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The impact of Covid-19 on Post-Operative Intensive Care Unit and Recovery Room: Experimental Survey on the Feasibility and Behavioural Metamorphosis of Nursing Staff.

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Abstract

The pandemic caused by SARS-CoV-2 has disrupted the National Health System. The aim of the study is to analyse what the effects of the pandemic have been on Post-Operative Intensive Care Unit and Post Anaesthesia Care Unit and to describe how nursing staff responded to the health care emergency. The thesis is based on a prospective cross-sectional study. The survey was administered to 24 nurses in Cattinara Hospital in Trieste (Italy) in the period between June and September 2020. The inclusion criterion is "having worked for more than 3 continuous months in the ward during the pandemic". The 91,7% of the nurses stated that the team's spirit of cohesion is highly decisive in dealing with the health emergency. Data show that 53,8% of the team is highly specialized and has more than 15 years of experience in critical nursing area. Clinical experience and teamwork are strictly crucial to obtaining a positive outcome. Despite the ever-increasing psychophysical load, the increase in the workload in qualitative and quantitative terms, all combined with the unpredictability of the situation, the nurses provided high-level nursing care. This behavioural metamorphosis was made possible both thanks to the masterful experience in the clinical field and teamwork.

Keywords: *Nurse; Intensive Care Unit; Critical care; Covid-19; Teamwork*

Abbreviations: RDS: Acute Respiratory Distress Syndrome; ASUGI: Azienda Sanitaria Universitaria Giuliana Isontina; FFP2/FFP3: Filtering Face Piece 2-3; ICU: Intensive Care Unit; MOF: Multiple Organ Failure; PACU: Post Anesthesia Care Unit; PICU: Post-operative Intensive Care Unit; PPE: Personal Protective Equipment; RR: Recovery Room; SIAARTI: Società Italiana Anestesia, Analgesia, Rianimazione e Terapia Intensiva

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Introduction

In February 2020, the WHO officially declared that the international outbreak of SARS-CoV-2 coronavirus infection causes the disease officially known as Covid-19 [1]. The new disease will lead to 13,700 deaths in Italy in the first quarter of 20202 [2]. What is striking about this disease is not only the virulence but also, above all, is the clinic: uncertain, not always dependent on comorbidities and age, with non-continuous evolution over time. Symptoms are characterized by dyspnea and hypoxemia, fever, diarrhoea and asthenia; in the most critical cases, it leads to respiratory failure (ARDS), septic shock caused by over infections, difficult to correct metabolic acidosis, hypercoagulability caused by an abnormal inflammatory response and finally MOF [3]. The clinical uncertainty and criticality together with the absence of a real cure have brought the Italian National Health Care System on its knees. Italian hospitals have had to face a complete restructuring of material and human resources to deal with the health emergency, especially in intensive care units. In this article, we discuss how the staff in the Cattinara Hospital (Trieste, Italy) was managed in such a way as to ensure general and specialist election surgery and time-dependent diseases even during the pandemic.

Background

During the pandemic Peak, ASUGI, the Local Health Care company, decided to suspend all non-urgent outpatient visits and to keep elective surgery, time dependent surgery, and emergency surgery, thus avoiding clouding other pathologies in a historical moment in which Covid-19 has taken all the attention and energy; with the aim of resuming the usual routine as soon as the peak of infections was over. In particular, it was necessary to establish different paths and structures to divide "Covid free" patients from infected patients to allow the two activities to continue simultaneously, without cross-contamination taking place. The Post-Operative Intensive Care and Recovery Room is a unitary structure that has maintained the role of the Recovery Room in the immediate post-operative period of "Covid free" patients during the pandemic and has also played the role of a real ICU, taking care of all non-infected patients, who continued to need complex intensive care not necessarily linked to the perioperative path [4]. The study was entirely conducted in the ward, which looks like a fusion between Post Anaesthesia Care Unit and the Recovery Room: both are aimed at preventing complications related to the surgery and anaesthesia. The difference between one facility and another is in fact the intensity of care provided which consequently determines the nursing workload and the available beds. The ward is located in the operating complex, adjacent to the operating rooms, to minimize travel time from the operating room to the intensive care. An anaesthesia nurse and the anaesthetist who carries out clinical, instrumental and laboratory monitoring welcome the patient. The purpose of the facility is to maintain a high level of monitoring in the immediate post-operative, period where complications that would cause immediate death occur in the absence of highly specialized personnel. The structure offers a total of 12 beds, and each station is equipped as if to accommodate a critical patient of a general intensive care.

