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General

# Professional quality of life and psychopathological symptoms among first-line healthcare workers facing COVID-19 pandemic: an exploratory study in an Italian southern hospital

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## Background

The COVID-19 pandemic has significantly affected the mental health of healthcare workers, who have taken on the major problems triggered by the emergency. The mental consequences concern high levels of insomnia, anxiety, depression and burnout, which inevitably affect their professional quality of life too.

## Objective

The aim of this study was to analyze the relationship between psychopathological symptoms (tested with the Depression Anxiety Stress Scale, DASS-21) and professional quality of life (measured with the Professional Quality of Life Scale, ProQol) in a hospital of southern Italy.

## Methods

204 healthcare workers were recruited by non-probabilistic sampling and divided by age, gender, work roles (physicians, nurses and intermediate care technicians) and clinical departments (Cardio-medicine, Infectious Diseases, Emergency Medicine, First Aid, Obstetrics and Pneumology).

## Results

The results showed higher levels of Secondary Traumatic Stress, Depression, Anxiety and Stress in women than in men. Physicians and nurses experienced lower levels of Compassion Satisfaction but higher Burnout than intermediate care technicians; likewise, nurses were more anxious than physicians. The Emergency Medicine had higher scores in Compassion Satisfaction than Infectious Disease, Pneumology, Obstetrics and Cardio-Medicine.

## Conclusion

In light of what has been said so far, it appears essential to intervene on the first mild signs of Burnout and Secondary Traumatic Stress, because they precede the onset of Depression, Stress and Anxiety in healthcare workers.

## 1. INTRODUCTION

The COVID-19 pandemic represents one of the most challenging events of the recent history. The world population is facing dramatic changes in public behavior patterns, intended as habits and overall perception of daily risk.[1] In this scenario, the World Health Organization (WHO), in collaboration with international institutions, provided guide-

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lines on how healthcare should clinically manage COVID-19 cases, relying on the contribution of first-line professionals.[2]

Indeed, healthcare workers (HCWs) sustained most of the burden brought by the emergency. As reported by the Italian Istituto Superiore di Sanità, 16.991 of them have been infected and represented 10.7% of the overall cases.[3] According to Shaukat et al., the COVID-19 pandemic exposes HCWs to specific health risk factors, such as working in a high-risk department, having a diagnosed family member, keeping an inadequate hand hygiene or suboptimal hand hygiene before and after contact with patients, using personal protective equipment (PPE) improperly, maintaining a close contact with patients (⩾ 12 times/day) for long daily hours (⩾ 15 h) and reporting unprotected exposure.[4]

However, mental consequences are as severe as physical ones. HCWs have experienced high levels of insomnia, anxiety, depression, and distress, especially females and nurses.[4] Similar results have been reported by Şahin et al., who found out that female gender, being a nurse, working on the front line, having a history of psychiatric illness, and being tested for COVID-19 are risk factors for mental health problems.[5] In the Italian context, Rossi et al.[6] have found that younger age and female gender are associated with all the investigated outcomes - like anxiety, perceived stress, Post Traumatic Stress Syndrome (PTSS) and depression - except insomnia. In addition, general practitioners are more likely to develop PTSS than other HCWs, while nurses and healthcare assistants are more likely to suffer from severe insomnia. Having a colleague deceased is associated with PTSS and symptoms of depression and insomnia; having a colleague hospitalized is linked to PTSS and higher perceived stress; and having a colleague in quarantine is associated with PTSS, symptoms of depression and higher perceived stress. Moreover, being exposed to contagion is connected to symptoms of depression. Di Tella et al.[7] found out that HCWs facing COVID-19 wards were more likely to suffer from depressive symptoms and PTSS. Moreover, being female and not in a relationship were associated with higher levels of depression, while being female and older were antecedents of higher levels of PTSS. In a multicenter Italian study involving neonatal HCWs with direct or indirect exposure to COVID-19, 91% of participants reported clinically relevant scores for anxiety, 29% for posttraumatic symptoms, 13% for burnout and 3% for depressive symptoms, with nurses reporting higher levels of anxiety than physicians.[8] A similar finding was described by Barello et al., who collected data on the psychological status of first-line HCWs finding out that nurses and females experienced more symptoms than physicians and males respectively.[9] To sum up, the psychological response of the Italian HCWs seems to be in line with that found out by international meta-analyses and meta-regressions, which individuated a higher prevalence of anxiety, depression and stress among the health professionals facing directly the COVID-19 pandemic.[10,11]

