiné et al., 2020). In recent decades, medical and nursing care has changed and focused mainly to the diagnosis and treatment of acute illnesses. However, basic nursing care remains an essential and underestimated factor for patient recovery if compared to intensive care treatments. Rengeiné et al. (2020) revealed that the basic nursing care items remained unchanged, until 48 h after liver transplantations. Instead, basic nursing care, the presence of invasive devices, monitoring, ventilatory and cardiovascular nursing activities decreased significantly at the end of the second post-operative day.

The NAS, NEMS and TISS-28 tools are mainly based on activities performed by nurses in the ICU, while a patient-centred care approach consistent with the values, needs and desires of patients/families and caregivers has been well established within the fundamentals of ICU nursing care (Palese et al., 2016). The ICU nursing care process has also been affected by: increased availability of evidence-based nursing knowledge; patient care innovations (e.g. decreasing sedation, delirium monitoring, early mobilisation and respiratory/cardiac extracorporeal support); open ICU policies/guidelines and the use of new communication technologies, such as video-calling with patient's relatives (Negro et al., 2020).

Moreover, in this (unexpected) COVID-19 era, new factors can tremendously influence nursing workload. COVID-19 patients require prophylactic measures to prevent or contain the spread of the virus to other patients: donning protective garments, specific decontamination procedures, isolated dedicated areas where specific supplies are stored. All these measures increase nursing workload (Giuliani et al., 2018), not only for the time required of their implementation but also for their organisation and management. Critical care nurses are experiencing a new challenging working scenario inside the COVID-19 ICUs. In these setting, they are called to provide the usual high standard care of patients with the additional problems caused by the personal protective equipment, especially for long periods. COVID-19 ICU patients cannot receive external visitors, they are dependent on support from healthcare workers.

The sudden lack of ICU beds and mechanical ventilators has led to an increasing number of conversions of recovery and operating rooms into new COVID-19 areas. (Bambi et al., 2020; Lucchini et al., 2020). New ICU beds were designated and critical care nurses were needed to manage patients who were dependant on high tech organ and system support (including extracoporeal membrane oxygenation) (Bambi et al., 2020; Lucchini et al., 2020). Some pre-

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liminary reports identify the nursing workload is dramatically high in COVID-19 patients (Lucchini et al., 2020; Reper et al., 2020). In addition to the severity of illness, the nursing workload increased because of the need to provide humanistic care in the absence of family. The introduction of mobile phone calls (Negro et al., 2020) also helped patients to mitigate their sense of isolation and keep them and their relatives updated, about what is happening outside and inside "*the hospital walls*". When people affected by COVID-19 enter the hospital, they literally disappear from their relatives' lives.

Therefore, the COVID-19 era is driving the need to enhance nursing workload scores with new issues, including the time for donning and doffing personal protective equipment (PPE), the additional time taken to provide care wearing PPE, the need for distanced communication between patient and relatives, and the need to manage the increasing incidence and severity of agitation and delirium due to the isolated environment (Kotfis et al., 2020).

Conflict of interest statement

The authors declare they have no conflict of interest.

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