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Prevalence and characteristics of distress in a sample of large hospital's workers in Rome in a period between two peaks of the covid-19 pandemic

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Summary. Aim. The aim of this study has been to measure the distress of workers at a large hospital in Rome, immediately after the lockdown with relaxed national restrictions except the indication to wear masks FP2 and to maintain the interpersonal distance of at least one meter. **Method.** A web-based anonymous survey has been conducted. Of the 324 responders (23-69 years; 78.09% females), 41.05% was nurse, 31.17% medical doctor, 7.72% employee with administrative function, 3.09% psychologist, 1.54% biologist, 13.58% grouped in the "other" category. 60.49% worked in a no-covid-19 ward, 20.37% in the covid-19 ward, 13.58% in outpatient clinics, and 5.56% outside the hospital. 45.06% have been exposed to covid-19 and 7.72% tested positive for covid-19. 66.67% were satisfied with the safety measures taken by the hospital. Post-traumatic stress disorder (PTSD) symptoms, as measured by IES-R, and peritraumatic distress, measured by CPDI, were frequently reported (41.05% and 43.21%, respectively). PTSD resulted independently associated with peritraumatic distress (Adjusted Odds Ratio, AOR 49.83), perception of being avoided by family and/or friends due to work performed (AOR= 4.05), low hope for the future (AOR= 2.25) and female gender (AOR= 2.90). Age and profession were considered confounding variables. **Results.** These results showed that even in times of reduced restrictions, the prevalence of peritraumatic distress and PTSD is high, regardless of work and professional specialization, length of service, more or less direct contact with covid-19 patients. **Conclusions.** Since the biological damage resulting from a PTSD is known, it is important to activate screening programs followed by specific interventions to reduce long-term risks to mental health.

Key words. Covid-19, CPDI, distress, hope for future, hospital workers, perceived isolation, PTSD.

Prevalenza e caratteristiche di distress in un campione di lavoratori ospedalieri di un grande ospedale di Roma, rilevate in un periodo compreso tra due picchi di pandemia covid-19.

Riassunto. Scopo. Scopo di questo studio è stato misurare il distress dei lavoratori di un grande ospedale di Roma, in un periodo immediatamente successivo al lockdown generale, messo in atto per contenere i contagi, in cui le restrizioni nazionali erano state allentate tranne che per l'indicazione di indossare mascherine FP2 e mantenere la distanza interpersonale di almeno un metro. **Metodi.** È stata condotta un'indagine anonima attraverso il sito web ospedaliero. Dei 324 rispondenti (23-69 anni; 78,09% femmine) il 41,05% è composto da infermieri, il 31,17% da medici, il 7,72% da impiegati con funzione amministrativa, il 3,09% da psicologi, l'1,54% da biologi, il 13,58% raggruppato nella categoria "altro". Il 60,49% lavorava in reparti no covid-19, il 20,37% in reparti covid-19, il 13,58% in ambulatorio e il 5,56% in unità esterne all'ospedale. Il 45,06% è stato esposto a covid-19 e il 7,72% è risultato positivo alla malattia. Il 66,67% è soddisfatto delle misure di sicurezza adottate dall'ospedale per fronteggiare il rischio di contagio. Per il 41,05% risulta un probabile PTSD, misurato con IES-R, e nel 43,21% è presente distress peritraumatico, misurato con CPDI. Il PTSD è risultato indipendentemente associato a distress peritraumatico (Adjusted Odds Ratio, AOR= 49,83), alla percezione di essere evitati da familiari e/o amici a causa del lavoro svolto (AOR= 4,05), a una bassa speranza per il futuro (AOR= 2,25) e al genere femminile (AOR= 2,90). Età e professione sono state considerate variabili confondenti. **Risultati.** I risultati mostrano che anche in tempi di allentamento delle restrizioni adottate per ridurre i contagi, la prevalenza di distress peritraumatico e PTSD è elevata, indipendentemente da specializzazione lavorativa e professionale, anzianità di servizio, contatto più o meno diretto con i pazienti covid-19. **Conclusioni.** Poiché il danno biologico derivante da un disturbo da stress post-traumatico è noto, è importante attivare programmi di screening a cui seguano interventi specifici per ridurre i rischi, a lungo termine, per la salute mentale.

Parole chiave. Covid-19, PTSD, CPDI, distress, isolamento percepito, lavoratori ospedalieri, speranza per il futuro.

Introduction

On 11 March 2020, the World Health Organization defined the covid-19 coronavirus infection as a "pandemic", underlining the seriousness of its spread worldwide. To preserve public health and contain the spread of the infection, numerous nations, including Italy, have adopted containment measures such as social distancing and quarantine, up to the isolation of infected people[1]. To treat the most severe covid-19 symptoms, hospitalization units with separate access paths and dedicated health personnel have been activated in many large Italian hospitals.

Numerous studies to detect the psychological consequences of the covid-19 pandemic and the associated lockdown has been conducted on the general population and on health workers. Just to name a few, a peritraumatic stress syndrome was detected in one third of the general population[2,3], as well as post-traumatic stress disorder (PTSD) symptoms (ranging from 7.6%-37.14%); depression (17.3%-67,3%), anxiety (20%-32.1%), sleep disturbances (7.3%-57.1%) and psychological distress (41.8%) were generally higher in women, young people, in those who live alone, in people with professional and economic uncertainty, with a psychiatric history, in those who have had direct contact with covid-19 infection[4-7].