Those clinical data leave no doubts on the severe psychological consequences left on HCWs, which influenced their professional quality of life too. Indeed, burnout is increasing worldwide among healthcare staff, which develops long-term mental symptoms caused by work-related stress.[12] In this scenario, according to recent evidence, the negative impact of COVID-19 emergency on the professional wellbeing can be effectively mitigated by organization-directed interventions built on specific contexts.[13] In this view, it is important to thoroughly explore the health consequences registered in health institutions, in order to obtain a detailed risk profile and to support interventional plans.

The aim of the present research was to investigate the relationship between psychopathological symptoms and professional quality of life among the staff of an Italian southern hospital facing the COVID-19 emergency. This medical center hosted about 200 beds for COVID-19 patients and was one of the regional points of reference for the management of the pandemic from its very beginning. A multidisciplinary health staff worked to ensure a complete assistance of patients (physicians, nurses, intermediate care technicians, psychologists and so on). In our vision, it was important to explore the emotional and professional responses of HCWs to the emergency in this specific venue, as the literature – at the best of our knowledge – is poor of works conducted specifically in a COVID-19 first-line hospital of southern Italy. Therefore, our main goals were: 1) to measure Compassion Satisfaction, Burnout and Secondary Traumatic Stress as indicators of the professional quality of life of HCWs; 2) to measure Depression, Anxiety and Stress of HCWs as indicators of their psychopathological status; 3) to investigate the relationship between the previous constructs for supporting specific interventional plans for the promotion of mental health.

## 2. MATERIALS AND METHODS

### 2.1. ETHICAL CONSIDERATIONS

The study was designed in full compliance with the Declaration of Helsinki. Each participant signed a written informed consent before starting the collection of data. The informed consent included the reasons for the study, responsibilities and information about data use, anonymity, and data protection clause. The questionnaires were fully anonymous and were uniquely identified via alphanumerical codes. The study was authorized by the Internal Ethic Review Board of Psychological Research (IERB) of the Department of Educational Sciences of the University of Catania, with protocol number *Ierb-Edunict-2022.10.14/1*.

### 2.2. PARTICIPANTS

The initial sample included 246 HCWs, recruited by non-probabilistic sampling. As a criterion of inclusion, they had to work with COVID-19 patients. Because of incomplete data, 42 participants were eliminated. The final sample consisted of 119 women (58.3%) and 85 men (41.7%), whose mean age was about 42 years (M = 42.73, SD = 11.643, minimum = 22, maximum = 67). They worked as physicians

(19.1%), nurses (60.8%) and intermediate care technicians (ICTs, 20.1%).

The sample worked in an Italian southern hospital facing the COVID-19 pandemic, and it was distributed in different clinical departments where COVID-19 patients were hospitalized: Cardio-Medicine (8.8%), Infectious Diseases (22.1%), Urgency Medicine (14.7%), First Aid (22.5%), Obstetrics (16.7%) and Pneumology (15.2%).

### 2.3. PSYCHOMETRIC TOOLS

The following demographic variables were recorded for each participant: gender, age, work role and clinical department. Moreover, information on professional quality of life and psychopathological symptoms were collected.

More in detail, the fifth version of the Professional Quality of Life Scale (ProQol)[14,15] was used for the evaluation of the Professional Quality of Life. ProQol evaluates two aspects of the professional quality of life: Compassion Satisfaction (CS) and Compassion Fatigue (CF), which is, in turn, subdivided into Burnout (B) and Secondary Traumatic Stress (STS). According to the manual,[16] Compassion Satisfaction is defined as the pleasure of working well and contributing to the good of work setting. Compassion Fatigue is related to the negative aspects of professional quality of life, characterized by exhaustion, anger and frustration typical of Burnout, and by the work-related secondary exposure to people who experienced very stressful events, known as Secondary Traumatic Stress. ProQol is made up of 30 items evaluated on a 5-point Likert scale, from 1 (never) to 5 (very often). Therefore, the scores for each dimension (CS, B and STS) range from 10 to 50, where low levels are indicated by scores below 22, and high levels are indicated by scores above 42. In our study, we obtained satisfactory indexes of Cronbach Alpha: Alpha CS = 0.72; Alpha B = 0.79; Alpha STS = 0.87.