The increased hospitalization for Covid patients immediately led to the saturation of intensive care units that had some Jolly places for infected patients, forcing a resuscitation to convert the PACU/RR in effect: to the saturation of the beds of non-infected patients, it is It was decided to increase the workforce by transferring operating room nurses to the Covid Free ICU.

Figure 1

Materials and Methods

The study investigates through the direct perception of PICU/RR nurses, what was the role of the structure during the new Coronavirus pandemic and how it affected nurses. Specifically, five macro-areas concerning nurses were investigated: clinical experience of nurses, management of PPE and new procedures, psycho-physical stress experienced by nurses, perception of the team and the point of view of the nurse Newbie vs. Veteran. The study is of a prospective observational type and is divided as follows:

- Phase 1: creation of the questionnaire
- Phase 2: administration of the questionnaire
- Phase 3: statistical analysis

The questionnaire administered consists of 25 questions and was created with the free Google Forms platform, which is part of the G Suite. It first investigates (section 1) what the clinical experience is, the opinion on the management of human and material resources and finally the opinion regarding the workload and the emotional and stress management created by the situation. The remaining sections are uniquely dedicated to the two types of nurses involved: "Newbies nurses", which were not in the ICU ward before the pandemic and the "Veteran nurse", who originally belonged to the PACU/RR ward. The questions are all multiple choice (typology: multiple choice, linear scale, multiple-choice grid, drop down) with the exception of question twelve and fourteen in which the question gave more possibilities to answer (typology: check box). The questionnaire was created specifically for the data collection of this study. The survey was administered to PACU/RR nurses who had worked for at least three continuous months in the ward during the pandemic peak without taking leave or maternity leave. It was submitted via e-mail from the Nursing Coordinator of the ward. The data collection period started on 17/6/20 and ended on 17/9/20. The questionnaires were submitted and sent back anonymously to the researchers via the Excel spreadsheet produced by Google Forms. The totality of the questionnaires correctly filled in are 24. The data were downloaded from the platform in ".csv" format and processed through an Excel spreadsheet. The data analysis is descriptive.

Results

The total population of nurses taking part in the study is 24 out of 33 total nurses. The first two questions of the questionnaire are intended to quantify and qualify the years of experience of the respondents to investigate in which department they have gained their skills in the past. The answers show that 33% of nurses have more than 30 years of experience in the critical area, 20.8% have an experience between 15 and 30 years and only 16.7% have an experience of less than 5 years. All nurses working in the ward have had previous experience in intensive care wards or highly specialized wards (operating room).

About 37.5% of nurses were moved from their ward to reinforce human resources in PACU/RR during the pandemic peak. The perception of the workload was also investigated by asking if human resources were well deferred in order to improve care: 70.8% argued that the reinforcement of nursing resources were adequate and 16.7% decreed that they were even in excess. The 79% also said that the optimal ratio is that of one nurse for every two patients. During the first pandemic wave for 42% of nurses, the shifts remained unchanged while the remaining 58% had entire additional shifts, or stayed for a few hours after working in case of need. From the analysis of the data regarding the availability of PPE, the majority declared that they always had: surgical mask, mask with high filtering power FFP2/FFP3, goggles and visor, disposable trilaminate gown, gloves, overshoes, cap, headgear. In the case of the Tyvek suit alone, 16% of the nurses interviewed said it was not always available in the ward. Regarding the management of PPE, 58.3% replied that the management was appropriate to the needs and 20.8% think that there was excellent management and there has never been a shortage of PPE during the pandemic. Furthermore, there was no shortage of devices for oxygen therapy, ventilation and oxygen itself. The study revealed that the nursing staff applied the new guidelines introducing new SIAARTI good practices5 in order to improve nursing care (table 1).