Healthcare professionals, already at risk of common mental disorders worldwide[8,9], found themselves facing many sources of "unprecedented stressors" with insufficient skills and training[10], and with a higher risk of infection for them and their cohabitants[11].

In the first three months of the pandemic, the risk of infection among staff working in healthcare facilities was three times greater than in those who had no contact with colleagues or patients in an early stage of unsuspected infection[12]. The Italian INAIL data indicate that of the 52,209 infections and 303 deaths from covid-19 of professional origin, 80.2% and 34%, respectively, were related to people who worked in health areas (August 31, 2020). The most at risk category for infections was the health technicians (nurses, physiotherapists, 39.7% nurses); followed by social health workers (20.9%), doctors (10.2%), social welfare workers (8.9%), unqualified staff as porters, auxiliary stretcher bearers (4.8%), administrative clerks (3.1%), cleaners (1.9%), health managers (1%)[13].

The pandemic has changed the healthcare workers' psychological health on a personal, family and social level[14], as well as their clinical practice[15]. The prevalence of psychological and psychopathological disorders varied according to the pandemic phase, with higher values in the initial periods. Studies conducted between March and May 2020 have shown prevalence of depression ranging from 13.5% to 50.4%, distress from 27.9% to 71,5%, anxiety disorders from 19.8% to 50,1%, insomnia from 8.3% to 34%, symptoms of PTSD from 49,4% to 53.8%. Frequently female gender and young age were been found associated with psychological distress; to be exposed to covid-19 was been found associated with depression; to work on the front line resulted associated to symptoms of PTSD; to have had a dead, hospitalized or quarantined colleague was associated with high levels of insomnia, depression and perceived stress; to be a nurse or social worker was associated with severe insomnia[16-19].

A study on 627 Italian health professionals, during the peak of the covid-19 pandemic, reported high levels of stress, burnout, secondary trauma, anxiety, and depression among those who worked with covid-19 patients. High levels of stress and burnout and low levels of compassion satisfaction were detected in those working in areas with high rates of infection. In the subgroup who worked with covid-19 patients, the percentage that thought to need for psychological support was twice that those that did not work with covid-19 patients[20].

A recent study on Italian health care professionals detected some coping strategies as protective factor for distress during covid-19 outbreak. An overall positive attitude toward stressful situations resulted as the main protective factor[21]. Another protective factor associated with positive physical or mental health outcomes is "hope for the future" as conceptualized by Snyder[22].

As a covid-19 hospital, the Sant'Andrea University Hospital has remodeled its organization in order to activate "dedicated inpatient departments", with suspension of most outpatient services. 147 covid-19 beds were activated, of which 37 were in intensive/semi-intensive care.

The purpose of this study was to measure the prevalence of PTSD and peritraumatic distress, as measure of psychological health, and the role of the hope in the future, in a sample of the employees of a large University Hospital in Rome. The survey was conducted between May, 10 and October, 5, 2020, in a so-called transitional period when the peak of emergency was progressively easing due to reduction in the number of infections and in the "pressure" of the National Health Service.

Materials and methods

The survey was anonymous, and study procedures were approved by Hospital Ethics Committee (Prot. n.75/2020; CE 7000/2020, dated May 2020).

Between mid-May and mid-October, in an intermediate phase between two epidemic peaks, a web-

based descriptive-analytical survey was conducted among hospital staff in Rome, Italy.

The survey was uploaded to the hospital website and 324 people clicked on a link that took them to the survey. The web-survey contained: the information sheet, the informed consent necessary to access, and the questionnaires to measure the variables under study. Only those who declared their consent to participate in the survey were able to access the items in the questionnaires and sent their answers via the platform.

All procedures followed in this study were in accordance with the World Medical Association 1964 Helsinki Declaration and its subsequent amendments.

Measures of distress

Impact of Event Scale-Revised (IES-R)[23] is a 22-item questionnaire that assesses subjective distress caused by traumatic events. Items correspond directly to 14 of the 17 DSM-IV symptoms of PTSD[24]. Items are rated on a 5-point scale ranging from 0 ("not at all") to 4 ("extremely"). The IES-R yields a total score, ranging from 0 to 88, and three subscale scores for Avoidance, Intrusions and Hyperarousal. As other questionnaires it is not used for psychiatric diagnoses but can be a useful screening tool for probable cases of PTSD in people who have been exposed to situations where they feared for their physical safety. A score below 33 indicates no PTSD, between 33 and 50 mild to moderate PTSD, and above 50 severe PTSD. As reported in previous studies[25], a cut-off score of 33 provided good values of sensitivity and specificity. In this study internal consistency was excellent-to-good for all scores, with Cronbach's alpha coefficients ranging from 0.800 to 0.938.