Depression Anxiety Stress Scale Short Version (DASS-21)[17,18] was administered for the evaluation of psychopathological symptoms. DASS-21 explores the constructs of Depression (D, e.g. "Life seemed meaningless"), Anxiety (A, e.g. "I felt panic") and Stress (S, e.g. "I found it difficult to calm down") represented by 7 items each. Consequently, it consists of 21 items measured by a 4-point Likert scale referring to how much each statement can be applied to the past week (from 1 = "Did not apply to me at all", to 4 = "Applied to me very much or most of the time"). Scores on the DASS-21 need to be multiplied by two before interpretation, which should be conducted according to the following norms: scores for normal Depression range from 0 to 9, for normal Anxiety from 0 to 7 and for normal Stress from 0 to 14; scores for mild Depression range from 10 to 13, for mild Anxiety from 8 to 9 and for mild Stress from 15 to 18; scores for moderate Depression range from 14 to 20, for moderate Anxiety from 10 to 14 and for moderate Stress from 19 to 25; scores for severe Depression range from 21 to 27, for severe Anxiety from 15 to 19 and for severe Stress from 26 to 33; scores for extremely severe Depression are equal or above 27, for extremely severe Anxiety are equal or above 20 and for extremely severe Stress are equal or above 34. Even in this case, in our study we obtained good indexes of Cronbach Alpha: Alpha D = 0.88; Alpha A = 0.77; Alpha S = 0.91.

### 2.4. PROCEDURE

During the lockdown period of the second wave of contagions in Italy, data were collected by administering the psychometric tools from 10/12/2020 to 20/05/2021 to HCWs.

Their administration was carried out in a single session using the paper-pencil method, and the completion took about 20 minutes.

### 2.5. DATA ANALYSIS

Analyses were conducted by using the statistical program SPSS 27. Descriptive statistics were calculated on the constructs under examination. Differences between groups were analyzed by using t test for independent groups and one-way ANOVA according to how many groups were compared. Post-hoc Fisher's Least Significant Difference test was used to deepen the findings. Finally, Pearson correlations were used to investigate the relationships between age, ProQol and DASS-21, and Multiple Linear Regressions were calculated to identify the antecedents of the emotional condition of HCWs.

## 3. RESULTS

### 3.1. DESCRIPTIVE STATISTICS

Descriptive analyses (Tab. 1) conducted on the ProQol showed nearly high mean scores on the CS scale (M = 41.88, SD = 5.439). Mean scores on the B (M = 20.35, SD = 4.819) and STS scales (M = 19.66, SD = 5.763), instead, were close to the risk threshold. Regarding the DASS-21, mean scores of the Depression (M = 3.24, SD = 2.817), Anxiety (M = 2.81, SD = 2.631) and Stress (M = 5.53, SD = 3.325) scales were not clinically relevant.

### 3.2. DIFFERENCES BETWEEN GROUPS

We wanted to investigate how gender, work role and clinical department groups differed in Professional Quality of Life and psychopathological symptoms.

According to the t test for independent groups, women showed significant higher levels of Secondary Traumatic Stress (STS = 20.93; t = - 3.852, p < .01, Cohen's d = - 0.55) than men (STS = 17.88). No gender differences were found in Burnout and Compassion Satisfaction levels. Moreover, women were significantly more depressed (D = 3.69; t = - 2.735, p < .01, Cohen's d = - 0.39), anxious (A = 3.3; t = - 3.244, p < .01, Cohen's d = - 0.46) and stressed (S = 5.97; t = - 2.243, p < .05, Cohen's d = - 0.32) than men (D = 2.61, A = 2.12, S = 4.92).

