

ANALISYS OF NURSING ACTIVITY SCORE IN AN ITALIAN INTENSIVE CARE UNIT

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Introduction

Adequate staffing within an area has an influence on: number of adverse events, care-related infections, mortality, length of stay, burn out and staff turnover. Using a rating scale, the Nursing Activity Score (NAS), which assigns a score to every aspect of nursing, we want to describe the workload within intensive care units. The study takes place in a large academic hospital with about 800 beds, 31 for the intensive care area, with Level II DEA and a center for ECMO (Extracorporeal Membrane Oxygenation) management for OHCA (out-of-hospital cardiac arrest).

Method

Retrospective Observational Study conducted from 1/3/2018 to 31/12/19. The NAS value was detected during each shift without modifying the original score for each item. The average NAS of the hospitalization was calculated by dividing the total NAS by the shifts in which the patient is present. The association between NAS and variables of interest (age, type of hospitalization, length of stay) was evaluated in the three intensive areas (General ICU, Cardiac Surgery ICU and Coronary Care Unit). The survey was carried out on paper and subsequently transcribed on an excel file and analyzed with Stata® version 16 software . We want to describe and verify which shift has the highest nursing workload according to the score.

Results

	NAS	IC95%		NAS	IC95%	
	COEFF.	COEFF.	p	COEFF.	COEFF.	p
SURGICAL	56.7	56.1 / 57.2		58.6	56.7 / 60.4	R
MEDICINE	+1	-0.7 / +2.6	0.241	+0.4	-1.3 / +2.1	0.643
ELECTIVE	56.5	55.9 / 57.2		58.6	56.7 / 60.4	R
ER	+0.7	-0.4 / +1.8	0.218	+3.1	+1.8 / +4.5	<0.001
18-49	55.6	54.3 / 56.9		58.6	56.7 / 60.4	R
50-74	+1.9	+0.4 / +3.4	0.010	+1.5	+0.1 / +2.9	0.03
>75 YEAR	+0.4	-1.2 / +2	0.642	+2	+0.4 / +3.5	0.015
<=24H	55	54.2 / 55.8		58.6	56.7 / 60.4	R
1-3 DAYS	+2.1	+0.9 / +3.4	0.001	+1.5	0.1 / 2.4	0.034
1-3 DAYS	+1.2	-0.3 / +2.8	0.113	+0.7	-0.9 / +2.4	0.382
>7 DAYS	+8	+6.3 / +9.7	<0.001	+6.4	+4.7 / +8.2	<0.001
CS ICU	62.1	61 / 63.1		58.6	56.7 / 60.4	R
GENERAL ICU	-4.1	-5.4 / -2.9	<0.001	-4.2	-5.7 / -2.7	<0.001
CCU	-14.3	-15.8 / -12.8	<0.001	-16.1	-17.8 / -14.4	<0.001
Univariate analysis			Multivariate analysis			R=reference

	NAS	IC95%		NAS	IC95%	
	COEFF.	COEFF.	p	COEFF.	COEFF.	p
MORNING	57.7	54.1 / 55.3		56.7	55.7 / 57.8	R
AFTERNOON	+4.4	+3.5 / + 5.3	<0.001	+4.4	+3.5 / 5.2	<0.001
NIGHT	+1.2	+0.3 / +2	0.009	+1.1	+0.3 / +1.9	0.007
<=24H	55	54.2 / 55.8		56.7	55.7 / 57.8	R
1-3 DAYS	+2.1	+0.9 / +3.4	0.001	+2.6	+1.7 / +3.6	<0.001
3-7 DAYS	+1.2	-0.3 / +2.8	0.113	+2.9	+1.8 / 3.9	<0.001
>7 DAYS	+8	+6.3 / +9.7	<0.001	+8.9	+7.8 / +10	<0.001
CS ICU	62.1	61 / 63.1		56.7	55.7 / 57.8	R
GENERAL ICU	-4.1	-5.4 / -2.9	<0.001	-2.9	-3.8 / -2	<0.001
CCU	-14.3	-15.8 / -12.8	<0.001	-13.8	-14.9 / -12.8	<0.001
Univariate analysis			Multivariate analysis			R=reference

The results obtained differ in terms of the average value compared to other studies carried out on the national territory (1), but the considerations observed are similar. The difference is made by the population of our study as our hospital admit an higher percentage of elective surgical patients, and consequently our ICUs are mostly occupied by surgical patients.

The high turnover caused by the operating activities of our hospital is reflected in the analysis of the NAS value in the 3 shifts. The afternoon shift has a higher NAS value due to acceptance and stabilization activities of post-operative patients who are admitted more frequently during this shift. In the morning, the activities are different, and the time dedicated to nursing and mobilization of long-term patients increases.

Conclusions

Contiunous evaluation of NAS score over the day can improve the allocation of resources. By continuously evaluating the use of the NAS accompanied by other indicators (bed occupancy, patient turnover) we can have a more efficient staffing in order to meet the care needs of ICU patients. We suggest to include NAS score in electronic health record forms, to allow prompt evaluation of resources, and easy retrospective evaluation of data. Retrospectively, the NAS score can be used to check whether a worsening or improvement of certain quality indicators such (i.e.: the incidence of adverse events and falls, pressure sores and care-related infections) is caused by a change in the burden of nursing work

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