Covid-19 Peritraumatic Distress Index (CPDI)[2,3] is a 24-item questionnaire referred to anxiety, depression, specific phobias, cognitive change, avoidance and compulsive behavior, physical symptoms and loss of social functioning due to the covid-19 pandemic, in the previous week. The questionnaire was developed to measure the level of distress that the person experiences when facing a new traumatic event such as the covid-19 pandemic. Each item is rated on a 5-point scale from 0 ("not at all") to 4 ("extremely"). The total score is generated by the sum of the individual items, compared to 100, based on the formula:

$$(\text{raw total score} / 96) * 100$$

A score below 28 indicates no distress, between 28 and 51 mild to moderate peritraumatic distress, and above 51 severe peritraumatic distress. CPDI scores above 27 identify those operationally defined as peritraumatic stress "cases". In this study, internal consistency was excellent, with Cronbach's alpha coefficient= 0.833 (α=0.934 and Symbol α=0.871, for males and females, respectively).

HOPE scale[22,26] is a 12-item questionnaire developed to measure the Snyder's cognitive model of hope. Four items measure agency for goals (e.g.: "I energetically pursue my goals"), and four measure pathways thinking in regard to goals (e.g.: "I can think of many ways to get out of a jam"); the remaining four items are fillers, with respect to the measured construct (Item 3 "I feel tired most of the time", item 5 "I get easily overwhelmed in an argument", item 7 "I care about my health", item 11 "I usually find myself worrying about something").

Each item is rated on an 8-point scale, from 1 ("definitely false") to 8 ("definitely true"). The total hope score can range from 8 to 64. Higher scores represent higher hope levels.

In this study Cronbach's alpha coefficient is 0.752.

Socio-demographic data (e.g.: sex, age) as data on workplace (e.g.: at home, in a covid-19 ward), and covid-19 exposure history (e.g.: exposure, positivity, quarantine, hospitalization) was also collected. Information regarding psychological status was obtained through 5 questions related to the last weeks: "Were you worried about dying if you contracted covid-19?", "Did you feel that you were being shunned by family and/or friends because of your job (where you worked from)?", "Did you ask psychological support?", "Did you use psychotropic drugs?", "Did you use sleep remedies (drugs, supplements, herbal teas)?". The sum of the 5 responses was considered a measure of the "Psychological burden"

Data reduction and statistical analysis

Between May and October 2020, Italy witnessed a change in the attitude of the general population that we could separate into two periods: the first one characterized by greater euphoria, the second by the fear of returning to lockdown due to the recovery of contagions. For this reason, respondents were subdivided into two groups with respect to survey compilation date (10 may-14 august vs 15 august-10 oct). For descriptive purposes, and to compare results with those of other studies, the age variable was subdivided into two group (<51/>=51yrs), and also religious beliefs, which, although more numerous, resulted in too small subgroups (no/yes). Furthermore, respondents were divided into two groups with respect to the sample median score in Hope-Total (low≤50 vs high>50). Respondents were divided into 4 groups (0, 1, 2, 3-5) with respect to psychological burden and numbers of cohabitants (0, 1, 2-3, 4-5), into 5 groups for years of work (1-

9, 10-19, 20-29, 30-39, 40-49) and age (20-29, 30-39, 40-49, 50-59, 60-69).

The descriptive statistics included percentages or mean values, depending on the nature of each variable, as well as standard deviations (SDs) whenever applicable. To analyze differences between groups, χ^2 tests and t-tests were used depending on the type of data. Cronbach's alpha was used to assess the internal consistency of scales.

Crude and Adjusted Odds Ratios (ORs and AORs) with 95% confidence intervals (CIs) to study the association for potential variables associated with IES-R-defined cases of PTSD (IES-R total score >33) were estimated using logistic regression models. Model-building involved assessing bivariate associations between the dependent variable (cases of PTSD) and each of the potential covariates; covariates not significantly associated (p>.10) with the outcome were then excluded from further consideration. The remaining candidate covariates underwent multivariable logistic regression and were subjected to backward selection until all remaining covariates had p-value <.05.

No questionnaire was excluded from analysis for missing values. Analyses were conducted on a sample of 324 respondents.

All statistical analyses were performed using STATA, version 11.0 (StataCorp, College Station, TX, USA).

Results

The sample consisted of 71 (21.91%) males and 253 (78.09%) females, with a mean age of 44.33 years (standard deviation, SD=11.17). Males were significantly older than females (mean=46.90; SD=10.52 vs mean=43.61; SD=11.26; p=0.028). More than 90% worked in hospital and 20% in a covid-19 ward (only 2% in smart working). Around 40% were nurses, 30% doctors, 8% administrative, 3% psychologists.

The demographic characteristics, on the total sample and separately by sex, are reported in table 1, the professional ones in table 2 and the covid-19 related ones in table 3.

Table 1. Socio-demographic characteristics of the 324 hospital workers. separately by sex.