Considering the work role, one-way ANOVA analysis highlighted significant differences in Compassion Satisfaction (F = 4.127, p < .05, $\eta 2$ = 0.04), Burnout (F = 7.699, p < .01, $\eta 2$ = 0.07) and Anxiety (F = 3.381, p < .05, $\eta 2$ = 0.03) levels between professional groups. In more detail, according to post-hoc Fisher's Least Significant Difference (LSD) procedure, physicians (CS = 40.87, p < .05) and nurses

**Table 1. Descriptive statistics of ProQol and DASS-21**

| Construct | Mean | SD | Minimum | Maximum |
|---|---|---|---|---|
| *CS* | 41.88 | 5.439 | 23 | 50 |
| *B* | 20.35 | 4.819 | 10 | 37 |
| *STS* | 19.66 | 5.763 | 10 | 40 |
| *D* | 3.24 | 2.817 | 0 | 15 |
| *A* | 2.81 | 2.631 | 0 | 15 |
| *S* | 5.53 | 3.325 | 0 | 18 |

*CS: Compassion Satisfaction; B: Burnout; STS: Secondary Traumatic Stress; D: Depression; A: Anxiety; S: Stress.*

(CS = 41.51, p < .05) experienced significant lower levels of Compassion Satisfaction than ICTs (CS = 43.98). Moreover, physicians (B = 22.13, p < .01) and nurses (B = 20.53, p < .01) showed significant higher levels of Burnout than ICTs (B = 18.1). In both cases, no significant differences were found between physicians and nurses. nurses, in turn, reached significant higher levels of Anxiety (A = 3.11) than physicians (A = 1.87, p < .05). No significant differences were found between nurses and ICTs, and physicians and ICTs.

Finally, considering the clinical departments with the same statistical procedure, it emerged a significant difference between groups (F = 2.737, p < .05, η2 = 0.07) in Compassion Satisfaction construct: Urgency Medicine showed significant lower levels of Compassion Satisfaction (CS = 39.2) than Infectious Diseases (CS = 42.16, p < .05), Pneumology (CS = 42.16, p < .05), Obstetrics (CS = 43.35, p < .01) and Cardio-Medicine (CS = 43.94, p <.01). No significant differences were found between Urgency Medicine and First Aid.

### 3.3. CORRELATIONS

Pearson correlations (Tab. 2) were calculated to investigate the relationship between age and psychometric tools' mean scores. Furthermore, Pearson correlations between ProQol and DASS-21 were conducted.

Results showed that age was positively correlated with Depression scores (r = 0.156, p < .05). No other significant relationships involving age were found. Compassion Satisfaction was negatively correlated with Depression (r = - 0.268, p < .01), Anxiety (r = - 0.165, p < .05) and Stress (r = - 0.291, p < .01). Burnout, instead, was positively correlated with Depression (r = 0.474, p < .01), Anxiety (r = 0.373, p < .01) and Stress (r = 0.486, p < .01). Further significant correlations emerged between Secondary Traumatic Stress and Depression (r = 0.45, p < .01), Anxiety (r = 0.529, p < .01) and Stress (r = 0.519, p < .01).

### 3.4. MULTIPLE LINEAR REGRESSIONS

Taking into account the above correlations, we further verified the existence of any antecedents between the dimensions studied (Tab. 3). More in detail, we tested the role played by Compassion Satisfaction, Burnout and Secondary Traumatic Stress on Depression, Anxiety and Stress.

Compassion Satisfaction was a significant antecedent of Depression (β = - 0.268, p < .01), Anxiety (β = - 0.165, p < .01) and Stress (β = - 0.291, p < .01). Burnout was an antecedent of Depression (β = 0.474, p < .01), Anxiety (β = 0.373, p < .01) and Stress (β = 0.486, p < .01) levels. Secondary Traumatic Stress was an antecedent of Depression (β = 0.45, p < .01), Anxiety (β = 0.529, p < .01) and Stress (β = 0.519, p < .01) levels.

