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Mental health and coping profiles during the first waves of COVID-19: Insights from an Italian hospital

Ivan Marzocchi^{1,*}, Claudia Passamonti², Cristina Di Tecco³, Monica Ghelli³, Matteo Ronchetti³, Luigi Fusco¹, Sonia Sebastianelli², Oriana Papa²

¹Department of Psychology - Sapienza University of Rome, Rome, Italy

²Psychology Unit – Azienda Ospedaliero Universitaria delle Marche, Ancona, Italy

³Department of Medicine, Epidemiology, Occupational and Environmental Hygiene - Italian Workers' Compensation Authority (INAIL), Rome, Italy

Abstract

COVID-19 had a profound impact on the quality of life of millions of employees, especially those on the front lines of the pandemic. This study examines the mental health of Italian hospital employees during the first two waves of the crisis, assessing key indicators such as burnout, secondary traumatic stress, and depression. Given the limited research on individual coping factors, we also explored how different strategies influenced professional quality of life by employing a person-centered approach. Using a repeated cross-sectional design, we collected data from two samples of healthcare employees. Findings revealed a significant decline in mental health over time, with higher levels of burnout, depression, anxiety, and secondary traumatic stress, and lower compassion satisfaction, at wave 2. Latent Profile Analysis identified three coping profiles: Resigned, Avoidant, and Proactive. The Resigned and Avoidant profiles were linked to the poorest mental health outcomes, with Avoidant coping showing the most severe negative effects. These results underscore the importance of fostering adaptive coping strategies and addressing maladaptive ones to protect healthcare employees' mental health during ongoing and future crises.

Keywords: coping strategies; COVID-19; health; latent profile analysis; healthcare sector

*Corresponding author.

Ivan Marzocchi
Department of Psychology - Sapienza
University of Rome,
Rome, Italy
E-mail: ivan.marzocchi@uniroma1.it
(I. Marzocchi)

Introduction

The sudden outbreak of the Coronavirus disease 2019 (COVID-19) has had a tremendous impact on the mental health of millions of people (Nochaiwong et al., 2021). In response, various workplace interventions and containment measures (e.g., remote work, mobility restrictions) were implemented to protect employees and reduce the spread of the virus, particularly during the first waves of the pandemic (Foucault & Galasso, 2020). These actions have strongly modified the way work was designed and organized, especially in those occupational contexts most exposed to the virus such as the healthcare sector (International Labor Organization, 2020). Unsurprisingly, healthcare employees, compared to those in other sectors, were disproportionately affected by the pandemic, as they experienced severe health challenges and a marked decline in professional quality of life across different waves of the crisis (Appelbom et al., 2024; Pappa et al., 2021). Following Stamm (2010), the professional quality of life for healthcare employees encompasses both negative outcomes, such as compassion fatigue, and positive outcomes, like compassion satisfaction. Compassion fatigue includes burnout, characterized by emotional exhaustion, depersonalization, and low personal accomplishment (Maslach et al., 2001), and secondary traumatic stress, which arises from exposure to patients' trauma, manifesting as anxiety and intrusive thoughts (Boyle, 2011; Figley, 1995). In contrast, compassion satisfaction refers to the gratification healthcare employees derive from helping others (Stamm, 2010).

Even before COVID-19, healthcare employees were already subjected to high levels of strain due to detrimental working conditions (Marzocchi et al., 2024). However, much of the research in this area has focused predominantly on how work-related factors, such as psychosocial risks, impacted employee health, with limited attention given to personal characteristics (Marzocchi et al., 2024; Swider & Zimmerman, 2010). This oversight is significant: particularly during emergencies, where unforeseen events, ambiguous intervention guidelines, and limited resources prevail, individual capabilities could play a pivotal role in aiding employees' recovery from challenging circumstances, mitigating the risk of long-term conditions like anxiety, burnout, and depression (Welbourne et al., 2007). In this respect, coping styles, defined as cognitive and behavioral strategies to manage stress (Welbourne et al., 2007), are especially relevant for healthcare employees. Positive coping strategies—such as problem-solving, seeking social support, and maintaining a positive attitude—are generally linked to better emotional health and life satisfaction (Kinman et al., 2020; Folkman & Lazarus, 1985). Conversely, avoidance-based strategies correlate with work-related stress and anxiety (Babore et al., 2020). Positive and negative coping strategies are not mutually exclusive (Skinner et al., 2003). However, most prior studies on coping strategies have relied on variable-centered methodologies, despite evidence that employees often use a combination of coping strategies simultaneously, especially in emergencies (Skinner et al., 2003). A person-centered approach, in contrast, would provide deeper insight into the unique combinations of

individual characteristics (e.g., coping styles) that employees adopt during emergencies, thereby addressing the limitations of traditional methodologies.

Building on these premises, this study has two main objectives. First, we aim to provide a snapshot of the mental health and professional quality of life of Italian healthcare employees during the first (W1) and second (W2) waves of the pandemic. Second, we seek to examine the role of coping styles in either protecting or exacerbating their mental health at W1 and W2. For our first objective, we assess a broad range of health indicators, including compassion satisfaction, burnout, secondary traumatic stress, depression, and anxiety. We hypothesize that prolonged exposure to pandemic-related stressors will lead to a decline in health outcomes from W1 to W2. This expectation aligns with previous research indicating that sustained exposure to stressful situations heightens psychological distress among employees (Hobfoll, 1989). Thus:

Hypothesis 1: We expect higher levels of burnout, secondary traumatic stress, depression, and anxiety, along with a decrease in compassion satisfaction from W1 to W2.