	Nurses	Percentage
Maintain HEPA filter	11	45,8%
Prone position in critical patients	2	8,3%
Central cannulation in critical patients	11	45,8%
Early intubation	8	33,3%
Using FFP2 always	19	73%

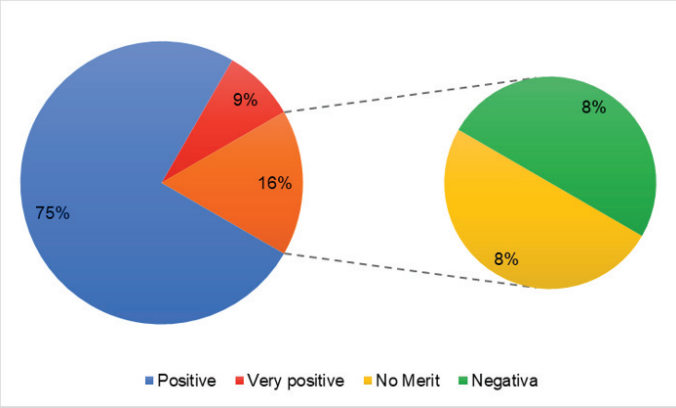
Table 1

We, then, focused on investigating the psychophysical stress that nursing team had to face and manage. Approximately 41% of nurses said that working daily wearing PPE is very tiring. Later the investigation considered what the level of anxiety caused by the saturation of Covid and Covid Free ICU was. 45.8% of nurses thought that in the acute phase in which the ICU was saturated and the PICU/RR had increased all the beds, the situation could have gotten out of hand, while 37.5% thought that with the increase in beds in PICU the situation was already well beyond bearable. In the section where they were asked to express their fears, the nurses all transmitted one or more concomitant fears: the most frequent fear was "the fear of infecting loved ones" with 75% of answers. (Table 2)

	Nurses	Percentage
Fear that there are insufficient PPE	6	25%
Fear of getting sick	8	33,3%
Fear of infecting loved ones	18	75%
Fear of being stressed (burnout)	12	50%
Social stigma outside the hospital walls	6	25%
Having colleagues from the same ward infected	7	29,2%

Table 2

The 91.7% of ward nurses stated that the sense of belonging of the team was clearly determined to obtain optimal nursing care even during the pandemic peak of March 2020. When asked, "in your opinion, how did the Covid-19 emergency it influence the team's spirit of cohesion?" the 75% replied that the pandemic has positively influenced the spirit of the team as the emergency has improved some weaknesses but not all of them have yet been addressed (graphic 1). During the pandemic, there was a need to strengthen nursing resources by drawing from operating theatres and other intensive wards. In the study, they were defined as "Novel nurses". It was interesting to see the different points of view between the "Veteran nurses" of the ward and the newcomers: for the Veterans it was quite tiring to teach the newcomers and for the Newbies it was difficult to learn in a time of crisis.