**Table 2. Pearson correlations among Age, ProQol and DASS-21**

| | D | A | S |
|---|---|---|---|
| **Age** | 0.156* | 0.078 | 0.054 |
| **CS** | - 0.268** | - 0.165* | - 0.291* |
| **B** | 0.474** | 0.373** | 0.486** |
| **STS** | 0.45** | 0.529** | 0.519** |

*CS: Compassion Satisfaction; B: Burnout; STS: Secondary Traumatic Stress; D: Depression; A: Anxiety; S: Stress.*
* p < .05
** p < .01

**Table 3. Multiple linear regression of ProQol on DASS-21**

| Predictor | Dependent variable | β | p |
|---|---|---|---|
| *CS* | D | - 0.268 | < .01 |
| | A | - 0.165 | < .05 |
| | S | - 0.291 | < .01 |
| *B* | D | 0.474 | < .01 |
| | A | 0.373 | < .01 |
| | S | 0.486 | < .01 |
| *STS* | D | 0.45 | < .01 |
| | A | 0.529 | < .01 |
| | S | 0.519 | < .01 |

*CS: Compassion Satisfaction; B: Burnout; STS: Secondary Traumatic Stress; D: Depression; A: Anxiety; S: Stress.*

## 4. DISCUSSION

The aim of this paper was to investigate the relationship between Professional Quality of Life and psychopathological symptoms related to Depression, Anxiety and Stress, among HCWs of a southern Italy hospital facing the

COVID-19 emergency. ProQol and DASS-21 psychometric tools were used for this goal.

Overall, the staff enrolled in the study showed adequate levels of Compassion Satisfaction and subclinical symptoms of Depression, Anxiety and Stress. This means that HCWs felt to work productively for the wellbeing of the hospital organization with a positive impact on mental health. However, the mean scores reached in the constructs of Burnout and Secondary Traumatic Stress were risky close to the attention threshold, which in some cases was even overcome according to the Standard Deviation values.

For this reason, group differences were considered. Women appeared to be more depressed, anxious, and stressed than men and also showed higher levels of Secondary Traumatic Stress. These results are in line with those of several authors who carried out similar research in their countries, pointing out that female gender is a significant predictor for the onset of symptoms such as anxiety, stress, depression, and general distress, especially among female HCWs who deals with COVID-19 pandemic.[19,20] This can be explained by the literature, which highlights that, at baseline, women are more vulnerable to developing psychological symptoms such as anxiety, stress, depression, and post-traumatic stress disorder.[21] In particular, the pandemic context has exacerbated this gender gap, which is likely due to hormonal and genetic factors, social inequality factors or factors that have led women to experience lockdown and isolation worse than men; moreover, it appears that coping strategies and resilience do not affect this gap.[22]

Regarding the differences between work roles, results highlighted that physicians and nurses experienced lower levels of Compassion Satisfaction and higher levels of Burnout than ICTs, which instead showed higher scores in Compassion Satisfaction. From physicians' point of view, those findings could be explained by the important ethical decisions taken during the pandemic, often without any previous specific preparation, such as giving priority to some patients over others or lacking sufficient resources to cope with the disease. This could have caused emotional exhaustion and a reduction of the feeling to do one's job well. However, when considering nurses too, our results were different from the studies conducted by Ruiz-Fernández and colleagues, in which nurses achieved higher levels of Compassion Satisfaction and physicians higher scores in Compassion Fatigue.[23]

Moreover, it was found that nurses reported higher Anxiety levels than physicians, in line with the results of the available literature[4,20]; it seems, indeed, that nurses suffer from more nervousness, anxiety and insomnia than other healthcare professionals.[6,20,24] In this scenario, Cai et al.[24] found that among the factors allowing a reduction of stress, the most important are family safety, specific corrective guidelines, effective safeguards for disease prevention and positive attitudes towards colleagues. One of the solutions proposed to overcome strong periods of stress – like the COVID-19 pandemic – consists in structuring multidisciplinary teams and administrating screening questionnaires for improving prevention strategies.[25]

According to the differences between the clinical departments, it was found that the lowest levels of Compassion Satisfaction were reached in the Urgency Medicine unit. This means that HCWs felt less capable of doing their job well in that department. This suggests, therefore, that an organizational-oriented psychological intervention within that hospital should pay particular attention to the Urgency Medicine group to support HCWs confidence and satisfaction in the performance of their duties.