		Study base (N=324)		Males (N=71)		Females (N=253)		p-value
		n	%	n	%	n	%	
Detection time								
	10 may-14 aug	231	71.3	49	69.01	182	71.94	
	15 aug-10 oct	93	28.7	22	30.99	71	28.06	0.63
Age (ys)								
	20-29	51	15.74	5	7.04	46	18.18	
	30-39	56	17.28	12	16.9	44	17.39	
	40-49	98	30.25	25	35.21	73	28.85	
	50-59	93	28.7	19	26.76	74	29.25	
	60-69	26	8.02	10	14.08	16	6.32	*0.052*
Live alone								
	no	275	84.88	64	90.14	211	83.4	
	yes	49	15.12	7	9.86	42	16.6	*0.161*
Cohabitants								
	0	49	15.12	7	9.86	42	16.6	
	1	85	26.23	25	35.21	60	23.72	
	2-3	154	47.53	29	40.85	125	49.41	
	4-5	36	11.11	10	14.08	26	10.28	*0.11*
Religious								
	no	120	37.04	25	35.21	95	37.55	
	yes	204	62.96	46	64.79	158	62.45	*0.718*

Table 2. Professional characteristics of the 324 hospital workers, separately by sex.

		Study base (N=324)			Males (N=71; 21.91%)			Females (N=253; 78,09%)			
		n	%	mean (SD)	n	%	mean (SD)	n	%	mean (SD)	*p-value*
Workplace											
	at home	7	2.16		1	1.41		6	2.37		
	out of home	12	3.7		4	5.63		8	3.16		
	hospital	301	92.9		65	91.55		236	93.28		
	other	4	1.23		1	1.41		3	1.19		*0.755*
Profession											
	medical doctor	101	31.17		31	43.66		70	27.67		
	nurse	133	41.05		25	35.21		108	42.69		
	psychologist	10	3.09		1	1.41		9	3.56		
	biologist	5	1.54		0	0,00		5	1.98		
	administrative	25	7.72		3	4.23		22	8.7		
	other	44	13.58		9	12.68		35	13.83		*0.19*
Unit											
	no-COVID ward	196	60.49		39	54.93		157	62.06		
	COVID-19 ward	66	20.37		16	22.54		50	19.76		
	outpatient clinic	44	13.58		13	18.31		31	12.25		
	outside the hospital	18	5.56		3	4.23		15	5.93		*0.482*
Years of work											
	01-19	77	23.77		15	21.13		62	24.51		
	10-19	92	28.4		17	23.94		75	29.64		
	20-29	85	26.23		24	33.8		61	24.11		
	30-39	58	17.9		14	19.72		44	17.39		
	40-49	11	3.7		1	1.41		11	4.35		*0.361*
				18.11 (11.29)			18.76 (10.33)			17.93 (11.56)	*0.59*

No significant differences between males and females emerged. One hundred forty-six (45.06% were exposed to covid-19, 25 (7.72%) tested positive to covid-19 test, 56 (17.28%) were or had been in quarantine, 4 (1.23%) were or had been hospitalized for covid-19. 216 (66.67%) were satisfied with the measures adopted by the hospital to protect the health of workers.

As reported in table 4, ninety (27,78%) used sleep remedies, females more than males (p=0.086). Twenty (6.17%) and 21 (6.48%), respectively used psychotropic drugs and psychological support. 194 (59.88%) feel they are being avoided by relatives and friends due to their work, much more among females (p=0.004). Ninety-five (29.32%) were worried about dying.

The prevalence of PTSD was 23.94% among males and 45.85% among females (p=0.01).

Females reported higher Intrusion, Avoidance, and Hyperarousal scores, compared to males (data not showed). In the all sample, 59 (18.21%) resulted as moderate cases of PTSD, and 74 (22.84%) severe cases. Significant differences between males and females emerged. Eight (11.27%) of males and 51 (20.16%) of females were moderate cases of PTSD, and 9 (12.68%) versus 65 (25.69%) severe cases of PTSD (p=0.004).

As shown in table 5, moderate levels of peritrau-

Table 3. Covid-19 related characteristics among 324 hospital workers, separately by sex.

		Study base (N=324)			Males (N=71)			Females (N=253)			
		n	%	mean (SD)	n	%	mean (SD)	n	%	mean (SD)	p-value
Exposure to covid-19											
	no	178	54.94		33	46.48		145	57.31		
	yes	146	45.06		38	53.52		108	42.69		*0.105*
Positive to covid-19											
	no	289	89.2		65	91.55		224	88.54		
	yes	25	7.72		5	7.04		20	7.91		
	test not done	10	3.56		1	1.41		9	3.56		*0.625*
Having been in quarantine											
	no	272	83.95		59	83.1		213	84.19		
	yes	52	16.05		12	16.9		40	15.81		*0.825*
Be in quarantine											
	no	320	98.77		70	98.59		250	98.81		
	yes	4	1.23		1	1.41		3	1.19		*0.881*
Having been hospitalized											
	no	323	99.69		71	100,00		252	99.6		
	yes	1	0.31		0	0,00		1	0.4		*0.596*
Be hospitalized											
	no	321	99.07		69	97.18		252	99.6		
	yes	3	0.93		2	2.82		1	0.4		*0.06*
Satisfied with measure taken by the hospital											
	no	108	33.33		23	32.39		85	33.6		
	yes	216	66.67		48	67.61		168	66.4		*0.849*

matic distress were found in 28.70%, and severe in 14.51% with no significant differences between males and females.

