

Influence of COVID-19 on the mental health of hospital medical staff and affected high-risk cardiac patients - first results of an ongoing civil-military cooperation

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Introduction: COVID-19 was the defining global health and sociopolitical problem in 2020 and 2021. In this civil-military research cooperation, this was the first psychometric data acquisition in Germany with a two-arm study design including hospital staff and affected patients.

Methods: For the first study arm, N = 78 hospital employees from the field of cardiology were included in the study. Of these, n = 40 had direct contact with those affected with COVID-19 (51%); n = 8 had contact with patients with suspected COVID-19 (10%) and n = 30 had no direct contact (39%). In the second study arm, N = 60 hospitalized high-risk patients with suspected COVID-19 were examined and the confirmed cases (n=19; 32%) were compared with the unconfirmed cases. At this stage, patients and treating medical staff were not aware of their COVID-19 infection status which resulted in a double-blinded design of the study.

Results: In the first study arm, multinomial regression analyses showed that proximity had a negative (inverse) influence on avoidance behaviour as part of PTSD, physical symptoms, compulsiveness, paranoid ideation and anger expression-in as tendency to suppress anger [4] as shown in Table 1. In addition, female hospital workers had higher scores on several anger scales [2]. In the second study arm, the prevalence of significant posttraumatic stress symptoms in the at risk patients was 37.9% [95% confidence interval (CI) 35.5–40.3 in all patients and 42.1% (95% CI 37.2–47.0) in the subgroup of patients with later confirmation of a COVID-19. Trait anger was identified as a risk factor, which explains up to 25% of the variance [5]. There was a significant correlation ($r = 0.35$; $p = 0.019$) between the diagnosis of COVID-19 and stress of the PHQ stress module. In a subsequent chi-squared test with the dichotomized values, there was a significant difference between the groups: $\chi^2(1, N = 50) = 5.56$; $p = 0.018$ with more patients with COVID-19 in the high general stress group [3].

Discussion: The results suggesting that the medical staff are less psychologically stressed when working closer to patients with COVID-19 are inconsistent with previous studies [e.g. 1]. This is attributed to the locus of control (LoC) that good protection against infection is possible in contact with patients. The more frequent double burden of work and family among female employees could explain the gender-specific differences in anger. In the second part of the study, patients at risk with suspected COVID-19 showed an unexpectedly high prevalence rate of 38% for probable post-traumatic stress disorders. Even the life-threatening pre-diagnoses represent a medical trauma. The additional occurrence of COVID-19 with a very poor medical prognosis is considered to be the cause of this high rate.

The small number of participants limits the results. Due to the pilot nature of the study, no alpha correction was made, which further limits the findings. An ongoing, large-scale confirmatory longitudinal study is investigating whether the results can be replicated. Until then, they should be interpreted carefully.

Conclusions: The LOC of employees can be positively influenced by the employer. Protective measures within the facilities and their transparent communication by management are of crucial importance. Routine examinations or psychological counseling are strongly recommended for high-risk patients so as not to overlook mental disorders. By continuing the scientific psychocardiological collaboration, knowledge is to be gathered in order to further optimize the treatment.

