

## DIFFERENCES IN DISTRESS AND COPING WITH THE COVID-19 STRESSOR IN NURSES AND PHYSICIANS

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### SUMMARY

**Background:** Since the declaration of the coronavirus 2019 (COVID-19) outbreak as pandemic, health workers have shown an incredible commitment to their patients, sometimes in apocalyptic conditions. We explored ways to deal with the coronavirus stressor and psychological outcomes among physicians and nurses.

**Subjects and methods:** 124 healthcare workers in General Hospital Našice (Croatia) were invited to participate in a study by performing within the period of March 26 to April 6 2020 questionnaire collected information on socio-demographic characteristics and living conditions that may be risk factors for covid-19 concern, Short form health survey-36, Depression Anxiety Stress Scales (DASS-21) and Ways of Coping Questionnaire (WOC; consisting of 8 subscales: Confrontive Coping, Distancing, Self-Controlling, Seeking Social Support, Accepting Responsibility, Escape-Avoidance, Planful Problem Solving, Positive Reappraisal).

**Results:** 11% healthworkers reports moderate to very-severe depression, 17% moderate to extremely-severe anxiety and 10% for moderate to extremely-severe stress. 67% of medical staff are worried. No statistically significant differences in the scales of depression, anxiety, and stress were found between nurses and physicians, but differences were found on Escape-Avoidance and Positive Reappraisal subscales. Nurses use significantly more avoiding coping style and positive reappraisal than doctors. Seeking social support is more pronounced in those over 40 years old, while those under 40 use more avoidable stress management techniques.

**Conclusions:** Monitoring and ensuring the mental health of coronavirus care staff is crucial for global health. The education of medical staff in the field of stress management is a conditio sine qua non of the issue of an adequate relationship with the COVID-19 pandemic.

**Key words:** COVID-19 Pandemic - general hospital - risk faktor - mental health - adaptive behavior

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### INTRODUCTION

COVID-19 Pandemic is a major crisis affecting all nations (Rajkumar 2020) and represents very complex events with medical, social, political, economic, religious, cultural and civilizational consequences (Jakovljevic 2020). Healthworkers during koronavirus pandemia have shown an incredible commitment to their patients, sometimes in apocalyptic conditions (Jakovljevic et al. 2020). All healthcare workers, doctors, nurses are overwhelmed (Jakovljevic 2020) because of many reasons: long working hours, enornes pressure, including a high risk of infection, shortages of protective equipment, frustration, discrimination, loneliness, physical fatigue and separation from families and exhaustion (Kang et al. 2020). Also healthworkers treating persons who are struggling with fear and uncertainty related to the pandemic, persons not physically ill but quarantined or in self-isolation at home even ih they not infected with coronavirus (Jakovljevic 2020).

Unfortunately, the effects of the coronavirus on mental health have not yet been enough systematically studied (Jakovljevic et al. 2020, Rajkumar 2020) especially on medical stuff in Western Europe. Kang et

al. (2020) emphasizes that hospital working conditions can cause mental problems like stress, anxiety, depressive symptoms, insomnia, denial, anger and fear. Xiao et al. 2020. reports that medical staff treating patients with COVID-19 manifested anxiety which was associated with stress and reduced sleep quality. Distress and traumatic experience, over-reactions and maladaptive defence mechanisms (Marcinko et al. 2020) which differ from person to person may trigger anxiety and depressive disorders, post-traumatic stress disorder etc. According to Zhou et al. (2020) mental health status of medical staff is worse then the general population and additionally reports have concluded that countermeasures for psychological pressure positively influence psychological health and that positive coping strategies can be even more helpful. Studies have indicated that from 23 do 47% of medical staff in China have depression (Zhou et al. 2020). Guo et al. (2020) found that about 5% healthcare workers reported middle and high level of anxiety and 13.47% middle and high levels of depression. Nurses, frontline medical staff and younger medical staff were more likely to have anxiety and depression than physicians, non-frontline medical staff and older medical staff respectively. Most general

hospital in Wuhan (China) have established a shift system to allow front line medical workers to rest and to take turn in high-pressured roles. Liaisons psychiatrists in these difficult times of crisis have an essential role to help healthcare workers with numerous demanding working conditions (Jakovljevic 2020).