One hundred thirdy (52.16%) reported scores below the median value of hope for the future. No differences between males and females emerged.

As shown in table 6, to be a probable PTSD case resulted associated with female, age under 51, being a nurse or administrative (medical doctor as reference), have been exposed to covid-19, used remedies for sleep and psychotropic drugs, feeling avoided by others and being worried about dying, a low hope in the future, and presence of moderate or severe symptoms of peritraumatic distress. To be satisfied with the measures taken by the hospital was associated with no-case of PTSD. In the multivariable logistic regression analysis, PTSD resulted independently associated with peritraumatic distress (Adjusted Odds Ratio, AOR 49,83; 95% Confidence Interval, CI 23,24-106,88), perception of being avoided by family and/or friends because of the work done (AOR=4,05; 95%CI=1,78-9,22), to have a low hope for future (AOR=2,25; 95%CI=1,06-4,75) and to be female (AOR=2,90; 95%CI=1,17-7,21), after adjustment for age and profession.

Table 4. Behaviors and concerns related to COVID-19 among 324 hospital workers, separately by sex.

		Study base (N=324)		Males (N=71)		Females (N=253)		
		n	%	n	%	n	%	p-value
Sleeping remedies								
	no	234	72.22	57	80.28	177	69.96	
	yes	90	27.78	14	19.72	76	30.04	*0.086*
Psychotropic drugs								
	no	304	93.83	66	92.96	238	94.07	
	yes	20	6.17	5	7.04	15	5.93	*0.73*
Psychological support								
	no	303	93.52	66	92.96	237	93.68	
	yes	21	6.48	5	7.04	16	6.32	*0.828*
Avoided by others								
	no	130	40.12	39	54.93	91	35.97	
	yes	194	59.88	32	45.07	162	64.03	*0.004*
Worried about die								
	no	229	70.68	51	71.83	178	70.36	
	yes	95	29.32	20	28.17	75	29.64	*0.809*
Psychological burden								
	0	81	25,00	25	35.21	56	22.13	
	1	96	37.04	24	33.8	96	37.94	
	2	66	26.09	15	21.13	66	26.09	
	3-5	35	13.83	7	9.86	35	13.83	*0.153*

Table 5. PTSD, as measured by IES-R, peritraumatic distress, and hope for the future among 324 hospital workers, separately by sex.

		Study base (N=324)			Males (N=71)			Females (N=253)			
		n	%	mean (SD)	n	%	mean (SD)	n	%	mean (SD)	p-value
PTSD											
	absent (0-32)	191	58.95		54	76.06		137	54.15		
	moderate (33-49)	59	18.21		8	11.27		51	20.16		
	severe (50-88)	74	22.84		9	12.68		65	25.69		*0.004*
CPDI				28.59(22.60)			23.83(21.75)			29.93(22.69)	*0.043*
	absent (0-26)	184	56.79		46	64.79		138	54.55		
	moderate (27-50)	93	28.7		17	23.94		76	30.04		
	severe (51-96)	47	14.51		8	11.27		39	15.42		*0.301*
				26.54(19.59)			23.97(19.00)			27.26(19.73)	*0.211*
HOPE											
	high(51-64)	155	47.87		32	45.07		123	48.62		
	low(29-50)	130	52.16		39	54.93		130	51.38		*0.597*
				48.72(7.65)			48.76(7.77)			48.71(7.63)	*0.959*

Table 6. Univariate and multivariate logistic regression analysis: cases of PTSD (N=133; no-cases. N=191) as dependent variable.

		no-cases (58.95%)		cases (41.05%)						
		n	%	n	%	p-value	OR	95%CI	AOR	95%CI
Detection time										
	10 may-14 aug	133	57.58	98	42.42		reference			
	15 aug-10 oct	58	62.37	35	37.63	0.428	0.82	0.50-1.34		
Sex										
	male	54	76.06	17	23.94		reference		reference	
	female	137	54.15	116	45.85	**0.001**	2.69	1.48-4.89	2.9	1.17-7.21
Age (ys)										
	22-50	124	55.11	101	44.89		reference		reference	
	51-69	67	67.68	32	32.32	**0.034**	0.59	0.36-0.96	0.77	0.35-1.72
Live alone										
	no	158	57.45	117	42.55		reference			
	yes	33	67.35	16	32.65	0.195	0.65	0.34-1.25		
Cohabitans										
	0	33	67.35	16	32.65		reference			
	1	45	52.94	40	47.06		1.83	0.88-3.82		
	2-3	93	60.39	61	39.61		1.35	0.69-2.67		
	4-5	20	55.56	16	44.44	0.392	1.65	0.68-4.01		
Religious										
	no	71	59.17	49	40.83		reference			
	yes	120	58.82	84	41.18	0.952	1.01	0.64-1.60		
Profession										
	medical doctor	68	67.33	33	32.67		reference		reference	
	nurse	67	50.38	66	49.62		2.03	1.19-3.47	1.07	0.46-2.52
	psychologist	7	70,00	3	30,00		0.88	0.21-3.64	4.94	0.79-30.89
	biologist	3	60,00	2	40,00		1.37	0.22-8.62	0.93	0.06-13.97
	administrative	12	48,00	13	52,00		2.23	0.92-5.43	2.92	0.72-11.90
	other	34	68,00	16	32,00	**0.064**	0.97	0.47-2.00	1.02	0.31-3.30
Unit										
	no-COVID ward	112	57.14	84	42.86		reference			
	COVID-19 ward	37	56.06	29	43.94		1.05	0.60-1.83		
	outpatient clinic	31	70.45	13	29.55		0.56	0.28-1.13		
	outside the hospital	11	61.11	7	38.89	0.402	0.85	0.32-2.28		
Years of work										
	01-19	44	57.14	33	42.86		reference			
	10-19	52	56.52	40	43.48		1.03	0.56-1.89		