For our second aim, we examine five coping styles: avoidance, seeking social support, transcendent orientation, positive attitude, and problem-solving. Using a person-centered approach, we aim to identify latent coping profiles at W1 and W2 and assess their influence on health outcomes. We hypothesize that distinct coping profiles will emerge, aligning with previous research that has identified three or four common coping patterns: approach-oriented strategies (e.g., active coping, social support, positive reframing), avoidance strategies (e.g., denial), and minimal engagement strategies (Kavčič et al., 2022). Furthermore, consistent with prior findings, we expect individuals who rely on approach-oriented strategies to report better mental health outcomes (Nielsen & Knardahl, 2014), while those employing avoidance strategies are likely to experience poorer psychological well-being (Kavčič et al., 2022; Pété et al., 2021). Thus:

Hypothesis 2: We expect the emergence of three-to-four latent coping patterns characterized by approach-oriented strategies, avoidance strategies, and minimal strategies to manage the pandemic-related stressors at the two waves.

Hypothesis 3: Latent coping profiles characterized by approach-oriented strategies will be associated with reduced burnout, secondary traumatic stress, depression and anxiety, and increased compassion satisfaction. Conversely, latent coping profiles characterized by minimal or avoidance-oriented strategies will be associated with increased burnout, secondary traumatic stress, depression and anxiety, and reduced compassion satisfaction.

Methods

Procedure and participants

We performed a repeated cross-sectional study on two samples of healthcare employees belonging to a regional hospital located in the Centre of Italy. A web-based survey was sent from the institutional mail to all the healthcare employees in

the hospital. Data were collected in two different time points: from 15 to 30 June 2020 (W1) and from 12 to 27 February 2021 (W2). The participants were informed about the aim and the procedure of the study. They were requested to provide their informed consent before completing the questionnaires anonymously. The procedures and the questionnaires used in this survey were in line with the indication of the Declaration of Helsinki and with the Ethics Code of the Italian Board of Psychology. The study protocol was approved by the local Institutional Board (Protocol nr: 12052020COGE). The first sample, which was recruited during W1, was composed of 307 employees (73% females). The second sample, recruited during W2, was composed of 265 employees (80% females), of whom 121 (78% female) had not participated in the previous wave.

Measures

At both waves, we administered a structured questionnaire which included sociodemographic questions and self-report measures.

Coping styles were assessed through the new Italian version of the Coping Orientation to the Problems Experienced (COPE-NVI-25) (Sica et al., 2008). The tool investigates five different coping styles: avoidance (5 items; e.g., "I admit to myself that I can't deal with it, and quit trying"; Cronbach's $\alpha_{W1} = .66$; Cronbach's $\alpha_{W2} = .63$), transcendent orientation (4 items; e.g., "I seek help in God"; Cronbach's $\alpha_{W1} = .97$; Cronbach's $\alpha_{W2} = .96$), positive attitude (6 items; e.g., "I try to learn something from my experience"; Cronbach's $\alpha_{W1} = .81$; Cronbach's $\alpha_{W2} = .81$), seeking social support (5 items; e.g., "I try to get advice from someone about what to do"; Cronbach's $\alpha_{W1} = .75$; Cronbach's $\alpha_{W2} = .76$), and problem-solving (5 items; e.g., "I try my best to act on the situation"; Cronbach's $\alpha_{W1} = .74$; Cronbach's $\alpha_{W2} = .69$). Participants rated the items on a 6-point frequency scale (1 = never to 6 = always).

Burnout, secondary traumatic stress and compassion satisfaction were investigated through the three 10-item subscales of the Professional Quality of Life scale (ProQOL) (Stamm, 2010). Participants rated the statements on a 5-point frequency scale (1 = never to 5 = very often). Raw scores of 22 or less indicate low levels in one of the three variables, while raw scores between 23 and 41 and of 42 or more indicate average and high levels in one of the three variables, respectively (Stamm, 2010). Cronbach's α for burnout were .71 (W1) and .78 (W2), for secondary traumatic stress were .86 (W1) and .86 (W2), and for compassion satisfaction were .88 (W1) and .89 (W2).

Depression was assessed through the 9-item depression module from the Patient Health Questionnaire (PHQ-9) (Spitzer et al., 1999). Participants were asked to rate the symptoms they experienced during the last month using a 5-point Likert scale (0 = not at all to 4 = nearly every day). Raw scores of 5, 10, 15, and 20 represent cutoffs for mild, moderate, moderately severe and severe depression, respectively (Spitzer et al., 1999). Cronbach's α were .89 (W1) and .87 (W2).

Anxiety was assessed through the Generalized Anxiety Disorder Assessment (GAD-7) (Spitzer et al., 2006). Participants were asked to rate the symptoms they experienced during the last month using a 5-point Likert scale (0 = not

at all to 4 = nearly every day). Raw scores of 5, 10, and 15 represent cutoffs for mild, moderate, and severe anxiety, respectively (Spitzer et al., 2006). Cronbach's α were .93 (W1) and .91 (W2).

Control variable. Two key psychosocial risks of the healthcare sector have been included as control variable in the main analyses: working in a COVID-19 ward and night shift. Many studies have demonstrated that healthcare employees working in COVID-19 units faced enormous pressure due to the high risk of infection, inadequate protection from contamination, overwork, and isolation (Huang et al., 2020; Ornell et al., 2020). Moreover, research has found healthcare employees working in COVID-19 units to report higher levels of depression and posttraumatic symptoms than those who worked in other healthcare units (Di Tella et al., 2020). Concurrently, night shift is one of the most common risk factors of the healthcare sector (Broetje et al., 2020; von Treuer et al., 2014). Especially during the COVID-19 pandemic, healthcare employees have generally reported more frequent shift work due to the heavier workloads (Zhan et al., 2020). Working in a COVID-19 ward was investigated through the single item "Have you worked in a COVID-19 ward?". Answers were given on a dichotomous scale ("yes" or "no"). Night shift was investigated through the single item "Do you work night shifts?". Answers were given on a dichotomous scale ("yes" or "no").