In order to better protect the population of Croatia from COVID-19 it was necessary to reorganization of work and space in hospitals according to the instructions of the Crisis Staff of the Ministry of Health. Also, the hospital management makes decisions about the necessary provision of psychological support to the hospital staff. Support included the distribution of educational materials on coping with stress, daily monitoring of the emotional status of employees using the so-called emotional barometer, individual psychological work with workers in high stress, psychological support to COVID-19 patients and staff in self-isolation. The beginnings of the pandemic were shrouded in threat of uncertainty and we decided to conduct research that could shed light on some of these enigmas. Recognizing thoughts and actions that an individual does in dealing with a specific stressful event that has frightened the whole planet for an entire period has been at the center of our exploratory curiosity.

Considering all the above, the goals of this study is to determine the degree of concern about the COVID-19 Pandemic and degree of distress, anxiety and depression in hospital workers and the ways in which hospital workers coped with stress in a specific hospital work organization during a general national coronavirus threat. We expected to determine the existence of psychological discrepancy in the mental health of hospital workers due to coronavirus exposure and that greater discrepancy will be found in those workers with personal risk factors such as poorer health, chronic illness, family member over 60, use of pressure medications, greater involvement social networks, healthy lifestyle, parenting of minor children, declared view of life, religious practice, experience with panic attack, general life satisfaction. We also expected that nurses compared to hospital physicians would manifest more pronounced psychological reactions of anxiety, distress, and depression as they were exposed to greater direct contact with coronavirus patients.

## SUBJECTS AND METHODS

Ethical approval was obtained by the Hospital ethics committee on 25<sup>th</sup> March 2020. The data collection was organized during period of 26<sup>th</sup> March do 6<sup>th</sup> April 2020. All participants, there were a 124 total of them, gave their informed consent and group administration of anonymous questionnaires was 20 minutes long and was performed at the end of work shift. They fulfilled first *Short form health survey-36 (SF-36)* who is a measure of health status. We choose only sections witch measure

general health perceptions, vitality and emotional role functioning (Russel et al. 2003). Secondly they fulfilled general demographic data including personal risk factors for heightened concern about covid-19 (age, education level, department where they work, concern about the COVID-19 Pandemic chronic illness, family member over 60, use of pressure medications, greater involvement social networks, parenting of minor children, declared view of life, religious practise, experience with panic attack, general life satisfaction). The third instrument was *Depression Anxiety Stress Scales (DASS-21)* who is well-established instrument to measure symptoms of depression, anxiety and stress in both clinical and non-clinical samples of adults (Antony et al. 1998). Finally they answerd on *Ways of Coping Questionnaire (WOC)*, 66-item questionnaire that measures coping as a proces. Participants task is to report the frequency of their cognitive and behavioural strategies used when confronting a stressful situation in the previous week on a 4-point scale when zero (0) means „not used“ to three (3) means „used a great deal“. It comprises 8 different ways of coping including Confrontive Coping (6 items, Cronbach  $\alpha = 0.70$ ), Distancing (6 items, Cronbach  $\alpha = 0.61$ ), Self-Controlling (7 items, Cronbach  $\alpha = 0.70$ ), Seeking Social Support (6 items, Cronbach  $\alpha = 0.76$ ), Accepting Responsibility (4 items, Cronbach  $\alpha = 0.66$ ), Escape-Avoidance (8 items, Cronbach  $\alpha = 0.72$ ), Planful Problem Solving (6 items, Cronbach  $\alpha = 0.68$ ), and Positive Reappraisal (7 items, Cronbach  $\alpha = 0.79$ ). Score on each scale is calculated as a composite score of specific items (Falkman & Lazarus 2013). Internal consistency coefficient Cronbach  $\alpha$  of the scales in the current study was in a range from 0.606 to 0.801.

