

# The impact of the alterations in caring for COVID-19 patients on Compassion Satisfaction and Compassion Fatigue in Italian nurses: a multi method study

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**Abstract.** *Background and aim of the work:* During COVID-19 first wave, healthcare professionals were exposed to a major psychological pressure related to uncertainty, a lack of therapies or a vaccine and shortages of healthcare resources. They developed higher levels of Burnout and Compassion Fatigue, and similar levels of Compassion Satisfaction. Aim is evaluating in Italian nurses Compassion Satisfaction and Compassion Fatigue and impacting individual and relational variables. *Methods:* A multi-methods approach was used. Qualitative data were collected through 2 focus group. Quantitative data were collected through a web survey composed by an ad hoc questionnaire developed from the focus group results, the Professional Quality of Life Scale-5 and the Resilience Scale. *Results:* In the qualitative phase 6 categories emerged. From the quantitative analysis the sample reported a moderate level of Compassion Satisfaction, a low level of Burnout and a moderate level of Secondary Traumatic Stress. Compassion Satisfaction had as predictors resilience ( $\beta = .501$ ), followed by feeling part of the team ( $\beta = .406$ ) and collaboration with colleagues ( $\beta = .386$ ). Secondary Traumatic Stress had as predictors the impact of PPE ( $\beta = .269$ ), and feeling Covid-related individual sufferance ( $\beta = .212$ ). The only predictor of Burnout was resilience ( $\beta = -.2195$ ). *Conclusions:* During COVID-19 first wave Italian nurses were exposed to a higher risk of Secondary Traumatic Stress, mainly impacted by frustration, loss of control, loss of possibility to properly care for patients, and personal threat. Relational and team support had a crucial role in sustaining Compassion Satisfaction. ([www.actabiomedica.it](http://www.actabiomedica.it))

**Keywords:** COVID-19, nurses, multi-method approach, compassion satisfaction, compassion fatigue, Italy

## Introduction

Coronavirus disease (COVID-19) is an infectious disease caused by a new virus (SARS-CoV-2), first isolated in December 2019 in Wuhan, China (1).

In Italy, as for the rest of the world, the evolution of the Covid-19 epidemic has been characterised by many phases of raise and decrease of the alert and pressure on the healthcare system (waves). Specifically, the first wave in Italy, from 20 February to the end of May 2020, was characterized by a very rapid spread of cases

and deaths, mainly in the North of the country, with an enormous pressure on the healthcare system and an objective difficulty in trying to manage this sudden and uncontrollable crisis. A total of 12.494.459 positive cases of COVID-19 were recorded from February 2020 to February 2022 in Italy (2).

The Pandemic situation changed everyone's work habits, especially for the healthcare professionals (3): they were at high risk of COVID-19 infection (4), long working hours, stress, anxiety, depression, sleep disturbance and burnout (5;6). During the first wave,

healthcare professionals were in a particularly delicate condition, as they were also exposed to a major psychological pressure related to uncertainty about the duration of the crisis, a lack of proven therapies or a vaccine and potential shortages of healthcare resources, including personal protective equipment (PPE) (7; 5). Particular attention was given to the mental well-being of nurses treating patients with COVID-19: frontline nurses were physically and psychologically challenged when committing themselves to providing high-quality nursing care for patients, presenting psychological symptoms as emotional exhaustion (8), stress, burnout, secondary trauma, anxiety, and depression with lower compassion satisfaction (9), irritability, insomnia, fear and anguish (10).

A qualitative study, showed that in healthcare professionals' mental adjustment to the sudden COVID-19 crisis, protective and risk factors could be identified at the personal history level, interpersonal level, and organizational level (11).

It was also underlined that the crisis may also influence the way healthcare professionals demonstrate caring and compassion (12). Social distancing and PPE made it difficult for nurses to use touch, whereas, gentle hand pressure was the most effective form of communication with dying patients (13). Compassion from the nurse perspective, was described as an effective communication of kindness, feeling of integration, building trust and verbal and non-verbal communication (14), and was directly connected with the concept of taking care (15).

So the existing literature suggested that Compassion Satisfaction (CS) and Compassion Fatigue (CF) could represent two crucial constructs in the assessment of healthcare professionals professional and mental wellbeing.