Continue

Continue **Table 6.**

		no-cases (58.95%)		cases (41.05%)						
		n	%	n	%	p-value	OR	95%CI	AOR	95%CI
	20-29	51	60,00	34	40,00		0.89	0.48-1.66		
	30-39	37	63.79	21	36.21		0.76	0.38-1.52		
	40-49	7	58.33	5	41.67	0.92	0.95	0.28-3.27		
Exposure to covid-19										
	no	113	63.48	65	36.52		reference			
	yes	78	53.42	68	46.58	0.067	1.52	0.97-2.37		
Positive to covid-19										
	no	169	58.48	120	41.52		reference			
	yes	13	52,00	12	48,00		1.3	0.57-2.95		
	test not done	9	90,00	1	10,00	0.105	0.16	0.02-1.25		
Sleeping remedies										
	no	160	68.38	74	31.62		reference			
	yes	31	34.44	59	65.56	<0.001	4.12	2.46-6.89		
Psychotropic drugs										
	no	186	61.18	118	38.82		reference			
	yes	5	25,00	15	75,00	0.001	4.73	1.67-13.35		
Psychological support										
	no	182	60.07	121	39.93		reference			
	yes	9	42.86	12	57.14	0.121	2.01	0.82-4.90		
Avoided by others										
	no	104	80,00	26	20,00		reference		reference	
	yes	87	44.85	107	55.15	<0.001	4.92	2.94-8.23	4.05	1.78-9.22
Worried about die										
	no	154	67.25	75	32.75		reference			
	yes	37	38.95	58	43.61	<0.001	3.22	1.96-5.29		
Satisfied with measure taken by the hospital										
	no	49	45.37	59	54.63		reference			
	yes	142	65.74	74	34.26	<0.001	0.43	0.27-0.69		
CPDI										
	absent (0-26)	167	90.76	17	9.24		reference		reference	
	moderate severe (>=27)	24	17.14	116	82.86	<0.001	47.48	24.42-92.32	49.83	23.24-106.88
HOPE										
	high(51-64)	108	69.68	47	30.32		reference		reference	
	low(29-50)	83	49.11	86	50.89	<0.001	2.38	1.51-3.76	2.25	1.06-4.75

Legend: OR= Odds ratio; 95%CI = 95% Confident Interval; AOR= Adjusted Odds Ratio; CPDI=Covid Peritraumatic Distress Index; HOPE= Hope in the future scale

Discussion

The covid-19 epidemic has been a period of exceptional pressure for healthcare workers. The impact with an unknown and highly transmissible virus has confronted humans and the Health System with the limits of medicine, blasting security into the domain of one's life, the world and nature[27]. In just a few months, the way we live and die with has changed. Seniors locked up in isolation, patients suffering from other diseases deferred in treatment with disastrous effects, hundreds of thousands of patients who died alone and family members deprived of the usual mourning rituals[28]. «This pandemic was the hardest test of our lives, at least for those who have not known war»[29], an event that, like 11 September, traumatically stimulated human awareness of death, arousing archaic fears and potentially debilitating existential anguish for all human beings[30].

In hospitals, to treat the sudden number of covid-19 patients and to preserve the health of employees and patients suffering from other diseases, institutions have coped by reconverting hospital services and treatment paths and supporting the treating staff with procedures and measures to protect against infection. Our results showed that most were satisfied with the measures taken by the hospital, but some were not (216; 66.67% vs. 108; 33.33%).

In line with the literature data, ours also showed that health workers report high levels of distress, with moderate (18,21%) or severe (22,84%) PTSD, especially among females. But even as at the end of the phase of strong pandemic spread, moderate and severe symptoms of peritraumatic distress were still present (28,70% and 14,51%, respectively).

Our results are consistent with those found in the general population[31], the prevalence of peritraumatic distress remained high even after the end of the first pandemic wave with all the risks that persistent distress entails in increasing the risk of psychiatric disorders and/or inadequate defense mechanisms, such as denial or dissociation or emotional numbness. A low hope for the future, found in the 52,16% of respondents, could suggests – according to Snyder's Cognitive-motivational theory of hope – that the pandemic may have worn out in some the ability to generate that inner mental energy (Agency) necessary to produce cognitive strategies (Pathway) to overcome obstacles and pursue their goals, and make them more vulnerable to PTSD.