## Statistical Analysis

Data analysis was performed using IBM SPSS Statistics for Windows (Version 25). Descriptive statistics were calculated for socio-demographic characteristics and self - assessed measures of depression, anxiety and stress as well 8 ways of coping with COVID-19 stressor.

Testing the normality of the distribution showed that only subscale Accepting Responsibility has Skewness greater than 0.5 while all others subscales was between 0.1 and 0.5 so the data are fairly symmetrical. T-test for small independent samples were made between 2 groups (nurses and physicians) with significant level  $p < 0.05$ .

The Pearson correlation coefficients were calculated to determine the association between socio-demographic characteristics and measure of mental health (DASS-21 scale) and coping also with significant level  $p < 0.05$ .

In order to examine how much of coping variance can be explained by socio-demographic characteristics we conduct a series of regression analyses.

## RESULTS

Distress measures were identified among health professionals: 11% of health workers reported moderate to very severe depression, 17% moderate to extremely severe anxiety, and 10% moderate to extremely severe stress. It has been found 67% of the medical staff was worried and very worried about the COVID-19 Pandemic.

Of the 124 participants, 27 (22%) were physicians and 97 (78%) nurses. The average age of physicians was 42.9 years and nurses 37.9 years. A total of N=18 (15%) participants worked directly with COVID-19 patients according to their own readiness. The presence of possible risk factors for COVID-19 disease concern was as follows: 44% of respondents had parenthood with minor children, 62% had a family member over the age of 60, 27% suffer from chronic diseases, 12% used pressure medications. Analyzing the healthy lifestyle factor, 12% of staff had not at all physical activity, 53% had 1-2 times a week, 28% had 3 and more times a week, and 7% had daily excersice, 33% were smokers. With no experience

of panic attack before COVID-19 Outbreak was 57% of the medical staff. Regarding religious practice, 69% of believers practice their religion, 19% have non-practitioners, 7% are undecided, 3% are atheists and 2% agnostics. 5% of medical staff had a pessimistic outlook on life, 35% optimistic and 60% realistic. On the life satisfaction dimension, 13% are poorly satisfied, 37% are quite satisfied, and 49% are very satisfied.

At Table 1 is shows significant predicted 4 risk factors: age, chronic illness, life satisfaction, and involvement in social networks. No significant correlations with mental health measures were found in the other 9 factors predicted.

The degree of distress of nurses in relation to physicians, although it records higher values on the DASS subscales, has not been statistically proven as seen in Table 2. This finding needs to be verified with a larger number of respondents.

At Table 3 and 4 are shown significant differences in the process of coping with the stressor COVID-19 pandemic between medical staff regarding educational status and age.

**Table 1.** Descriptive statistics socio-demographic characteristics and coefficient of correlation of in relation to mental health measures

| Variables                     | Physicians (%) | Nurses (%) | Mean Physicians | Mean Nurses | DASS-depression | DASS-anxiety | DASS-stress |
|-------------------------------|----------------|------------|-----------------|-------------|-----------------|--------------|-------------|
| Age                           |                |            | 42.89           | 37.85       | 0.270**         | 0.062        | 0.113       |
| Under 30 years                | 10.5           | 39.2       |                 |             |                 |              |             |
| 31 to 40 years                | 26.3           | 24.3       |                 |             |                 |              |             |
| 41 to 50 years                | 36.8           | 8.1        |                 |             |                 |              |             |
| 51 to 60 years                | 26.3           | 24.3       |                 |             |                 |              |             |
| 61 and more                   | 0.0            | 4.1        |                 |             |                 |              |             |
| Life satisfaction             |                |            | 2.37            | 2.35        | -0.390**        | -0.269**     | -0.226      |
| Low Life satisfaction         | 5.3            | 6.2        |                 |             |                 |              |             |
| Good life satisfaction        | 52.6           | 32.4       |                 |             |                 |              |             |
| Great life satisfaction       | 42.1           | 51.4       |                 |             |                 |              |             |
| Social network                |                |            | 2.53            | 2.63        | -0.259**        | 0.054        | -0.108      |
| None                          | 10.5           | 5.3        |                 |             |                 |              |             |
| Only 1 social network         | 52.6           | 33.3       |                 |             |                 |              |             |
| 2 social network              | 10.5           | 22.7       |                 |             |                 |              |             |
| 3 and more social network     | 26.4           | 38.7       |                 |             |                 |              |             |
| Early experience panic attack |                |            | 1.70            | 1.64        | 0.471**         | 0.454**      | 0.370**     |
| Never                         | 63.2           | 57.3       |                 |             |                 |              |             |
| Only once                     | 5.3            | 13.3       |                 |             |                 |              |             |
| More times                    | 31.6           | 28.0       |                 |             |                 |              |             |
| Chronic illness               | 47.4           | 25.3       | 1.74            | 0.76        | 0.253**         | 0.236**      | 0.217*      |