CS represented the positive aspect of being a healthcare professional, related to an empathetic attitude and inclination to take care of suffering patients (9). A higher level of CS protected from burnout (16), positively correlated with resilience (17) and positive affect (18), and improved nurses retention and quality indicators (19).

CF was defined as a decrease in empathic capacity caused by repeated exposure to the suffering of others (20), the progressive and cumulative outcome of pro-

longed, continuous, and intense contact with patients, and exposure to multidimensional stress leading to a compassion discomfort that exceeds nurse's endurance levels (21). CF was composed of two aspects: burnout (exhaustion, frustration, anger, and depression) and secondary trauma (negative feelings driven by fear and work-related trauma) (22). CF or secondary traumatic stress is the cost of caring for others or their emotional pain, resulting from the desire to relieve the suffering of others (23). CF was linked to the presence of anxiety and depression symptoms (24) and psychological distress (25), and had a negative impact on job satisfaction, the quality of patient care and retention within nursing (24).

The wide literature existing on CS and CF showed that the evaluation of these construct can be effective in the assessment of the professional quality of life as, in its turn, protective and risk factor for burnout syndrome. CS and CF were always measured using the Proqol scale (22), an open access tool validated in many languages and cultures that is able to finely assess CS as a unique construct and CF in its two sub components: burnout and secondary trauma stress (26)

The impact of CS and CF is important in the professional action of healthcare professionals: for instance, it is recognized that lower burnout and higher CS in nurses promoted hand hygiene behaviour, while high burnout was frequently associated with poor-quality care, including lower adherence to management guidelines, medical error, healthcare-associated infections (27). Compassionate health care resulted in increased patient satisfaction, higher levels of staff satisfaction and better health outcomes for patients (28; 29).

Healthcare professionals exposed to COVID-19 had a high risk of developing unfavourable mental health outcomes (30). Burnout and CF were high among all health professionals but especially in those working in environments where they were confronted daily with large numbers of people for whom the outcome is death; such was the case for those diagnosed with COVID-19 and requiring admission to emergency or intensive care units (31).

Literature review showed how during the first year of COVID-19 pandemic, healthcare professionals developed higher levels of burnout and CF, while having similar levels of CS (32). According to literature, the raise in CF levels seemed to be a central issue in overall pro-

fessional quality of life and wellbeing, and this turned to be particularly true facing the COVID-19 pandemic. It suggested that to reduce the risk of front-line nurses developing psychological problems including CF, burnout and vicarious trauma nurses should have been assisted when managing the competing care demands caused by increased acuity, increased patient numbers, clinical uncertainty and limited access to necessary equipment during emergency (33). Nonetheless, up to date literature widely testified the changes in CF and CS in nurses during COVID-19 and in particular during the first wave, while showing a gap in describing which individual and relational variables strictly linked to the pandemic condition could have worsen the levels of CF or, on the other side, supported and improved the levels of CS. Identifying these variables would help in the possibility to timely intervene in supporting help professionals preventing the onset of CF and strengthening CS.

## Aims

The aim of this study is to evaluate CS and CF in Italian nurses who were on the frontline during the COVID-19 first wave.

Moreover, we wanted to evaluate which individual and relational variables specific to the COVID-19 pandemic could impact CS and CF.

## Methods

Given that there are few contributions in the literature on the experience of Italian nurses with respect to the factors that influence their CS and CF and given the heterogeneous organization of services on the Italian territory during the emergency situation related to COVID-19, it was decided to adopt a qualitative-quantitative design model (multi-methods approach).

The multi-methods approach allows to study complex phenomena, helping to obtain full answers and increase the robustness of our understanding (34). Using multiple methods has the potential of gaining knowledge about different aspects of the phenomenon under study, and therefore, an overall better and more complete explanation (35).

In this study, the data collection strategy was sequential (36): qualitative and quantitative data were collected at different times, with a limited time span.

## Qualitative phase

### *Design*

The research project envisaged the collection of qualitative data through the focus group methodology (37).

### *Instruments and procedure*

2 focus groups were conducted on-line on two separate days within the same week, during May 2020 in Italy, and lasted 2 hours. Three researchers were present at both focus groups. One was the moderator, the other two were the observers and were responsible for videotaping and making notes regarding what took place in the online room.