Finally, at W2, we included previous participation in W1 as a control variable to account for any potential bias arising from overlapping participants. This information was collected through a single-item question: 'Did you participate in the previous online survey promoted by the Hospital Psychology Unit in 2020?' Responses were recorded on a dichotomous scale ('yes' or 'no').

Data analysis

To test hypothesis 1, we conducted descriptive statistics, independent sample t-tests and chi-square tests to obtain information on the sample characteristics and the prevalence of health issues at both waves. These analyses compared the W1 sample with the W2 participants who had not taken part in W1, ensuring the assumption of independence.

To test hypothesis 2, we performed Latent Profile Analysis (LPA), which allowed us to identify the homogenous patterns of individual coping strategies employed by healthcare employees in the two waves. Preliminarily, we examined the measurement model of the variables used for the clustering procedure using confirmatory factor analysis (CFA). Item parcels for measures with more than five items were computed using the item-to-construct balance strategy (Little et al., 2009). Model fit was evaluated by inspecting the following: Comparative Fit Index (CFI ≥ 0.90), Tucker and Lewis Index (TLI ≥ 0.90), Root Mean Square Error of Approximation (RMSEA ≤ 0.08), and Standardized Root Mean Square Residual (SRMR ≤ 0.08). We estimated LPA solutions ranging from one to six latent profiles using *Mplus* 8.6 and Robust Maximum Likelihood estimator (MLR) (Muthén & Muthén, 1998-2018). To determine the number of profiles to retain, we relied on a graphical

representation (“elbow plot”) that illustrates the changes in the following information criteria with the number of profiles: Akaike’s information criterion (AIC), Bayesian information criterion (BIC), sample-size-adjusted Bayesian information criterion (SABIC), and Approximate weight of evidence (AWE).

Finally, to test hypothesis 3, structural equation modelling (SEM) was employed to explore the association among coping profiles (measured by their posterior probabilities) and employee health (latent variables measured by their items and/or parcels).

CFA, LPA, and SEM analyses were conducted separately for W1 and W2, as the two samples were not fully independent. Indeed, due to the repeated cross-sectional nature of our data collection, direct comparisons between waves were not feasible. However, as anticipated above, at W2 we included prior participation in W1 as a control variable to account for its potential influence on the structural model.

All analyses were conducted using IBM SPSS 27 and *Mplus* 8.6.

Results

Descriptive statistics are presented in Table 1. The two independent samples showed no significant differences in gender, education, employment in a COVID-19 ward,

or seeking psychological support during the pandemic. However, compared to the W1 sample, the W2 sample included a lower percentage of employees over the age of 50, a higher percentage of employees who had contracted COVID-19, undergone fiduciary isolation, and worked night shifts, as well as employees with lower organizational and role tenure.

Table 2 shows the mental health and professional quality of life of healthcare employees across the two waves. All the indicators of health showed deterioration, as compassion satisfaction dropped from 3.80 ($SD = .60$) to 3.53 ($SD = .61$) ($p < .001$), burnout increased from 2.42 ($SD = .49$) to 2.80 ($SD = .62$) ($p < .001$), secondary traumatic stress increased from 2.27 ($SD = .64$) to 2.53 ($SD = .69$) ($p < .05$), depression increased from 0.80 ($SD = .60$) to 1.01 ($SD = .62$) ($p < .001$), and anxiety increased from 1.11 ($SD = .75$) to 1.36 ($SD = .80$) ($p < .01$). These findings were further examined through crosstab analysis. At W2, fewer participants reported high levels of compassion satisfaction (*adjusted standardized residual* = -2.8) compared to W1. Conversely, a greater number of participants at W2 reported moderate (*adjusted standardized residual* = 3.1) and high levels of burnout (*adjusted standardized residual* = 2.3), moderate levels of secondary traumatic stress (*adjusted standardized residual* = 2.3), and high levels of moderate depression (*adjusted standardized residual* = 3.3) than at W1. Overall, these results provide confirmation of hypothesis 1.

Tab. 1. Sample characteristics.

	Wave 1		Wave 2 full sample		Wave 2 independent sample		χ^2 test ^a	
	N	%	N	%	N	%		
Gender							1.41	
	Male	83	27	52	19.6	26	21.5	
	Female	224	73	213	80.4	95	78.5	
Age							16.45***	
	Up to 30	34	11.1	38	14.3	26	21.5	
	Between 31 and 50	179	58.3	172	64.9	78	64.5	
	More than 50	94	30.6	55	20.8	17	14	
Education							6.98	
	Middle school	2	0.7	4	1.5	1	0.8	
	High school	44	14.3	32	12.1	17	14.0	
	Degree	154	50.2	153	57.7	76	62.8	
	Post-degree	107	34.9	76	28.7	27	22.3	
Have you worked in a COVID-19 ward?							.03	
	No	168	54.7	143	54.0	65	53.7	
	Yes	139	45.3	122	46.0	56	46.3	
If yes, in which sector?							.42	
	Sub-intensive	52	37.7	46	38.3	18	32.7	
	Post-ictal	30	21.7	22	18.3	13	23.6	
	Intensive	56	40.6	52	43.3	24	43.6	
Do you work night shift?							7.75**	
	No	160	52.1	123	46.4	45	37.2	
	Yes	147	47.9	142	53.6	76	62.8	
Role tenure							14.68***	
	Less than 5 years	72	23.5	76	28.7	41	33.9	
	Between 6 and 15 years	92	30	97	36.6	48	39.7	
	More than 15 years	143	46.5	92	34.7	32	26.4	
Organizational tenure							12.38**	