Note: \*p<0.05; \*\*p<0.01

**Table 2.** Differences in mental health assessment between nurses and doctors

|                 |            | Mean | Standard deviation | Standard Error Mean | Significance (2-tail) |
|-----------------|------------|------|--------------------|---------------------|-----------------------|
| DASS-depression | Physicians | 1.94 | 2.838              | 0.669               | 0.369                 |
|                 | Nurses     | 3.03 | 3.707              | 0.440               |                       |
| DASS-anxiety    | Physicians | 1.84 | 3.516              | 0.807               | 0.418                 |
|                 | Nurses     | 2.58 | 2.936              | 0.348               |                       |
| DASS-stress     | Physicians | 3.94 | 4.621              | 1.089               | 0.630                 |
|                 | Nurses     | 4.93 | 4.039              | 0.469               |                       |

**Table 3.** Differences in 8 coping strategies regarding of COVID-19 stressor between medical staff

| WOC strategies           |            | Mean   | Standard deviation | Standard Error Mean | Significance (2-tail) |
|--------------------------|------------|--------|--------------------|---------------------|-----------------------|
| Confrontive Coping       | Physicians | 5.5000 | 3.32990            | 0.78487             | 0.975                 |
|                          | Nurses     | 5.5270 | 3.05306            | 0.35491             |                       |
| Distancing               | Physicians | 5.5000 | 2.83362            | 0.66789             | 0.581                 |
|                          | Nurses     | 5.9324 | 3.36920            | 0.39166             |                       |
| Self-Controlling         | Physicians | 6.2222 | 3.42234            | 0.80665             | 0.122                 |
|                          | Nurses     | 7.7703 | 4.75293            | 0.55252             |                       |
| Seeking Social Support   | Physicians | 5.6111 | 3.66444            | 0.86372             | 0.178                 |
|                          | Nurses     | 6.9865 | 4.28599            | 0.49824             |                       |
| Accepting Responsibility | Physicians | 2.4444 | 2.89466            | 0.68228             | 0.641                 |
|                          | Nurses     | 2.7973 | 2.63267            | 0.30604             |                       |
| Escape-Avoidance         | Physicians | 4.4444 | 3.61731            | 0.85261             | 0.035*                |
|                          | Nurses     | 6.6486 | 4.47958            | 0.52074             |                       |
| Planful Problem Solving  | Physicians | 8.0000 | 4.63998            | 1.09365             | 0.680                 |
|                          | Nurses     | 7.5000 | 4.15537            | 0.48305             |                       |
| Positive Reappraisal     | Physicians | 5.7222 | 3.12119            | 0.73567             | 0.025*                |
|                          | Nurses     | 7.7973 | 4.23611            | 0.49244             |                       |