Each focus group was guided by the same not-structured interview based on the study aims.

There were mainly three questions:

1. *What were the individual and / or group difficulties you encountered?*
2. *What resources, individual and / or group, have been adopted to address the aforementioned obstacles?*
3. *What were your feelings in the face of the effectiveness or ineffectiveness of the strategies adopted?*

Participants, together with an email invitation to participate in the study, were provided with information on the study and forms for informed consent. Participants read and signed the informed consent to the processing of personal data before participating in the focus groups, together with a short questionnaire to detect socio-demographic variables.

During the focus group, participants were asked to activate the video camera so that everyone could see everyone at the same time.

### *Participants*

A convenience sample of practicing clinical nurses who worked during COVID-19 pandemic were recruited at University Hospital of Parma (Italy)

and who declared to be available to participate in this study. The inclusion criteria were as follows:

- Having given informed consent to participate in the study.
- Having worked during the COVID-19 first wave in direct contact with COVID 19 patients admitted to Italian hospitals or residential care homes.

It was not taken into consideration to select participants on the basis of having worked in a particular department or structure.

A total of 13 nurses (3 male and 10 female) - on 22 who volunteered for this study - satisfied the criteria for participation. The age ranging from 25 to 50 years (mean age =34,6 years) The length of experience of working within a health service varied between 3 and 25 years (mean =10.1 years). The participants were from a variety of clinical area, and in particular: intensive care, neonatal intensive care unit, palliative care, home care, emergency medicine, residential care homes and other departments (diabetology, nephrology, orthopedics, gynecology, geriatrics).

### *Data analysis*

Focus groups discussions were video recorded, then transcribed verbatim and supplemented with field notes (38). Thematic analysis was used to extract themes from the focus group data. Two researchers have read each of the transcripts and independently assigned codes to identify distinct themes. Field notes were next added to the transcripts to augment the data. All authors were involved in the final analysis and identification of categories worth of being explored in the survey.

## **Quantitative phase**

### *Design*

We used a cross-sectional design in order to reach the aim of the study.

### *Sampling*

The sample was composed of Italian nurses who, between March 2020 and November 2020, worked

closely with patients diagnosed with COVID-19.

Inclusion criteria were:

- Reading and signing of the informed consent to the study
- Having worked in Emergency Health Service and Medical Emergency, Emergency Room, COVID-19 wards, residential care homes

Exclusion criteria were:

- Nurses having worked in hospitals or in the territorial services who did not have close contacts with reported COVID-19 patients

We recruited the sample with a convenience criterion.

Students from the Post graduate specializations in Nursing Science were asked to fill out the survey and then a snowball sampling procedure was activated.

Moreover, we tried to reach the most of nurses' population through the help of Italian professional associations AICM, ANIPIO, ANIARTI, SICP and AIIAO and through social media pages as "AICM Associazione Italiana Case Manager [Italian Association Case Manager]" and "INFERMIERE PROFESSIONISTA DELLA SALUTE [Nurse Health Professional]".

328 questionnaires have been compiled, of which have been deemed valid only 175 (dropout rate of 46%; N=153) due to not adherence to the inclusion criteria (detected through filter questions) and delivery of incomplete answers.

### *Instrument and procedure*

A web survey was conducted using Lime Survey.

The survey was composed by:

1. Study description, information on privacy and anonymity, and informed consent;
2. Filter question: profession and contact with reported COVID- 19 patients;
3. Anagraphic sheet: gender, age, study degree, professional experience, household condition, residence, ward, previous use of PPE;
4. Ad hoc questionnaire: it was developed from the focus group results: the themes emerged from the focus group were explored through 18 thematic items measured with a 5 or 7 points Lickert Scale response;