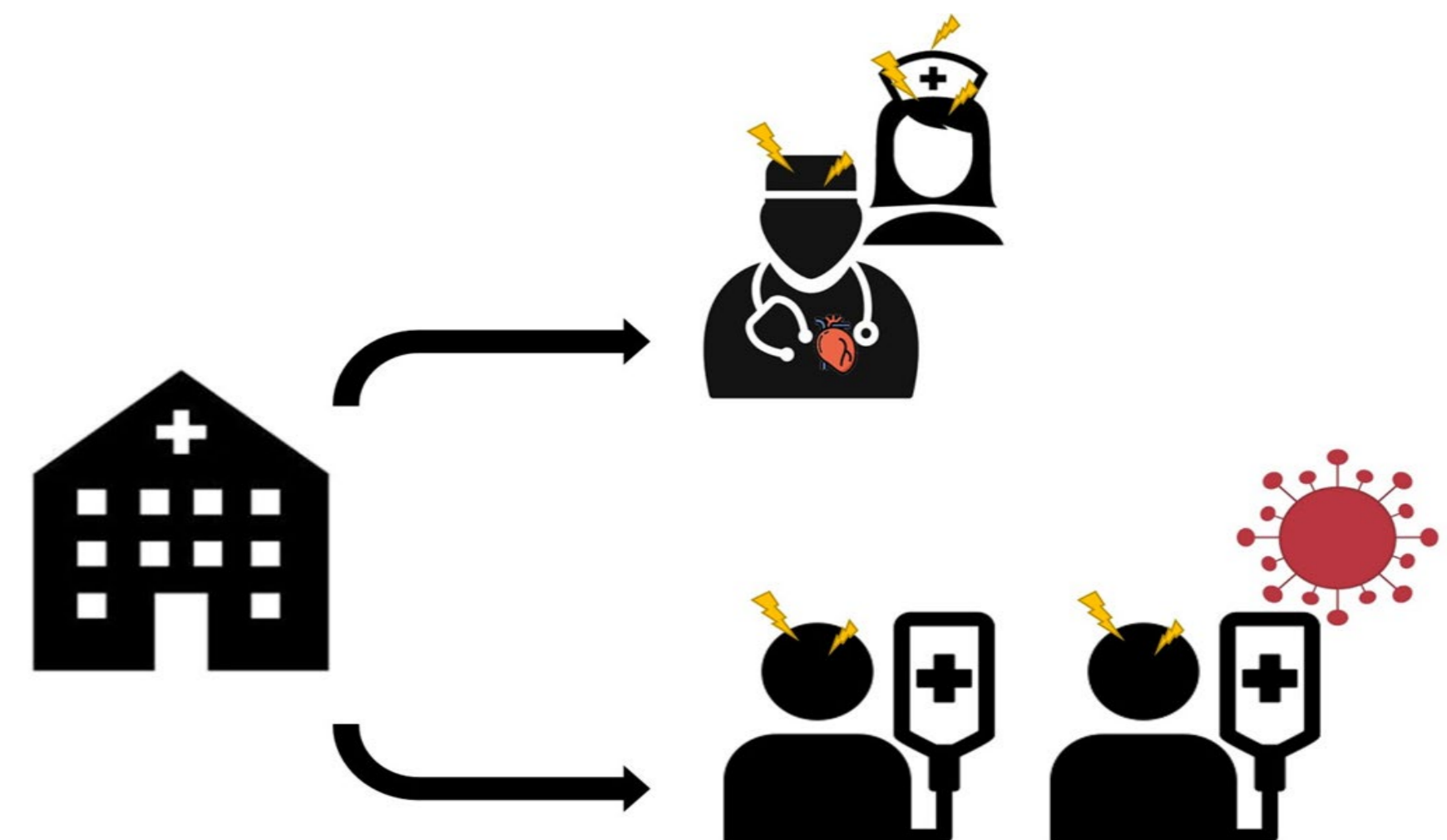


Figure 1: Graphical abstract to illustrate the two-armed study design with hospital staff and affected persons. Copyright: Wehrmed Monatsschrift 2021; 65(3-4)

Table 1: Multinomial regression analyses on the influence of the "proximity to patients with COVID-19" of medical hospital staff on their mental health. Selected significant models.

Regressand	R ²	Predictors	USC		SC	Coefficients		ANOVA		
			B	SE		t	Sig.	df C	df D	Sig.
Avoidance (PCL-5)	.145	Age	.255	.381	.156	.669	.506	5	70	2.38
		WE	.130	.298	.102	.438	.663			
		Gender	-.059	.380	-.019	-.156	.877			
		Occ. Grp	.091	.264	.043	.346	.730			
		Prox.	-.485	.186	-.303	-2.601	.011			
Physical Symp. (PHQ)	.237	Age	-1.434	.896	-.350	-1.601	.114	5	70	4.36
		WE	1.236	.706	.381	1.752	.084			
		Gender	-2.350	.879	-.307	-2.672	.009			
		Occ. Grp	-.907	.602	-.179	-1.508	.136			
		Prox.	-1.133	.428	-.292	-2.646	.010			
Compulsive-ness (BSI)	.181	Age	.037	.138	.061	.268	.789	5	70	3.09
		WE	.022	.109	.045	.198	.844			
		Gender	-.128	.136	-.112	-.940	.351			
		Occ. Grp	-.153	.093	-.202	-1.644	.105			
		Prox.	-.239	.066	-.415	-3.621	.001			
Paranoid Ideation (BSI)	.177	Age	.294	.210	.318	1.398	.166	5	70	3.01
		WE	-.079	.166	-.107	-.474	.637			
		Gender	-.201	.207	-.116	-.972	.335			
		Occ. Grp	-.164	.141	-.143	-1.159	.250			
		Prox.	-.323	.101	-.369	-3.211	.002			
Anger Expression-In (STAXI-2)	.164	Age	2.667	1.447	.462	1.843	.070	5	65	2.54
		WE	-1.230	1.156	-.269	-1.064	.291			
		Gender	-1.983	1.402	-.182	-1.415	.162			
		Occ. Grp	-.783	.916	-.109	-.854	.396			
		Prox.	-1.653	.676	-.297	-2.446	.017			

USC: unstandardized coefficients; SC: standardized coefficients; Sig: significance (p); dfC: degrees of freedom counter; dfD: degrees of freedom denominator; WE: work experience; Occ Grp: occupational group; Prox: proximity to patients with COVID-19 (factor)

Reading:

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- Wesemann U, Vogel J, Willmund G, et al. Proximity to COVID-19 on Mental Health Symptoms Among Medical Staff. *Psychiatr Danub*. 2021; in print
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