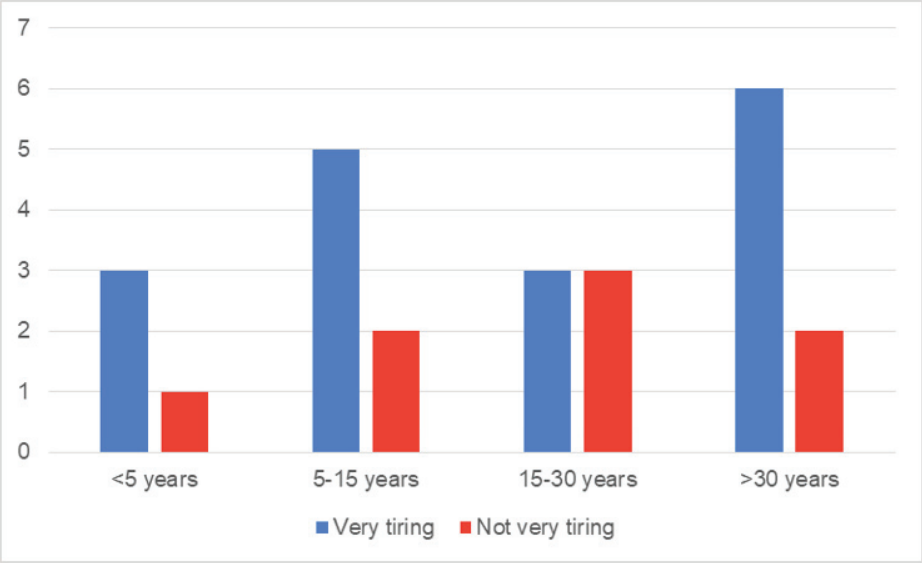
Graphic 1: *Influence of the pandemic on the team spirit.*

Discussion

There was an adhesion to the study of 72.2% on total nurses of the PACU/RR. What is interesting is that 53.8% of nurses who have presented service at the ward have more than 15 years of experience in the critical area in an intensive, sub-intensive or critical care setting. This proves to us that in order to face an emergency such as the one we are still experiencing, the aspect of clinical experience in intensive settings is fundamental to obtain an excellent outcome even in serious and unexpected situations [6], as nurses who work in critical area for many years seem to have greater skills than others do. This concept is consistent and supported by numerous literature. A recent article in the *Journal of Perianesthesia Nursing* highlights precisely how the nurses in the intensive area were fundamental in dealing with the Covid-19 emergency [7]. Thanks to perianesthesia nurses knowledge of advanced monitoring of the cardiorespiratory system and knowledge of respiratory management, including the use of invasive and non-invasive mechanical ventilation, the emergency management have been made possible.

The 83.3% of the interviewees replied that the pandemic has very positively influenced the sense of team. If we correlate this data with the years of clinical experience, we find that out of 6 new nurses, 80% who replied that the pandemic has positively influenced the team also has more than 15 years of experience, while the remaining 20% who responded negatively have less than 5 years of clinical experience. Out of 18 Veteran nurses, only 10% replied that the pandemic had no positive or negative effects on the spirit of cohesion. It can generally be said that the nurse with more experience who has already worked in PACU/RR had a much more serene approach than the new ones as they, the Veterans, could rely on the team formed over years of knowledge, while in the new nurses category there is correlation between experience and the feeling of team cohesion. It can reasonably be deduced that lack of experience can lead to being less sensitive to team play.

Analysing the physical emotional load that nurses had to face, it emerged that wearing multiple PPE, sometimes even stratified, together with fears related to the epidemiology and pathophysiology of the virus, the increase in working hours and the request for overtime, led to a great psychophysical impact putting a strain on PACU/RR nurses. The study found that perceived fatigue is totally independent of the years of experience and service, concluding that psychophysical stress is a direct consequence of the pandemic emergency regardless of everything else. (Graphic 2)