Note: \*p<0.05

**Table 4.** Differences in 8 coping strategies in relation to age of medical staff

| WOC strategies           |            | Mean   | Standard deviation | Standard Error Mean | Significance (2-tail) |
|--------------------------|------------|--------|--------------------|---------------------|-----------------------|
| Confrontive Coping       | Under 40 y | 5.9146 | 3.15525            | 0.34844             | 0.377                 |
|                          | Above 40 y | 5.3611 | 3.09056            | 0.51509             |                       |
| Distancing               | Under 40 y | 6.2262 | 3.15599            | 0.34435             | 0.481                 |
|                          | Above 40 y | 5.7500 | 3.45894            | 0.57649             |                       |
| Self-Controlling         | Under 40 y | 7.6071 | 4.20275            | 0.45856             | 0.665                 |
|                          | Above 40 y | 7.9722 | 4.21213            | 0.70202             |                       |
| Seeking Social Support   | Under 40 y | 6.2619 | 3.90588            | 0.42617             | 0.011**               |
|                          | Above 40 y | 8.3333 | 4.28952            | 0.71492             |                       |
| Accepting Responsibility | Under 40 y | 2.6905 | 2.56471            | 0.27983             | 0.948                 |
|                          | Above 40 y | 2.7222 | 2.40964            | 0.40161             |                       |
| Escape-Avoidance         | Under 40 y | 5.5952 | 4.03932            | 0.44073             | 0.022*                |
|                          | Above 40 y | 7.5556 | 4.23215            | 0.70536             |                       |
| Planful Problem Solving  | Under 40 y | 7.7976 | 4.32081            | 0.47144             | 0.992                 |
|                          | Above 40 y | 7.8056 | 3.78583            | 0.63097             |                       |
| Positive Reappraisal     | Under 40 y | 7.4578 | 4.07042            | 0.44679             | 0.458                 |
|                          | Above 40 y | 8.0556 | 3.92024            | 0.65337             |                       |

Note: \*p<0.05; \*\*p<0.01

**Table 5.** The results of regression analysis for prediction of Escape-avoidance way of coping

|                             | b      | SE b  | Beta   | t      | Significance |
|-----------------------------|--------|-------|--------|--------|--------------|
| (Constant)                  | 20.041 | 2.599 |        | 7.712  | 0.000**      |
| My health is excellent.     | -0.540 | 0.262 | -0.176 | -2.066 | 0.041*       |
| I felt down.                | -1.021 | 0.559 | -0.202 | -1.825 | 0.071        |
| I feel fealthearted and sad | -1.503 | 0.526 | -0.310 | -2.857 | 0.005*       |

Note: \*p<0.05; \*\*p<0.01

Next, a series of regression analyses were performed in order to examine how much of coping variances can be explained by predicted socio-demographic characteristics and only significant correlation was in Escape-avoidance coping with  $R^2=0.218$  (Table 5) with significance 0.00\*\*.

## DISCUSSION

The aim of this study was to explore how stressor COVID-19 has influenced on mental health Croatian hospital workers. 67% of the staff are worried, 11% depressed, 17% anxious, and 10% are stressed. We

compared our findings with data from China who had presence of so called “psychiatric trio” Depression-Anxiety-Stress at medical staff in range from 3,8% to 8.7% (Chew et al. 2020) or from 7.5% to 24.1% (Wang et al. 2020) or from 19.4% to 48.3% (Gou et al. 2020). Regarding to Kang et al. (2020) only 36.9% among 994 nursing staff had subthreshold mental health disturbances. Zhou et al. (2020) finds of 32.3% healthworkers who had some degree of PTSD. Although our conditions in the hospital are far from an apocalyptic Italian tragedy, can we be satisfied with these numbers of psychic outcomes? We can only conclude about this numbers that face of fear and treat had no nationality et all. In our country there is a proverb: “*A bear plays with a neighbor, he will come to you too.*” which means misfortune does not choose or heroic proverb “*In trouble you know a hero*” that we can address to all the professions that have contributed to this threat to humanity. We interpret this finding that our concrete adequate organization of hospital work has reduced to a minimum the cumulative and interfering effect between work and life roles, beliefs, and responsibilities toward the burden that the coronavirus brought to our lives. In the first critical period for the entire nation, the hospital had the most willing employees who were provided with a proper exchange of work and rest, constant supervision of managers and, if necessary, support. Our hospital management estimated that we could not be privileged by delays in supporting the mental health of employees, but with the first material reorganization of the hospital's work, it also adopted a psychological strategy for the well-being of all workers. All the lessons we have learned from the covid-19 disaster can be underlined by the need for a multidisciplinary approach (5 factor model – see Jakovljevic et al. 2020), greater global empathetic solidarity, good scientific education, trust between people and public authorities and better international cooperation.