<b>Table1.</b> Qualitative themes and examples of the item created for the ad hoc questionnaire	
<b>Theme</b>	<b>Example of questionnaire item</b>
<b>COVID-19-related individual and personal suffering</b>	Thinking about your job, during the COVID-19 emergency, how much from 1 (not at all) to 5 (really much) these elements brought you suffering: <ul style="list-style-type: none"> <li>- Therapies uncertainty</li> <li>- Physical fatigue</li> <li>- Less contact with the patient</li> <li>- Fear of the virus</li> <li>- Fear of spreading the virus to family and friends</li> <li>- Witnessing numerous deaths</li> <li>- Impossibility to foresee the end of the pandemic</li> <li>- Healthcare organisation uncertainty</li> <li>- Being powerless in front of the virus</li> </ul>
<b>Sense of frustration in the changed relationship with patients and caregivers</b>	To what extent from 1 (not at all) to 5 (really much) these factors made you feel frustrated: <ul style="list-style-type: none"> <li>- Patients' loneliness</li> <li>- Not sharing decisions with patients and caregivers</li> <li>- Not being able to help colleagues</li> <li>- Not having enough help from colleagues</li> <li>- Working with colleagues not already known</li> <li>- Not having clear guidelines</li> <li>- Not having instrument to care for patients facing their death</li> <li>- Not having enough time to care for the patients</li> </ul>
<b>Use of technological devices and its impact on the communication with patients, families, and colleagues</b>	How much from 1(not at all) to 5(really much) you think that during isolation technological devices (smartphones, tablets) were useful in: <ul style="list-style-type: none"> <li>- Communicating with patients</li> <li>- Communicating with relatives</li> <li>- Communication between patients and families</li> <li>- Communication with other facilities/wards</li> <li>- Communication between colleagues</li> </ul>
<b>Perception of positive and negative impact of Personal Protective Equipment (PPE) in terms of: the alteration of the senses; the individual physical and psychological effects deriving from the use of PPE; the effects on caring and on the relationship with patients and colleagues</b>	In which direction from 1 (reducing) to 7 (improving) you feel PPE impacted: <ul style="list-style-type: none"> <li>- Intimacy in communicating with patients</li> <li>- Impatience towards patients</li> <li>- Impatience towards colleagues</li> <li>- Empathy towards patients</li> <li>- Empathy towards colleagues</li> <li>- Freedom of action in technical assistance</li> <li>- Freedom in meeting your needs</li> <li>- Feeling of protection</li> </ul>
<b>Perceived sense of resilience, the perceived personal efficacy in the communication, professional attitudes and of professionals' skills</b>	How much from 1 to 5 you felt effective in: <ul style="list-style-type: none"> <li>- Communicating with patients</li> <li>- Communicating with families</li> <li>- Communicating with your colleagues</li> <li>- Communicating with your family</li> <li>- Communicating with different professionals</li> <li>- Communicating with your chiefs</li> </ul>

5. The Italian Version (39) of the Professional Quality of Life Scale-5 (ProQOL-5): developed by Stamm (40) The scale is composed of 30 items corresponding to three sub-scales: CS, Burnout (BO) and Secondary Traumatic Stress (STS) which together compose the CF scale. Respondents were asked to indicate how often (1= never; 5 very often) during

the last 30 days, each item was experienced;  
 6. The Italian version (41) of Resilience Scale (RS-14; 42): a validate questionnaire assessing the level on individual resilience. The 7 points Likert scale ranges from 1 (strongly disagree) to 7 (strongly agree).

*Data analysis*

Data were prepared using Excel and analysed using SPSS 10. Frequencies, percentages and descriptive analysis were evaluated to describe the sample. Descriptive analysis was performed on all data, along with correlation using 2-tails Pearson correlation. To test the predictors of CS and CF (BO+STS) the regression analyses were performed for each of the constructs.

## Results

### Qualitative phase overview

The results of the focus groups made it possible to identify some issues relevant to the objective of the study, which were subsequently operationalized in items of a questionnaire created ad hoc (Table 1).

The most recurring themes, which emerged from the analysis of the focus groups - can be mainly aggregated into six categories, summarized below:

- 1) *The COVID-19-related individual and personal suffering;*
- 2) *The sense of frustration in the changed relationship with patients and caregivers;*
- 3) *The use of technological devices and their impact on the*

- communication with patients, families, and colleagues;*
- 4) *The perception of positive and negative impact of Personal Protective Equipment (PPE) in terms of: the alteration of the senses; the individual physical and psychological effects deriving from the use of PPE; the effects on caring and on the relationship with patients and colleagues;*
  - 5) *The perceived sense of resilience, the perceived personal efficacy in the communication, professional attitudes and of professionals' skills;*
  - 6) *The importance of relationship with the colleagues, the trust in the équipe and the feeling of being part of a team.*

### Quantitative phase

#### Sample characteristics

The final sample was composed by 175 nurses who worked in direct contact with COVID patients and the 90,9% (N=159) worked in a specific COVID-19 ward. The 53,1% of the sample (N=93) declared to have worked in the COVID-19 crisis in a mixed team composed by previous and new colleagues, while the 26% (N=47) worked with the pre-crisis team and the 20% (N=35) worked with a completely new team. The 65,7% (N=115) of the sample declared they had an increased feeling of being part of a team when compared to the pre-crisis condition. Other socio demographic characteristics of the sample are reported in Tab 2.