	Wave 1		Wave 2 full sample		Wave 2 independent sample			
<i>Have you contracted COVID-19?</i>	Less than 5 years	82	26.7	83	31.3	51	42.1	7.20**
	Between 6 and 15 years	83	27	78	29.4	34	28.1	
	More than 15 years	142	46.3	104	39.2	36	29.8	
<i>Have you undergone fiduciary isolation?</i>	No	290	94.5	236	89.1	105	86.8	35.09***
	Yes	17	5.5	29	10.9	16	13.2	
<i>Have you asked for psychological help?</i>	No	276	89.9	195	73.6	80	66.1	.04
	Yes	31	9.1	70	26.4	41	33.9	
	No	298	97.1	253	95.5	117	96.7	
	Yes	9	2.9	12	4.5	4	3.3	

Note: N= number of subjects; a = test performed comparing wave 1 sample and wave 2 independent sample; ***p<.001; **p<.01; *p<.05.

Tab. 2. Mental health and professional quality of life of healthcare employees at wave 1 and wave 2.

	Wave 1				Wave 2 Independent Sample				t-test	χ2 test
	N	%	M	SD	N	%	M	SD		
<i>Compassion satisfaction</i>			3.80	.60			3.53	.61	4.07***	
	Low	4	1.3		3	2.5				8.27*
	Moderate	221	72.0		101	83.5				
	High	82	26.7		17	14				
<i>Burnout</i>			2.42	.49			2.80	.62	-5.99***	
	Low	116	37.8		25	20.7				15.92***
	Moderate	191	62.2		94	77.7				
	High	0	0		2	1.7				
<i>Secondary traumatic stress</i>			2.27	.64			2.53	.69	-3.72**	
	Low	160	52.1		49	40.5				6.31*
	Moderate	144	46.9		72	59.5				
	High	3	1.0		0	0				
<i>Depression</i>			0.80	.60			1.01	.62	-3.31***	
	Minimal	115	37.5		25	20.7				18.65***
	Mild	117	38.1		44	36.4				
	Moderate	37	12.1		30	24.8				
	Moderately - severe	29	9.4		17	14.0				
	Severe	9 (2.9)			5 (4.1)					
<i>Anxiety</i>			1.11	.75			1.36	.80	-3.09**	
	Low	82	26.7		21	17.4				7.73
	Mild	136	44.3		50	41.3				
	Moderate	47	15.3		24	19.8				
	Severe	42	13.7		26	21.5				

Note: N= number of subjects; SD = standard deviation; ***p<.001; **p<.01; *p<.05.

Tab. 3. Correlations among study variables (NW1 = 307; NW2 = 265).

	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.
1. COVID-19 ward ^a	-	.33***	.24***	.23***	.13*	.18**	-.21**	.01	-.07	-.05	-.02	-.00
2. Night work ^a	.44***	-	.25***	.13*	.20**	.13*	-.17**	-.03	-.08	-.08	-.06	-.03
3. Burnout	.15*	.08	.71 (.78)	.64***	.67***	.59***	-.72***	.22***	-.19**	-.30***	-.20**	-.21**
4. Secondary traumatic stress	.07	.02	.68***	.86 (.86)	.63***	.73***	-.36***	.25***	.10	-.15*	-.01	-.06
5. Depression	.10	-.01	.58***	.66***	.89 (.87)	.74***	-.43***	.23***	-.05	-.25***	-.15*	-.16*
6. Anxiety	.04	-.01	.60***	.68***	.82***	.93 (.91)	-.33***	.22***	.03	-.23***	-.01	-.10
7. Compassion satisfaction	-.07	-.10	-.53***	-.27***	-.33***	-.31***	.88 (.89)	-.26***	.22***	.32***	.21**	.27***

	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.
8. Avoidance	.05	.03	.23***	.29***	.29***	.22***	-.20***	.66 (.63)	.03	-.32***	-.11	-.28***
9. Transcendence	-.07	-.13*	-.01	.13*	.02	.09	.09	.02	.97 (.96)	.16**	.17**	.13*
10. Positive attitude	-.03	-.06	-.21***	-.20***	-.32***	-.23***	.40***	-.30***	.10	.81 (.81)	.37***	.70***
11. Social support	-.03	-.04	.04	.13*	-.03	.02	.20***	-.04	.12*	.27***	.75 (.76)	.43***
12. Problem-solving	-.16**	-.07	-.27***	-.23***	-.28***	-.20**	.47***	-.34***	.09	.67***	.22***	.74 (.69)

Note: COVID-19 ward: working in a COVID-19 ward; Correlations below the diagonal are for W1; correlations above the diagonal are for W2; Cronbach's alphas are reported in italics and in diagonal, and those for W2 are reported in parentheses. ***p < .001, **p < .01, *p < .05; ^a responses are coded: 0=no, 1 =yes.