Pearson's correlations showed that the higher the age was, the more intense the depressive symptoms were. This result differs in part from those reported by the work of Lai and colleagues,[20] who showed that younger medical staff (less than 30 years old) appears to have higher self-rated depression scores than older colleagues (from 30 years onwards), although the difference was not statistically significant. In this regard, Cai[24] attempted to explain these data by highlighting that younger HCWs showed a strong concern about infecting their families, while older staff perceived greater levels of stress due to prolonged hours of work and to the lack of safety devices for individual protection.[26]

Linear regression analysis demonstrated that the ProQol dimensions were antecedents of all the DASS-21 constructs; this means that low levels of Compassion Satisfaction and high levels of Burnout and Secondary Traumatic Stress could be considered as risk factors for the onset of Depression, Anxiety and Stress in HCWs facing COVID-19 pandemic. These data are in line with the study by Darias Sanchez,[27] who pointed out that the constructs of Burnout and Compassion Fatigue are the main antecedents for the development of affective symptomatology and, therefore, of depression. For this reason, prevention strategies should address Professional Quality of Life, as it is directly connected to mental health of workers. With this aim, different strategies have been suggested, such as the development of a better understanding of physiological, cognitive, emotional, and behavioral consequences of actions on the individual,[28] or better practical organizations providing greater support, more complete reorganization, precise redistribution of tasks, temporary transfers, and rotations.[29] Other authors, moreover, proposed interventions based on resilience and mindfulness, as it seems a protective factor against Burnout, stressful events, Compassion Fatigue and Secondary Traumatic Stress in HCWs.[30-33] In more detail, Coco et al. found out that stress and anxiety inversely correlated with emotional stability and – with regard to resilience – with the perception of future and self-perception in Italian HCWs facing COVID-19 emergency.[34] Those findings can be taken into account in interventions based on positive psychology approaches. Those findings can be taken into account in interventions based on positive psychology approaches,[35,36] which are of critical importance given the transversal dramatic effects carried out by COVID-19 pandemic.[37,38]

### 4.1. LIMITATIONS

This study suffers from some limitations that must be disclosed. First of all, the cross-sectional methodology of the

research does not allow to speculate on causal relationships between the constructs. The self-report nature of measures must be also highlighted, so our data should be considered as mediated by the personal response style of participants. Moreover, the sampling procedure, the size of the sample and the specific work context of the participants do not allow a reliable generalization of results to all Italian HCWs. This means that our findings should be considered as related to their venue of collection and specifically useful for projecting organization-directed interventions.

## 5. CONCLUSIONS

Our research intended to contribute to the psychological support and the professional quality of life of HCWs facing COVID-19 pandemic. Indeed, this study ranks among the first ones referred to the context of southern Italy with the objective of obtaining a detailed risk profile for supporting specific intervention plans. It is known, in fact, that the relationship between the professional quality of life of health workers and psychopathological symptoms has been extensively investigated throughout the Italian peninsula, but little or nothing is told by the research conducted in southern Italy (and in Sicily, in particular). In addition, this is the first research that takes into consideration the division of health workers into clinical departments (Cardio-Medicine, Infectious Diseases, Emergency Medicine, First Aid, Obstetrics and Pneumology). Consequently, we were able to define the ward that needed a specific prevention or intervention program aimed at reducing psychopathological symptoms.

From this point of view, even if the literature suggests various useful general strategies for approaching the difficulties experienced by HCWs every day, the best operative option is represented by interventions that are tailored on specific health organizations.

In the present case, in fact, it appears important to address the first mild signs of Burnout and Secondary Traumatic Stress as they predict the onset of Depression, Anxiety and Stress. In more detail, older women, nurses and physicians should be carefully supported, as well as the personnel working at the Urgency Medicine department.

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AUTHOR’S CONTRIBUTION

Study design, S. V.; manuscript writing, S. V., C. S. G., G. A. P., S. C. and C. P.; methodology, C. S. G., G. A. P., S. C. and C. P.; data collection, C. N., F. I., E. G., M. P., C. P., D. R., G. F. and M. C.; data analysis, S. V., C. N., F. I., E. G., M. P., C. P., D. R., G. F. and M. C.; writing-review and editing, S. D. N., P. C., S. C. and C. P.; supervision, S. D. N. and P. C.

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