#### Descriptive Analysis

##### 1. Personal Protective Equipment impact (B2-B3-B4- B5)

We evaluated the impact of PPE on the and emerged that sense of smell was particularly decreased (M= 2,89; SD= 1,5) and taste was increased (M=3,38; SD=1,6). Also, considering PPE impact on professionals' perception towards the relationship with patients and professional performance emerged, that wearing PPE mostly reduced positive professional perception (M=3,72;DS= 1). It slightly raised the feeling of protection and safety (M=4,93; SD= 1,5), perceived empathy towards colleagues (M=4,56;SD= 1,6) and patients (M=

**Table 2.** Participants' demographic characteristics (N= 175)

Criterion	Sub-Criterion	N (%)
Age	20-30	53 (30,3)
	31-40	38 (21,7)
	41-50	55 (31,4)
	51-60	27 (15,4)
	>60	2 (1,1)
Gender	Male	24 (13,7)
	Female	151 (86,3)
Nursing professional experience (years)	< 5 yrs	54 (30,9)
	5-10 yrs	23 (13,1)
	11-20 yrs	41 (23,4)
	21-30 yrs	38 (21,7)
	> 30 yrs	19 (10,9)
Household condition	Alone	22 (12,6)
	With children/elders	94 (53,7)
	In couple	46 (26,3)
	With flatmates	13 (7,4)

4,a;SD=1,7) and reduced the perceived intimacy with patients (M=2,8;SD=1,7). We evaluated the negative impact of PPE on nurses' psychophysiological state and emerged that there was a moderately high overall impact (M= 3,6; SD= .72) and the higher unpleasant sensation was linked to heat (M=4,6; SD= .76). We evaluated the impact of being not recognisable because of PPE and emerged a moderately low impact (M= 2,7;DS=.72); in particular, being not recognizable seemed to create difficulties in the creation of an intimate communication with patients (M= 3,51;DS=1,2).

## 2. Collaboration (D1-D2)

We evaluated how nurses felt helped by their colleagues, it emerged a moderate overall perception of help received (M=3,5; SD= ,78). In particular, it was influenced by the perception of safety linked to the procedure of wearing together PPE (M= 4,1; SD=.99). Also, we evaluated the level and main areas of trust towards the whole work organization, it emerged that there was a moderate sense of overall trust (M= 3,2;SD=, 77) particularly linked to the existing trust within nurses (M=4; SD=,99).

## 3. Individual resources (E1-E2)

We evaluated how much nurses used their professional skills (technical, communicative and relational) during the crisis, and it emerged that there was a moderately high investment in the use of this competences (M=3,8;SD=,68), in particular for the Intraprofessional collaboration (M=4,17;SD=,92), Problem Solving (M=4,14; SD=,88), and Interprofessional collaboration (M=4,12;SD=,99). Moreover, we evaluated how much the use of technological devices impacted on the communication with patients, families, and colleagues and it emerged a moderately high overall impact (M=3,7;SD=,89) with a particular impact on the communication between patients and their relatives (M=4,39;SD=,92) and between professionals and families (M=4,2;SD= 1).

## 4. Psychological suffering (F1-F3)

We evaluated the level of reported frustration and it emerged a moderate level of overall frustration (M=3,4; SD=,6) with a particular impact derived

from patients perceived loneliness (M=4,3;SD=1), and from the reduced time of care given to the patients (M=4; SD=1,2). We also evaluated the level of individual suffering experienced and it emerged a high overall level of suffering (M=4;SD= ,6), in particular influenced by fearing of infecting relatives and families (M=4,4;SD=1), not seeing an end to the pandemic (M=4,3;SD=,91), feeling helplessness (M= 4,3;SD=,92), perceiving a lack of organisation in the healthcare system (M= 4,1;SD=1), and physical fatigue linked to the shifts organisation (M=4;SD=1,1).