Graphic 2: *Correlation years of experience/effort during shift.*

The most frequently encountered fears among the staff were also investigated: the fear of being able to transmit the viral infection to loved ones, the fear of ending up in burnout and getting sick from Covid19 are the three most popular fears among the staff. They cannot be totally controlled, if not with the correct use of PPE, however, as fears are by definition irrational, they can sneak in and work below the conscience of the staff committed to taking care of others for a living. To tackle this problem, a listening channel was made available for medical-nursing staff in order to manage the consequences of "pandemic-care". In an article in the *International Journal of Nursing Studying*, he highlighted how this emergency combined with physical fatigue can actually affect the mental health of health workers working on the front line [8]. Ultimately, it is good to analyse the points of view of the two categories "Veterans" and "Newbies" on how difficult it was to adapt to the new emergency and on how the training and adaptation of the new nurses to help Veterans took place. For 66.7% of Veteran nurses it was difficult to teach new nurses, as they still had to train new nurses in a situation of continuous tension and instability, this is confirmed by 83.6% of new nurses who felt on average in the way of Veterans. From the analysis of this situation, it is clear that teaching and learning in a moment of emergency such as the pandemic to nurses, even those who are already highly specialized, is however very difficult and expensive, as well as essential for the optimization of resources. These considerations must be interpreted taking into account the limitations of the study: the size of the population investigated, the presence of few data compared to the behaviour of other Italian, European and world hospitals and the timing of administration and the consequent compilation that may have influenced, amplified or halved , the compiler's feeling about the events that happened.

Conclusion

The results indicate that, despite the heavy psycho-physical burden that nurses had to face, despite the increase in the workload (both in terms of care complexity and in the number of patients), PACU/RR nurses still maintained an excellent level of care provided and allowed the elective surgery in the Cattinara hospital to continue allowing the 74.7% of normal Post-operative Intensive Care and Recovery Room (Table 3). The ability to work as a team has made possible for the nurses to adapt to an agile behavioural metamorphosis to cope with a health emergency of unparalleled dimensions. In the face of all this, it is necessary to specify that such high standards have also been made possible by the structure of the structure: the PACU/RR was born as a General Intensive Care Unit and as such is equipped therefore for each workstation it is equipped with all the necessary equipment to deliver complex care.

It would be interesting to develop a future study that follows the evolution of the times with respect to the pandemic situation and how the team evolves to the need for events always involving the same population, or the study could be extended by comparing it with data, if available, of the others hospitals.

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References

1. Timeline of WHO's response to Covid-19. Accessed September 28, 2020.

	RR	PACU	Sedation preparation	PICC/ midline	Month total
January	535	47	45	62	689
February	532	47	21	68	668
March	388	51	30	30	499
April	275	54	18	25	372

2. ISTAT. SINTESI DEI PRINCIPALI RISULTATI. Flavia Riccard., et al. (2020). Epidemiological characteristics of COVID-19 cases in Italy and estimates of the reproductive numbers one month into the epidemic.
3. Esakandari H, Nabi-Afjadi M, Fakkari-Afjadi J, Farahmandian N, Miresmaeili S-M, Bahreini E. (2020). A comprehensive review of COVID-19 characteristics. Biol Proced Online. 22(1).
4. ASUGI. ASUGI – (2020). PIANO PANDEMICO PER IL CONTROLLO DELLA DIFFUSIONE DELL'INFEZIONE DA Covid -19 P.R.O. Protezione-Riserva Strategica-Organizzazione PIANO OPERATIVO ANNUALE SETTEMBRE 2020- SETTEMBRE 2021. Accessed October 9.
5. Scelsi S, Giusti GD, Romigi G, et al. (2020). Le raccomandazioni degli infermieri di Area Critica italiani sull' emergenza Coronavirus. Scenario. 2020;37(1):1-2. Accessed Novem.ber 10.
6. Stucky CH, De Jong MJ, Lowe AW, Mathews B. (2020). Covid-19: Initial Perioperative and Perianesthesia Nursing Response in a Military Medical Center. J Perianesthesia Nurs. 35(4):353-356.
7. Chen Q, Lan X, Zhao Z, et al. (2020). Role of Anesthesia Nurses in the Treatment and Management of Patients With COVID-19. J Perianesthesia Nurs. 35(5):453-456.
8. Fernandez R, Lord H, Halcomb E, et al. (2020). Implications for Covid-19: A systematic review of nurses' experiences of working in acute care hospital settings during a respiratory pandemic. Int J Nurs Stud. 111.