Correlations among variables are shown in Table 3. Before performing LPA, the CFA positing 5 correlated coping styles showed an adequate goodness-of-fit at the two waves (W1: $MLR\chi^2 = 378.84$, $df = 199$, $p < .001$; $CFI = .932$; $TLI = .921$; $RMSEA = .054$, 90% C.I.: .046; .063; $SRMR = .063$; W2: $MLR\chi^2 = 349.15$, $df = 199$, $p < .001$; $CFI = .932$; $TLI = .921$; $RMSEA = .053$, 90% C.I.: .044; .063; $SRMR = .060$). Factor scores were thus stored and used as indicators for the next LPA stages. The inspection of the elbow plots revealed slight flattening of the curves around the 3rd, 4th and 5th profile-solutions, which were thus analyzed (Figure 1). However, in both waves the 4th and 5th profile solutions had a cluster with a very limited number of subjects (less than 5%). Thus, the 3-profile solution was chosen at W1 and W2. The entropy of the 3-profile solution was also adequate (W1: .90; W2 = .86).

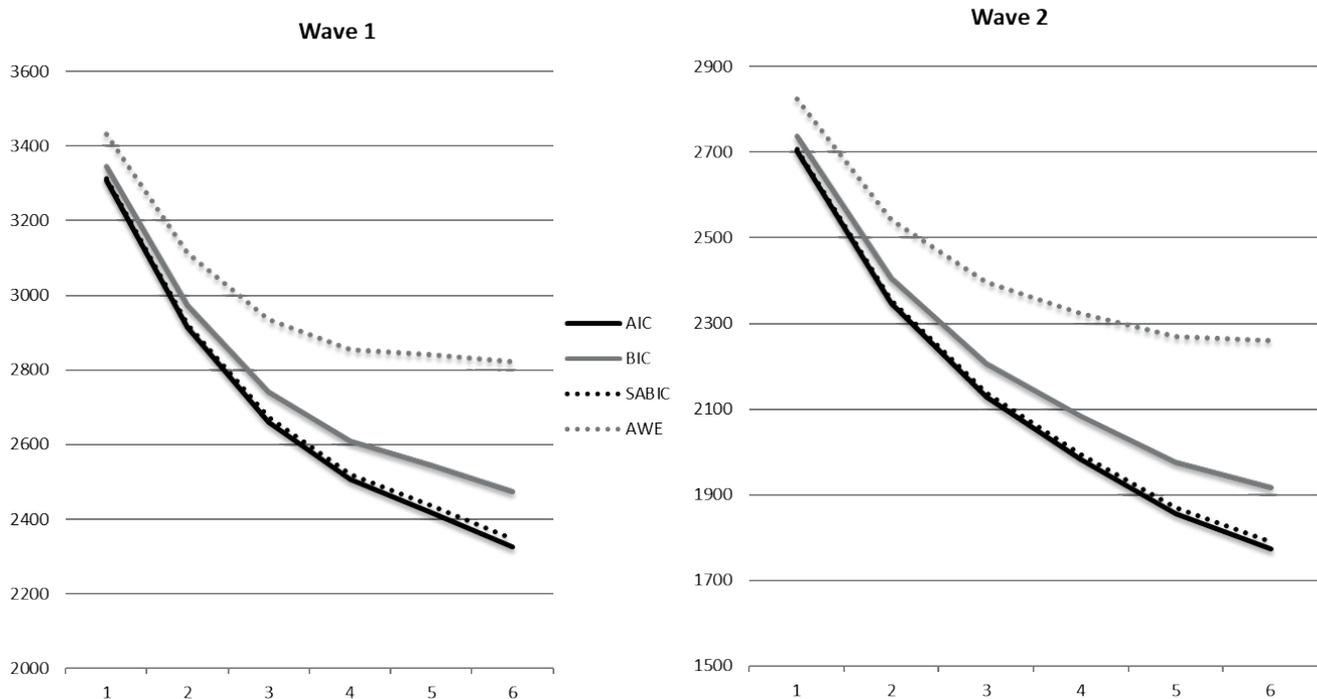
Figure 2 reports the homogeneous patterns of individual strategies, which showed a very similar shape across W1 and

W2. The first profile was defined by very high levels of avoidance and very low levels in the other coping styles (W1: 6% of the sample; W2: 8% of the sample); hence, it was labelled *Avoidant*. The second profile was characterized by medium-high levels of avoidance and low levels in the other coping styles (W1: 38% of the sample; W2: 44% of the sample); thus, it was labelled *Resigned*. Finally, the third profile was characterized by high levels of seeking social support, positive attitude, problem-solving and transcendent orientation, and low levels of avoidance (W1: 56% of the sample; W2: 48% of the sample); thus, it was labelled *Proactive*. All in all, hypothesis 2 was supported.

Chi-square tests were performed to explore the association between sociodemographic factors and the three latent coping profiles at both waves. The results of these analyses are reported in Supplementary Material.