Contemporary medicine has specialized in dealing with what causes physical suffering and deals with little or nothing about what Meier calls «The existential, spiritual and relationship foundations of people»[32]. «In medicine, the art of losing is still the most difficult to manage»[28]. Talking about losses, expressing pain and the sense of grief is fundamental for the well-being of people, because unaddressed and expressed traumas expose you to the risk of excessive reactions to new traumas. While a reworked suffering can even help improve one's life[32].

The mission of the "cure" and therefore the responsibility of the institutions responsible "to cure" should be to take care of the mental health and well-being, also of own employees, and in this historical phase, both in the emergency and in the phases following the epidemic peak, to foster a resilient health workforce and stronger health organizations[33]. An organization affected by an adverse event uses crisis management to restore the system to a previous level of functioning, but when the trauma is of exceptional magnitude appropriate supportive measures to promote post-traumatic growth are desirable.

A process of awareness, elaboration, reflection to understand the feelings of fragility and the sense of own live, and to learn from the experience, can favor a revision of the crisis, stimulate a post traumatic growth and reduce the possibility of developing a PTSD in the case in which subsequent trauma should recur[33]. In this regard, healthcare professionals trained to help cancer patients to elaborate the sense of limitation and human frailty showed a lower prevalence of peritraumatic distress (11%) in a study carried out between 29 May and 5 June 2020, on a Italian sample of 394 psycho-oncologists, leading the authors to hypothesize that good resilience skills are associated and consistent with the daily confrontation with suffering, death and the limitations of life[34].

The Professional Associations and the Italian Government have expressed their opinion on the need to provide more adequate support to health professionals. During the lockdown, the Ministry of Health activated a telephone support service (Psychological support free call number 800.833.833) also dedicated to healthcare professionals. Several authors agree that health institutions should pay greater attention to the psychic well-being of operators, promoting distress screening programs, using simple assessment tools such as the CPDI, implementing support interventions for staff with adaptation difficulties[34,35], and implementing a "grief leadership" that relieves stress, helps to understand the pain of grief, to recognize and honor losses, to find meaning and meaning in events[36]. Recognizing the strategic role of grief leadership after extreme events is not acquired in the corporate health care culture, but its importance should be emphasized because, as someone wrote, «to miss grief is to miss a vital part of leadership»[37].

Conclusions

Healthcare professionals have paid a very high price to the covid-19 pandemic with a toll of at least

115,500 deaths worldwide according to estimates for the period March 2020-May 2021 published in a report by the WHO Health Workforce Department[38]. The results of this report prompted WHO and its partners, such as the Frontline Health Workers Coalition, the Global Health Workforce Network, the International Labor Organization and the Public Services International and the World Medical Association, to promote actions concrete to better protect health workers around the world from covid-19 but also from problems such as burnout, stress, anxiety and fatigue, promoting a dignified and enabling work environment. The responsibility of institutions should always be, but even more so in the course of health emergencies of exceptional magnitude, that of looking after the mental health and well-being of its employees both in the phases of strong pandemic spread and in the following ones, to foster a resilient health workforce and stronger health organizations[33,39].

Conflicts of interests: the authors have no conflict of interests to declare.