## 5. Psychological resources (F2-F4)

We evaluated the perceived level of efficacy in the, it emerged a moderate perceived overall efficacy (M=3,4;SD=,7) with a higher impact was held by the efficacy in the communication between colleagues (M=3,9;SD=,8). We also evaluated the level of positive possibilities perceived by nurses during the crisis on a scale from 1 (not at all) to 5 (completely). It emerged a moderately high investment of positive attitude (M=3,9;SD=,8), particularly influenced by the higher value given to the collaboration within professionals (M=4,1;SD=,9).

## 6. ProQol 5

The whole sample reported a moderate level of CS (M=38,22; SD=6,5), a low level of Burnout (M=15,48; SD=4,7) and a moderate level of Secondary Traumatic Stress (M=23,43; SD=7,5). To evaluate the scale reliability in our sample, we computed Chronbach's alpha for each subscale. For the CS scale Chronbach's alpha was .87 (original one .88). For Burnout scale Chronbach's alpha was .71 (original one .75). For the Secondary Traumatic Stress scale Chronbach's alpha was .85 (original one .81).

## 7. Resilience

The whole sample reported a mean level of resilience (M=73,36; SD=13,1) which, according to the scale given interpretation, can be considered in between a moderately low level (65 to 73 points) and a moderate level (from 74 to 81 points). In this sample the scale Chronbach's alpha was .91

### Correlations

First of all, we wanted to verify the correlations among the subscales of ProQol 5.

The Pearson's correlation coefficients highlighted significant values almost all subscales. In particular the Burnout correlated negatively with CS ( $r = -.188$ ;  $p = .013$ ) and positively with Secondary Traumatic Stress ( $r = .765$ ;  $p = .001$ ). Instead, the CS did not correlate with Secondary Traumatic Stress ( $r = -.120$ ;  $p = .115$ ).

Secondly, we correlated these three subscales with the other variables.

Only the CS subscale correlated positively with the collaboration with colleagues ( $r = .328$ ;  $p = .001$ ), trust in colleagues ( $r = .351$ ;  $p = .001$ ), with the professional skills ( $r = .320$ ;  $p = .001$ ), with feeling part of the team ( $r = .223$ ;  $p = .003$ ) with the use of technological devices ( $r = .258$ ;  $p = .001$ ), with the perceived efficacy in the communication ( $r = .217$ ;  $p = .004$ ) and with the positive professional attitudes ( $r = .343$ ;  $p = .000$ ).

On the contrary, only the Secondary Traumatic Stress and the Burnout subscales correlated with the negative impact of PPE ( $r = .389$ ;  $p = .001$  and  $r = .273$ ;  $p = .001$  respectively), with sense of frustration ( $r = .345$ ;  $p = .001$ ;  $r = .279$ ;  $p = .001$  respectively) and with the individual suffering COVID-19-related experienced ( $r = .385$ ;  $p = .001$ ;  $r = .307$ ;  $p = .001$  respectively).

The resilience correlated positively with CS ( $r = .546$ ;  $p = .001$ ) and negatively with Secondary Traumatic Stress ( $r = -.216$ ;  $p = .004$ ) and Burnout ( $r = -.180$ ;  $p = .017$ ).

No other significant correlations were found.

### Linear Regressions

Finally, linear regression analysis made it possible to analyse which independent variables predicts the CF (Secondary Traumatic Stress; Burnout) and CS.

The Table 3 illustrates the predictors of CS subscale [ $F(11, 174) = 10.835$ ;  $p < .0001$ ].

The better predictor is the resilience ( $\beta = .501$ ), followed by feeling part of the team ( $\beta = .406$ ) and the collaboration with colleagues ( $\beta = .386$ ). No others significant values were found.