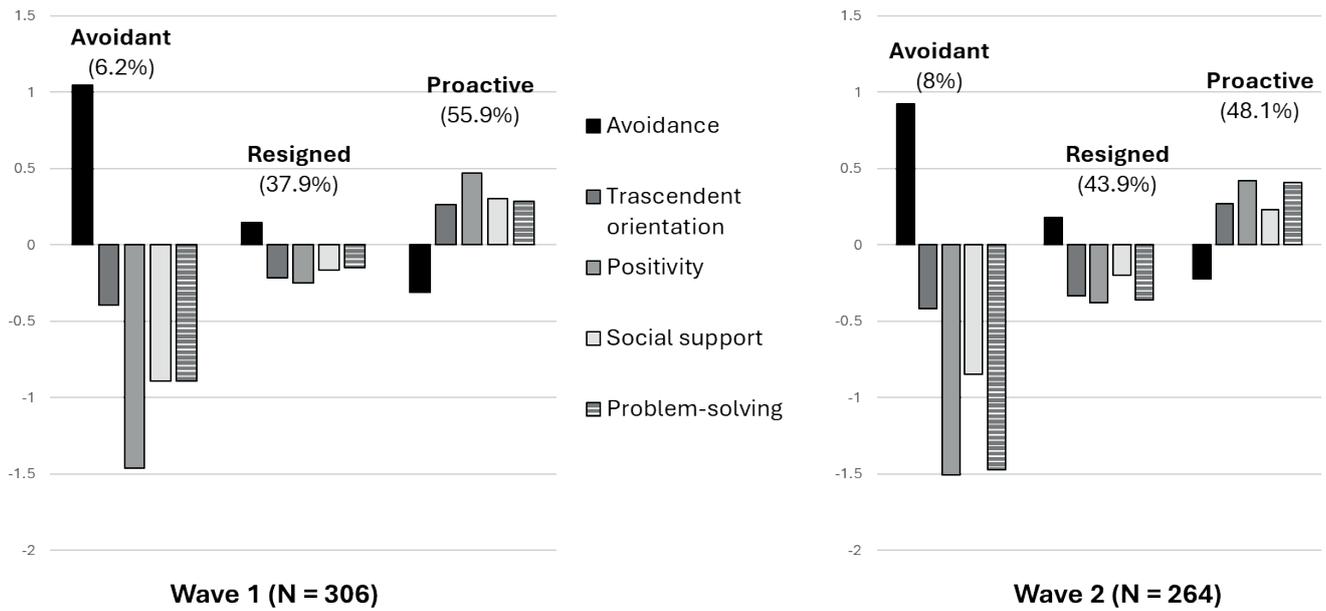
At W1 (Figure 3), SEM analysis revealed that compared to the Proactive profile (normative group), both the Avoidant and

Fig. 1. Elbow Plots for Waves 1 and 2



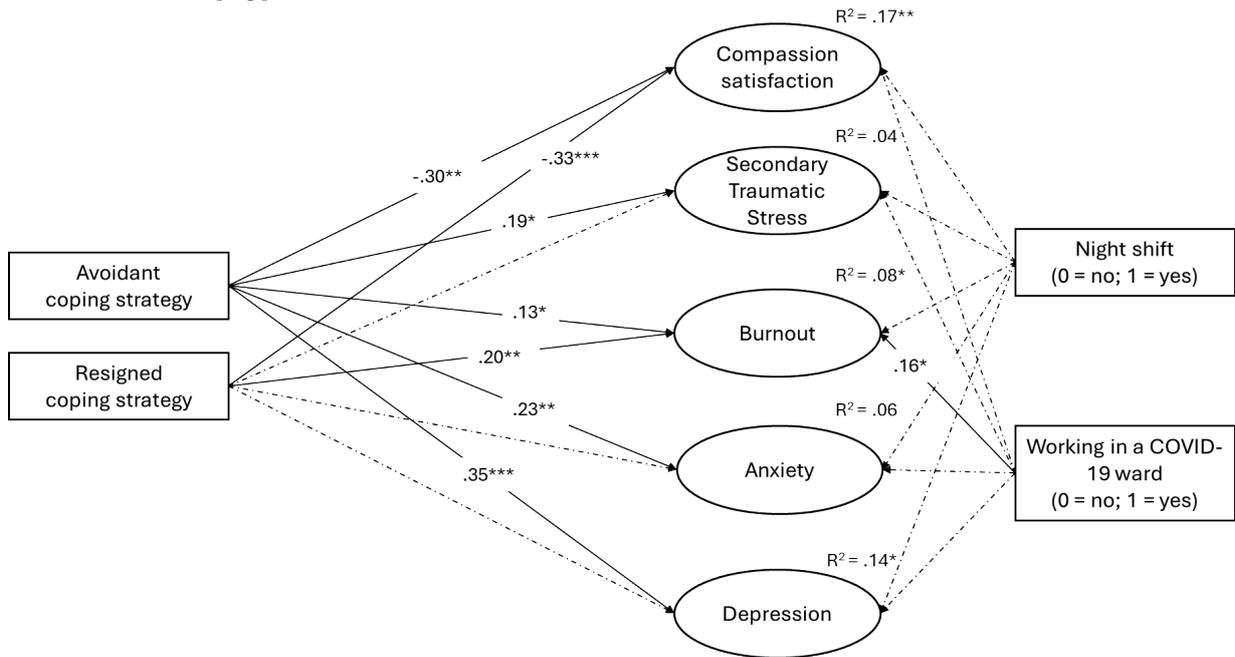
Note: k number of profiles tested in each LPA solution is reported on the x-axis. AIC = Akaike information criterion; BIC = Bayesian information criterion; SABIC = sample-size-adjusted BIC; AWE = Approximate weight of evidence.

Fig. 2. Profiles of coping strategies



Note: Plotted values represent CFA factor scores.

