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Opinion

Nursing Workload in Times of COVID-19 According to the Nursing Activities Score (NAS)

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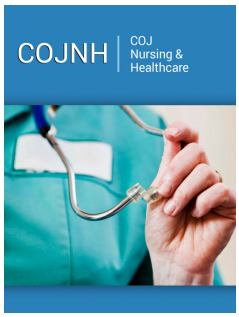

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Opinion

During the COVID-19 pandemic, the whole world has been recognizing the importance of the role of health professionals, especially nurses, who are with patients incessantly and available 24 hours per day, 7 days a week. In the fight at the front line, the nursing team has suffered the impact of providing care to COVID-19 patients. Thus, it is estimated that thousands have been removed from professional activities and many died from becoming infected during work [1]. The greatest protection for nursing professionals is the proper use of personal protective equipment (PPE). There was a shortage of resources for the protection of professionals at the beginning of the pandemic in countries like Brazil, and even developed countries such as the USA had difficulties to maintain the supply of masks, aprons and other supplies [2]. Safe and adequate care for patients and professionals free of iatrogenesis require adequate sizing, meaning that the number of professionals should be adequate for the number of patients to provide care with quality. In this context, the concept of "nursing workload" is complex and difficult to define, and we have been using tools and procedures for measuring nursing workload. In this context, one of the most updated of these tools is the Nursing Activities Scores (NAS) [3,4].

The Nursing Activities Score (NAS) [5], translated and validated for the Portuguese language in 2009 [6], is divided into 7 large categories and has a total of 23 items. The item weights vary from a minimum of 1.2 to a maximum of 32. The score can vary from 0 to 176.8 and represents the percentage of time spent by nurses providing direct and indirect care to an Intensive Care Unit (ICU) patient. Each NAS point corresponds to 14.4 minutes of nursing care [5]. Previous studies have reported an association of the NAS score with patient ICU mortality and costs [7,8]. Brazil currently ranks second in the world in COVID-19 cases with more than 3.7 million cases and 118,649 deaths in the population [9]. Therefore, the country is an important place for assessing COVID-19 in the ICU. Assessing the NAS before and after the pandemic can enable us to better understand the nursing workload, as well as discuss points to improve this valuable instrument. In view of the above, the aim of this study was to compare the nursing workload required by ICU patients before and after the COVID-19 pandemic.

This retrospective cohort study was evaluated through a survey of medical records and spreadsheets regarding the months of March to June 2019, and then compared to the same months in 2020. The choice of this period (2020) represents the beginning of the pandemic in Brazil. The study site is the Hospital Geral de São Mateus (HGSM), a public hospital located in the east side of Sao Paulo, Brazil. It consists of 154 beds, with its ICU containing 14 beds. It serves an average of 225,261 patients per year. The NAS instrument has been used since 2010 in the unit of this study. It is performed daily by a team of 12 trained and qualified nurses and represents the nursing workload of ICU patients in the last 24 hours.

Table 1 shows the patient characteristics of the study. The NAS average from March to June 2019 was 75.4(SD 9.71), while in the same period of 2020 it was 88.61(SD 12.13). These data are from the results of 1,147 measures of NAS in 2019, and 922 in 2020. Despite that the NAS was not calculated for some days (six days) due to team overload in 2020, there was a

significant statistical difference between the NAS scores before and after the pandemic (p<0.001) (Table 1), and similar results were reported by Reper et al. [10] and Lucchini et al. [4]. Figure 1 reveals an overload of the nursing team during the COVID-19 pandemic; in addition, this period made it possible to explore some gaps that the current instrument does not address. First, the approach to using individual protection equipment (PPE) is not described in the NAS. We emphasize that patients in isolation such as in COVID-19 and for other diseases require adequate dressing which consume too much time in both placement and removal (remembering that many professionals were contaminated in removing PPE). In addition, dexterity decreases with the use of PPE and this also increases the time to do many nursing activities.

Table 1: Patient characteristics.

	Cohort 2019	Cohort 2020	p
No. of patients	257	180	
Age-mean (SD)	57 (18.6)	61.7 (15.8)	0.376*
Male-n(%)	158 (61.5)	88 (64.2)	0.445**
Reason for ICU Admission-n (%)			
CAD	116 (45.1)	18 (10)	0.375**
RSD	35 (13.6)	138 (76.7)	
Others	106 (41.3)	24 (13.3)	
Length of stay-mean (SD)	5.0 (5.94)	4.24 (7.05)	0.14*
ICU mortality-n (%)	69 (26.8)	48 (26.6)	0.48**
NAS-mean (SD)	75.40 (9.71)	88.61 (12.13)	<0.001*

Abbreviations: N: Number; CAD: Cardiovascular Disease; ICU: Intensive Care Unit; RSD: Respiratory System Disease; SD: Standard Deviation.
*Student's t-test; **Chi-squared test.

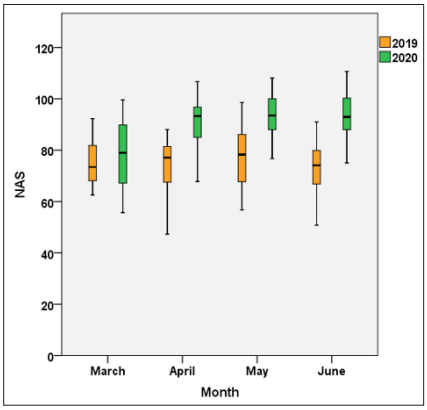

Figure 1: Box plots of NAS related to 2019 versus 2020.

Second, the nursing team had to reinvent themselves due to the distanced communication between patient and relatives during the pandemic in order to mitigate this isolation and technology really helps in doing so. However, the use of technology tools such as WhatsApp to both talk to the family and communicate professionally is a new reality and should be scored on the NAS. Furthermore, the lack of human resources is highlighted within the innumerable challenges of this pandemic. A previous study [11] reported that the ideal nurse-to-patient ratio for COVID-19 patients should be around 1:1.5; however, there have been increased numbers of absenteeism during the pandemic which hindered achieving this proportion in practice. Thus, finding the perfect instrument to estimate the workload of a health profession as complex as nursing and which can be used in different scenarios like COVID-19 seems to be a great challenge. The NAS is a valuable tool which needs improvements that became more evident after the pandemic on how to use PPE and technology resources. Therefore, further studies are needed to assess this issue.

Conflicts of Interest

The authors declare that there are no conflicts of interest regarding the publication of this study.

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