**Table 3.** The predictors of the CS (dependent variable): linear regression

Model	Standardized Coefficients Beta	t	Sig.
(Constant)		1.191	.236
Positive impact of PPE	.054	.868	.387
Negative impact of PPE	-.037	-.539	.590
Use of technological devices	.099	1.383	.169
Feeling part of the team	.406	2.536	<b>.012</b>
Collaboration with colleagues	.386	2.177	<b>.031</b>
Trust in colleagues	.149	1.794	.075
Sense of frustration	-.080	-1.046	.297
Covid-related individual suffering	-.101	-1.135	.258
Professional skills	.053	.693	.489
Efficacy in communication	.024	.350	.727
Professional attitudes	.041	.504	.615
Resilience	.501	7.891	<b>.000</b>

Table 4 illustrates the predictors of Secondary Traumatic Stress [ $F(11, 174) = 7.19$ ;  $p < .0001$ ].

The significant predictors were the collaboration with colleagues ( $\beta = -.485$ ), feeling part of the team ( $\beta = -.398$ ) the negative impact of PPE ( $\beta = .269$ ) and resilience ( $\beta = -.229$ ). They are followed by feeling Covid-related individual suffering ( $\beta = .212$ ), by the professional attitudes ( $\beta = -.187$ ), and by professional

**Table 4.** The predictors of the Secondary Traumatic Stress (dependent variable): linear regression

Model	Standardized Coefficients Beta	t	Sig.
(Constant)		.966	.335
Positive impact of PPE	-.001	-.008	.994
Negative impact of PPE	.269	3.593	<b>.000</b>
Use of technological devices	-.060	-.770	.443
Feeling part of the team	-.398	-2.298	<b>.023</b>
Collaboration with colleagues	-.485	-2.533	<b>.012</b>
Trust in colleagues	-.101	-1.127	.261
Sense of frustration	.152	1.848	.066
Covid-related individual suffering	.212	2.210	<b>.028</b>
Professional skills	-.186	-2.263	<b>.025</b>
Efficacy in communication	-.056	-.758	.450
Professional attitudes	-.187	-2.112	<b>.036</b>
Resilience	-.229	-3.333	<b>.001</b>



skills ( $\beta = -.186$ ). No others significant values were found.

Table 5 illustrates the predictors of Burnout [ $F(11, 174) = 3.532$ ;  $p < .0001$ ].

The only significant predictor is the resilience ( $\beta = -.2195$ ). No others significant values were found.

## Discussions

The purpose of this research was to investigate which individual and relational variables specifically emerged during the first COVID-19 pandemic wave impacted CS and CF in Italian nurses.

For this reason, focus groups were conducted, which helped to identify the risk and protective factors that played a role in the adjustment of nurses during the COVID-19 first wave.

The study was launched during the first wave, when we conducted the explorative focus groups and ended during the onset of the second wave in Italy. This gave us an unexpected point of view of the development of nurses' psychological state during the epidemic.

First, we had some interesting information on the variables which were rated as particularly impacting nurses profession during the COVID-19 first wave.

In the collected sample, among the 175 nurses who worked in direct contact with COVID patients, more than 90% worked in a specific COVID-19 ward. It's not surprising that these nurses showed a high level of sufferance, particularly related to fearing of infecting relatives and families, to not seeing an end to the pandemic, to feeling helplessness, to a lack of organisation in the healthcare system, and to physical fatigue linked to the shifts organisation, in line with previous research (5; 7). One of these studies, showed that during the peak of COVID-19 pandemic fear of infection, followed by death and dying of patients and work overload were the highest stressors (30).

In our study emerged a particular sense of frustration due to patients' perceived loneliness and to the reduced time of care given to them. This result aligned to previous literature showing how some healthcare professionals, particularly in busy settings, felt their duty of care to the patient as the most important thing and as a result, compromising also their adherence to infection prevention and control guidance (43).

Literature underlined how wearing PPE reduced the perception of nurses' professionalism and had a negative impact on their psychophysiological state: some healthcare professionals found it difficult to use masks and other equipment when it made patients feel isolated, frightened or stigmatised (43). Above all, being not recognizable seemed to create difficulties in the creation of an intimate communication with patients. Interpersonal contact was diminished by the necessity of using PPE, especially masks, which greatly reduced the ability to communicate with the nuances of non-verbal expression, and even interfered with healthcare professionals recognizing one another (44).