Fig. 3. Association between coping profiles and health at Wave 1



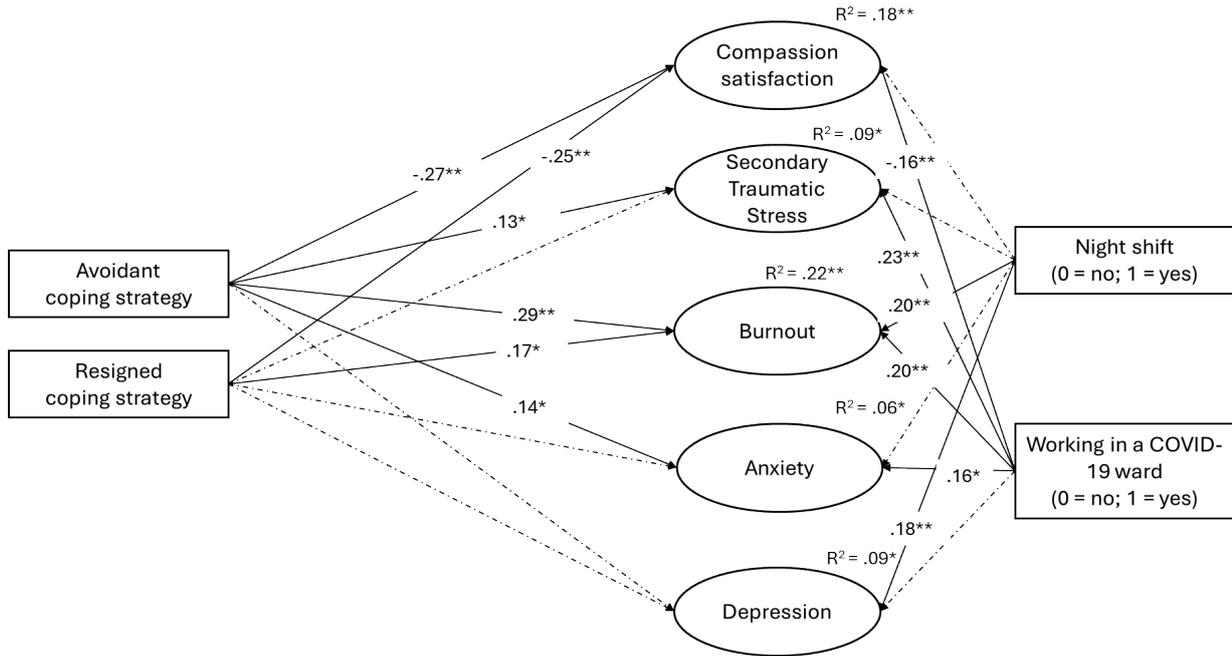
MLR $\chi^2 = 416.15$ (df = 243 $p < .001$; CFI = .952; TLI = .942; RMSEA = .048 (90%CI: .040 - .056); SRMR = .050

Note: Proactive profile as reference group; Dotted lines denote non-significant paths; Outcome variables were allowed to correlate: compassion satisfaction correlated with secondary traumatic stress ($-.27^{***}$), burnout ($-.61^{***}$), anxiety ($-.30^{***}$), and depression ($-.32^{***}$); secondary traumatic stress correlated with burnout ($.83^{***}$), anxiety ($.73^{***}$), and depression ($.71^{***}$); burnout correlated with anxiety ($.70^{***}$), and depression ($.71^{***}$); anxiety correlated with depression ($.88^{***}$); $***p < .001$, $**p < .01$, $*p < .05$.

Resigned profiles had detrimental effects on employee health. They were negatively associated with compassion satisfaction and positively linked to burnout. The Avoidant profile was also positively associated with secondary traumatic stress, anxiety, and depression. Among psychosocial risks, only working in a COVID-19 ward was positively associated with burnout. At W2 (Figure 4), the Avoidant and Resigned profiles were again negatively associated with compassion satisfaction and burnout

compared to the proactive profile. Additionally, the Avoidant profile was positively linked to secondary traumatic stress and anxiety. Psychosocial risks played a larger role: working in a COVID-19 ward and night shifts were both positively associated with burnout. Working in a COVID-19 ward was also negatively linked to compassion satisfaction and positively associated with secondary traumatic stress and anxiety, while night shifts were positively associated with depression. Finally, participation in

Fig. 4. Association between coping profiles and health at Wave 2



MLRχ² = 543.47(df = 264 p < .001; CFI = .922; TLI = .905; RMSEA = .063 (90%CI: .056 - .071); SRMR = .056

Note: Proactive profile as reference group; Dotted lines denote non-significant paths; Participation in W1 was included as a control variable and influenced only the Resigned coping profile: specifically, compared to the Proactive profile, employees who had previously participated in W1 were more likely to adopt a Resigned coping profile. Outcome variables were allowed to correlate: compassion satisfaction correlated with secondary traumatic stress (-.34***), burnout (-.84***), anxiety (-.30***), and depression (-.41***); secondary traumatic stress correlated with burnout (.75***), anxiety (.81***), and depression (.71***); burnout correlated with anxiety (.68***), and depression (.82***); anxiety correlated with depression (.83***); ***p < .001, **p < .01, *p < .05.

W1 was included as a control variable and influenced only the Resigned coping profile. Specifically, compared to the Proactive profile, employees who had previously participated in W1 were more likely to adopt a Resigned coping profile.

All in all, our results generally supported hypothesis 3.

Discussion

Theoretical implications

This study examined the professional quality of life and the use of coping strategies of Italian healthcare employees during the first two waves of the pandemic, using a person-centered approach to explore how profiles of coping styles affected their health during COVID-19. In line with hypothesis 1, all the indicators of professional quality and health have shown a deterioration between the first two waves of the pandemic. Consistent with the Conservation of Resources theory (Hobfoll, 1989), it may be that individuals exposed to excessive pressure over time — such as healthcare employees following the COVID-19 outbreak — are particularly vulnerable to the experience of “loss spirals”. These occur when resources are depleted and no longer available to manage future threats, leading to further resource loss and health issues, such as increased burnout and psychological distress (Hobfoll, 1989). Moreover, when resources are overstretched, employees may resort to irrational or defensive behaviors to preserve themselves, such as avoiding

prosocial or helping behaviors, thereby missing out on the positive outcomes like compassion satisfaction.