References

1. Cucinotta D, Vanelli M. WHO Declares COVID-19 a Pandemic. Acta Biomed 2020; 91 157-60.
2. Qiu J, Shen B, Zhao M, Wang Z, Xie B, Xu Y. A nationwide survey of psychological distress among Chinese people in the COVID-19 epidemic: implications and policy recommendations. Gen Psychiatr 2020; 33: e100213. 22457.
3. Costantini A, Mazzotti E. Italian validation of CoViD-19 Peritraumatic Distress Index and preliminary data in a sample of general population. Riv Psichiatr 2020; 55: 145-51.
4. Rossi R, Socci V, Pacitti F, et al. Mental health outcomes among frontline and second-line health care workers during the coronavirus disease 2019 (COVID-19) Pandemic in Italy. JAMA Netw Open 2020; 3: e2010185.
5. Casagrande M, Favieri F, Tambelli R, Forte G. The enemy who sealed the world: effects quarantine due to the COVID-19 on sleep quality, anxiety, and psychological distress in the Italian population. Sleep Med 2020; 75: 12-20.
6. Forte G, Favieri F, Tambelli R, Casagrande M. The enemy which sealed the world: effects of COVID-19 diffusion on the psychological state of the Italian population. J Clin Med 2020; 9: 1802.
7. Mazza C, Ricci E, Biondi S, et al. A nationwide survey of psychological distress among Italian people during the COVID-19 pandemic: immediate psychological responses and associated factors. Int J Environ Res Public Health 2020; 17: 3165.
8. Gold JA. Covid-19: adverse mental health outcomes for healthcare workers. BMJ 2020; 369: 1815.
9. Petrie K, Crawford J, Baker STE, et al. Interventions to reduce symptoms of common mental disorders and suicidal ideation in physicians: a systematic review and meta-analysis. Lancet Psychiat 2019; 6: 225-34.
10. Mehta S, Machado F, Kwizera A, et al. COVID-19: a heavy toll on health-care workers. Lancet Respir Med 2021; 9: 226-8.
11. Shah ASV, Wood R, Gribben C, et al. Risk of hospital admission with coronavirus disease 2019 in healthcare workers and their households: nationwide linkage cohort study. BMJ 2020; 371: 3582.
12. Karlsson U, Fraenkel CJ. Covid-19. Risks to healthcare workers and their families. BMJ 2020; 371: 3944.
13. INAIL - Scheda Nazionale Infortuni COVID-19. I dati sulle denunce da COVID-19 (monitoraggio al 31 agosto 2020). Available at: www. inail.it 21/9/2020 [last accessed July 25, 2022].
14. Kisely S, Warren N, McMahon L, Dalais C, Henry I, Siskind D. Occurrence, prevention and management of the psychological effects of emerging virus outbreaks on healthcare workers: rapid review and meta-analysis. BMJ 2020; 369: m1642.
15. Costantini A, Mazzotti E, Marchetti P. Stress of working in oncology. Cancer Stud Ther J 2020; 5: 1-5.
16. Lai J, Ma S, Wang Y, et al. Factors associated with mental health outcomes among health care workers exposed to Coronavirus disease 2019. JAMA Netw Open 2020; 3: e203976.
17. Lasalvia A, Bonetto C, Porru S, et al. Psychological impact of COVID-19 pandemic on healthcare workers in a highly burdened area of north-east Italy. Epidemiol Psychiatr Sci 2021; 30: e1.
18. Rossi R, Socci V, Talevi D, et al. COVID-19 pandemic and lockdown measures impact on mental health among the general population in Italy. Front Psychiatry 2020; 11: 790.
19. Zhu Z, Xu S, Wang H, et al. COVID-19 in Wuhan: immediate psychological impact on 5062 health workers. EClinicalMedicine 2020; 24: 100443.
20. Trumello C, Bramanti SM, Ballarotto G, et al. Psychological adjustment of healthcare workers in Italy during the COVID-19 pandemic: differences in stress, anxiety, depression, burnout, secondary trauma, and compassion satisfaction between frontline and non-frontline professionals. Int J Environ Res Public Health 2020; 17: 8358.
21. Babore A, Lombardi L, Viceconti ML, et al. Psychological effects of the COVID-2019 pandemic: perceived stress and coping strategies among healthcare professionals. Psychiatry Res 2020; 293: 113366.
22. Snyder CR. Hope theory: rainbows in the mind. Psychol Inq 2002; 13: 249-75.
23. Weiss DS, Marmar CR. The Impact of Event Scale - Revised. In: Wilson J, Keane TM (eds). Assessing psychological trauma and PTSD. New York: Guilford Press, 1996.
24. American Psychiatric Association. Diagnostic and Statistical Manual of Mental Disorders-IV-TR. Washington, DC: American Psychiatric Publishing, 2000.
25. Morina N, Ehring T, Priebe S. Diagnostic utility of the Impact of Event Scale - Revised in two samples of survivors of war. PLoS ONE 2013; 8: e83916.
26. Mazzotti E, Costantini A, Lamacchia L. Reliability and validity of the Italian Version of the HOPE Scale in a sample of cancer patients. J Cancer Stud and Therap 2020; 01: 1-6.
27. Veltroni W. Intervista a Benedetto Carucci Viterbi. Il rabbino: «Il sentirci fragili alla fine ci aiuterà a riscoprire gli altri». Corriere.it 2020; November 30.
28. Maitra A. Medicine and grief during the COVID-19 era: the art of losing. JAMA Intern Med 2020; 180: 1573-5.
29. Cazzullo A. Abbiamo dimostrato di saper soffrire. Corriere.it 2020; September 25.
30. Emanuel L, Solomon S, Fitchett G, et al. Fostering existential maturity to manage terror in a pandemic. J Palliat Med 2021; 24: 211-7.
31. McGinty EE, Presskreisher R, Anderson KE, Han H, Barry CC. Psychological distress and COVID-19 related stressors reported in a longitudinal cohort of US Adults in April and July 2020. JAMA 2020; 324: 2555.

32. Marchese D. Covid has traumatized America. A doctor explains what we need to heal. The New York Times 2021; March 22.
33. Olson K, Shanafelt T, Southwick S. Pandemic-driven posttraumatic growth for organizations and individuals. JAMA 2020; 324: 1829-30.
34. Costantini A, Mazzotti E, Serpentini S, et al. COVID-19 pandemic distress among a sample of Italian psycho-oncologists: risk of isolation and loneliness. Tumori 2022; 108: 77-85.
35. Delmastro M, Zamariola G. Depressive symptoms in response to COVID-19 and lockdown: a cross-sectional study on the Italian population. Sci Rep 2020; 10: 22.
36. Chang E. When the world's in crisis, we need "grief leaders". Here's how to be one. The Washington Post 2020; September 17.
37. Kubler Ross E, Kessler D. On grief and grieving. New York: Schuster Books, 2014.
38. WHO Health Workforce Department. The impact of COVID-19 on health and care workers: a closer look at death - (September 2021). Available at: https://bit.ly/3S3fdQi [last accessed July 25, 2022].
39. Abbasi J. Prioritizing physician mental health as COVID-19 marches on. JAMA 2020; 323: 2235-6.

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