In our sample, wearing PPE wasn't a specific stressor, it mostly played a role in the perception of unity with the rest of the team. Regarding the perception of safety linked to PPE, nurses felt *"the dressing at the end with the colleagues became a sort of ritual, so we went together with those who had to go at the beginning of the shift, we helped each other in dressing: 'I'll close you, look here put a piece of scotch', that is we supported each other in this thing, both in entrance and in exit. And I appreciated this, in the sense that there was a good atmosphere with my colleagues"*. The collaboration with other professionals was linked also with the develop-

**Table 5.** The predictors of Burnout (dependent variable): linear regression

Model	Standardized Coefficients Beta	t	Sig.
(Constant)		2.122	.035
Positive impact of PPE	-.030	-.409	.683
Negative impact of PPE	.141	1.730	.086
Use of technological devices	-.020	-.237	.813
Feeling part of the team	-.358	-1.890	.061
Collaboration with colleagues	-.245	-1.169	.244
Trust in colleagues	-.033	-.336	.737
Sense of frustration	.127	1.411	.160
Covid-related individual sufferance	.140	1.329	.186
Professional skills	-.068	-.750	.454
Efficacy in communication	-.050	-.614	.540
Professional attitudes	-.113	-1.168	.245
Resilience	-.195	-2.596	.010

ment of a professional positive attitude. The participants showed to have trust in the team, and they felt an overall efficacy in the communication among colleagues, thanks also to the use of technological devices. The interprofessional collaboration seemed linked also with the extent to which nurses used their professional skills during the COVID-19 related crisis.

The second, important set of information we gathered from this study, was a closer look to the intertwining of the individual and relational variables and CS and CF.

While the Secondary Traumatic Stress and the Burnout subscales (CF) correlated with individual variables, like the negative impact of PPE, sense of frustration, and the individual sufferance as previous literature suggested (45), CS was positively associated with relational variables, such as collaboration with colleagues, trust in colleagues, and feeling part of the team. In fact, most of the participants declared they had an increased feeling of being part of a team when compared to the pre-crisis condition as they said *“this period we have changed coordinator and therefore we have rediscovered a lot as a team not having indications from above”*.

Furthermore, the regression analysis highlighted that Secondary Traumatic Stress, that had an average level, was influenced not only by individual factors (resilience, individual sufferance, professional attitudes and professional skills), but above all by relational factors, such as collaboration with colleagues and feeling part of the team. These last two factors, along with resilience, which was the absolute most significant predictor across all subscales, also emerged as predictors of the CS.

In this sample, moderate levels of CS emerged, low levels of Burnout and moderately high Secondary Traumatic Stress. It therefore seems that the experience of COVID-19 favoured the onset of traumatic responses more than chronic stress. This finding is well supported by previous studies on healthcare professionals during the SARS, Ebola epidemics and the A/H1N1 influenza pandemic which observed the occurrence of symptoms associated with post-traumatic stress (46; 47).

## Conclusions

What we gained from this study is a deeper insight on the impact COVID-19 first wave had on Italian nurses mental health. As we underlined they were exposed to a higher risk of Secondary Traumatic Stress, mainly caused by the feelings of frustration, loss of control, loss of possibility to properly care for their patients, and feeling of personal threat. On the other hand, we also found the crucial role of relational and team support in sustaining their CS.

These findings can be helpful in suggesting the specific support that could comfort nurses during a pandemic event. In fact, as we identified, these nurses seem to cope with a condition of trauma more than exhaustion, thus justifying how some psychological interventions aimed to reduce the impact of traumatic events (as EMDR), could be particularly effective (48; 49).

Of course, individual resilience played an important role in the possibility to preserve a constructive attitude during this crisis, but a crucial role was played by the team and the trust which arose between colleagues. This seemed to drastically change the perception of daily practice and seemed to act as a real external coping strategy as the said *“but everything a little bit improvised, I have to say that however at least there are quite good working groups, that yes, but from the top, indications or protocols nothing”*.

Of course, this study had several limitations, as the small sample of participants both in the qualitative and quantitative phase, the absence of a previous validation of the ad hoc questionnaire, the timing, which only framed COVID-19 first wave. Hence, it cannot give an exhaustive interpretation of the COVID-19 impact on Italian nurses mental health.

Nonetheless, it opens some interesting trajectories for future studies, as the multimethod approach that could help gathering precious information to shape protocols to handle healthcare crisis and to define the best support that could sustain nurses coping with this high intensity and risk situations.

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