LPA identified three consistent coping patterns across both waves: Resigned (medium-high levels of avoidance, low levels of other strategies), Avoidant (very high avoidance, very low levels of other strategies), and Proactive (low avoidance, high levels in other strategies). Generally speaking, these coping patterns align with previous findings (Kavčič et al., 2022). An unresolved question in the field of coping research revolves around whether individuals tend to employ consistent coping styles across various situations and over time, or if they adapt their coping mechanisms based on specific situational demands (Nielsen & Knardahl, 2014). Keeping in mind that our data is not longitudinal as two partially independent samples have been compared, the qualitative similarity in latent profiles suggests that coping strategies are likely to remain consistent across different situations. However, given the characteristics of our sample, additional prospective research is absolutely needed to properly assess the stability and changeability of coping styles over time.

Our SEM analyses revealed that individuals who reported higher levels of avoidant or passive-avoidant coping styles experienced poorer health outcomes compared to those who employed more approach-oriented coping styles. This is consistent with previous variable-centered studies, where problem-focused coping has been associated with lower levels of strain (Boyd et al., 2009), likely because individuals using this strategy view problems as solvable and have confidence in their ability to address them (Lazarus & Folkman, 1984). Additionally, maintaining a positive attitude helps employees

appraise stressful situations as less threatening (Ercolani et al., 2020). Conversely, in the context of prolonged stress, such as the pandemic, especially the Avoidant coping profile emerged as a significant maladaptive strategy. Avoidance, combined with passive coping styles, limits individuals' ability to recognize and regulate their emotional states effectively. While avoidance may initially seem like an escape from anxiety-provoking situations, its continued use tends to worsen anxiety and exacerbate health issues over time (Hofmann & Hay, 2018).

Notably, the finding that employees who had previously participated in W1 (a variable included as a control at W2) were more likely to adopt a maladaptive coping strategy (i.e., Resigned) at W2 suggests that prior exposure to the pandemic's challenges may have led to a growing sense of resignation over time. Employees who had already been involved in W1 might have experienced prolonged stress and burnout, making them more susceptible to adopting a Resigned coping style rather than sustaining a Proactive approach.

On a final note, working in COVID-19 wards and night shifts emerged as key psychosocial risks, particularly during the second wave. Numerous studies have demonstrated that healthcare employees in COVID-19 units faced immense pressure over time due to the high risk of infection, insufficient protective equipment, overwork, and social isolation (Huang et al., 2020; Ornell et al., 2020). Furthermore, healthcare employees reported more frequent shift work during the pandemic due to increased workloads (Zhan et al., 2020). We argue that psychosocial risks became more pronounced and had a greater impact on employee health at W2 due to the prolonged exposure to the same stressors (Hobfoll, 1989). This extended stress likely depleted employees' personal resources and energy, reducing their capacity to withstand the negative effects of these stressors compared to earlier phases.

Practical implications

Consistent with our findings, enhancing functional (e.g., problem-solving), while countering dysfunctional coping styles (e.g., avoidance) could serve as strategies to prevent mental health issues. For example, implementing group psychological support interventions and promoting spaces for listening and processing of traumatic experiences, may be two viable options to enhance individual capacities in coping with stressful circumstances. These strategies could be particularly beneficial for unexperienced employees or those personally exposed to extreme or emergency situations (Lin & Lin, 2024). Along with individual-focused interventions, it is crucial to design corrective actions at the organizational-level (Di Tecco et al., 2020). The detrimental effects of working in a COVID-19 ward and night shifts underline the importance of assessing and managing these organizational factors. For instance, personnel rotation in traumatic care settings, and rigorous planning of night shifts to allow adequate recovery time, could be potential strategies.

Limitations and future studies

Our study is not exempt from limitations that should be acknowledged. First, and as already mentioned, our

repeated cross-sectional study design does not allow us to draw causal inferences from our results. Additionally, as previously mentioned, the W1 and W2 samples were not completely independent. As a result, direct comparisons between the two full samples, such as multigroup CFA or quantitative comparisons between latent profiles, could not be conducted. Although participation in W1 was included as a control variable in the SEM analysis at W2, the lack of sample independence and completeness limited our ability to rigorously examine differences between groups and assess how coping profiles may have evolved between the two waves. Future research should utilize longitudinal data to explore causal relationships, as well as the stability and changes in variables and profiles over time. Second, self-reported measures may introduce common method bias and social desirability bias. Future studies should incorporate objective measures from different sources (e.g., medical records) to address this limitation. Finally, performed in Italy, one of the European countries most affected by the pandemic, this study's generalizability may be limited. It is thus advisable to include data from multiple countries in future studies to enhance its generalizability.

Ethical Approval

This research was conducted as part of the annual organizational climate analysis mandated by the General Management of the Italian Hospital "Azienda Ospedaliero-Universitaria delle Marche" to comply with the ISO9001:2015 quality certification standards. The study was conceived during the initial stages of the COVID-19 pandemic, as an integral component of the urgent organizational health interventions aimed at safeguarding the well-being of healthcare employees. The research and the informed consent process received approval from the Hospital General Management (ID: 12052020COGE). All procedures carried out were in strict accordance with ethical standards, ensuring the highest levels of integrity and respect for participant rights.

Data Availability Statement

The data that support the findings of this study are available from the corresponding author upon request.

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Conflict of Interests

We declare no conflicts of interest.

Author Contributions

I.M., C.P., S.S. and O.P. contributed to the design and implementation of the research, I.M., C.T., M.G., M.R., and L.F. contributed to the analysis of the results. All authors contributed to the writing of the manuscript. The paper has been read and approved by all authors.

Supplementary material

Supplemental data for this article can be accessed online at: <https://figshare.com/s/484b6ae83b137d8fa5ef>

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