It has been shown that the elderly, chronically ill and less satisfied with their own lives or those who experienced a panic attack as a bad life experience before the Pandemic had greater anxiety, distress and depression during outbreak time. Greater life burdens / challenges such as accepting aging and coping with chronic illness at a time of possible life-threatening coronavirus brought into our daily lives are considered as an additional burden on our mental health. This finding points to the civilizational necessity of special measures for the protection of such groups in the population. The reality of the threat to elderly individuals and the chronically ill is by no means negligible.

Several anticipated possible risk factors such as department where they work, parenting of minor children, family member over 60, health life style, use of pressure medications, declared view of life and religious practice did not proved significant in relation to the mental health measures so we suggest that future research should have a larger number of respondents

with uniform independent variables in order to minimize the interfering influences of other variables.

Although the mostly negative impact of social networks on informing the population during the COVID-19 Pandemic is well-known, this study indicates that social networks reduce depression since they were the only safe life-threatening response to a person's normal human need for society during the quarantine period. Social networking, the most used in this research was Facebook (66%), Wiber (60%), Whatsup (32%), Instagram (28%), Snapchat (5%), Tik-tok (4%) and Tweeter (1%) is associated with less depression these days which can conditionally refer as a coping strategies when individual should avoid physical contact and seek empathy and solidarity with the community. There are a lot of findings that deal with the impact of social media during quarantine with ambiguous conclusions to complex social categories like increased alienation, loneliness, etc. but yet requires further research.

We were interested in the process of coping with coronavirus living and working conditions and we found out the different order of coping strategies between medical staff. While physicians first use a strategy of planned and analytical approach to the problem (stressor), nurses first resort to positive reassessment. The difference in problem vs emotional coping between doctors and nurses is not surprising. Medical education and the dominant role in diagnosis and treatment is fundamentally analytically oriented where the disease is viewed as an equation to be solved. We may say that for physicians SARS-COV-2 is „only“ one between thousands illness that need to be overcome. Nurses, however, are more oriented towards coping with difficult emotions due to being in the company of vulnerable people. Self-control of their own emotional reactions takes second place in coping process in both doctors and nurses.

Younger hospital workers more often wanted all this with the coronavirus to pass as soon as possible, more often they fantasized that the pandemic had not even happened and hoped for some miracle. Older hospital workers were more likely to seek conversation and advice on how they felt about the special living conditions we were exposed to. How a particular event will be assessed by a person depends on the characteristics of the assessor's person and the characteristics of the event. A stressful event does not occur in a vacuum, but in the context of an individual's life cycle and in relation to other events (Lazarus & Folkman 2004). The life cycle in which a stressful event occurs will also determine how to cope. Young people at the beginning of their careers are in the phase of researching and finding their own way by which the national proclamation of quarantine due to the threat to the predominantly elderly population seems excessive.

Education for resilience and anti-fragility (Jakovljevic et al. 2020) and education in the field of stress management of medical staff is a *conditio sine qua non* of the issue of an adequate relationship with the crisis

situations like 2020 coronavirus Outbreak. We believe that future research should monitor the long-term consequences on mental health to this pandemic for different groups.

## CONCLUSION

We found the existence of distress in the mental health of hospital workers. Dealing with the COVID-19 stressor is a process that has been approached somewhat differently by physicians compared to nurses, younger compared to older health professionals. These findings emphasize the special role of the Ministry of Health which should provide systematic supervisory support to health workers.

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