# Supplementary material

## Measures – extended description

Demographic data were self-reported by the participants including occupation (physician, nurse, or other), sex (male, female, or diverse), age (18–25, 26–30, 31–40, or >40 years), living status. Participants were asked whether they had – to their own knowledge – work-related or private contact to patients with COVID-19 disease.

The Generalized Anxiety Disorder 7 (GAD-7) [1] and the Patient Health Questionnaire-2 (PHQ-2) [2] are self-report questionnaires derived from the Patient Health Questionnaire for efficient screening and severity measuring of generalized anxiety disorder (GAD) and depression respectively.

The seven items of the GAD-7 capture frequency of occurrence within the past two weeks for the most important DSM-IV criteria for GAD diagnosis. A cut-off score of 10 applied to the sum score achieves sensitivity of 89% and specificity of 82%; internal consistency (Cronbach's alpha=.89) and test-retest reliability (intraclass correlation coefficient [ICC]=.83) are high [1]. The GAD-7 has been validated in a representative German sample [3]. Norm derived from this sample revealed an overall mean sum score of M=2.95 (SD=3.41). Data is also available for patients with a clinical diagnosis (GAD: M=14.0, panic disorder: M=12.5, posttraumatic stress disorder: M=12.0) [4].

The two-item PHQ.2 measures frequency of depressed mood and anhedonia over the past two weeks. A cut-off score of three, applied to the sum score, achieves sensitivity of 87% and specificity of 78%; internal consistency (Cronbach's alpha=.83) is high, and the PHQ-2 has been shown to be sensitive to change [2]. Comparison scores for both healthy individuals (M=1.4, SD=1.3) and patients with a clinical diagnosis are available (major depression: M=4.7, SD=1.5; any depressive disorder: M=3.4, SD=1.7) [2].

The German Fragebogen zur Erfassung von Ressourcen und Selbstmanagementfähigkeiten (Resources and Self-Management Skills Questionnaire, FERUS) [5] measures health-related resources and self-management

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via 26 items (Likert-scale from 1=not accurate to 5=very accurate) on seven subscales (motivation to change, self-monitoring, active and passive coping, self-efficacy, self-verbalization, hope, and social support). The scales are summarized in an overall self-management score with higher scores representing superior resources. The FERUS-26 has been sufficiently validated. Retest-reliability of all scales is satisfactory or good (0.66 to 0.86), internal consistency is good to excellent (0.86 to 0.93) [5]. The test comes with validated reference data for T transformation which we used in this manuscript.

The German Resilience scale RS-13 [6] is a well-established self-report questionnaire designed to assess trait resilience with 13 statements that are rated from '1=no, I do not agree' to '7=yes, I completely agree'. Higher sum scores reflect a person's global capability to adapt positively to challenging conditions [7]. The scale has been validated in several studies, has high internal consistency (Cronbach's alpha=.90), and offers reasonably high retest reliability (.61) [6].

The Maslach burnout inventory consists of 22 statements answered in a 'yes/no' format. The sum score reflects an individual's experience of occupational burnout [8]. The scale offers strong reliability (≥.76), retest reliability ranging from .82 for a few weeks to .54 for 1 year, and has been validated across different work divisions [9], [10].

For economic assessment of somatic symptom burden, we proportionately condensed the well-validated [11], [12] Somatic Symptom Scale-8 (SSS-8) with high internal consistency (Cronbach's alpha=.81) that is sensitive to change [13] into a 2-item screener reflecting the two most prominent domains of somatic symptom disorder (i.e. pain and gastro-intestinal symptoms).

Additional items were generated for assessment of duration and intensity of contact with COVID-19 patients according to the criteria of the Robert Koch Institute as of April 24, 2020, COVID-19-associated anxiety and stress experiences (visual analog scale, VAS), and effects of 'social distancing' (VAS). Open questions were used to record the three currently most stressful factors (associated weighting via VAS), measures that could help to cope with stress in the workplace, and usage/knowledge of support offers established by the UKW.

## References


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| FERUS domain | Full cohort mean (SD) | Physicians | Nurses | Other | COVID contact | No COVID contact |
|---|---|---|---|---|---|---|
| Overall score | 49.6 (9.1) | 51.3 (8.9) | 45.8 (8.5) | 43.4 (6.9) | 48.4 (10.0) | 50.6 (8.2) |
| Motivation for change | 40.1 (8.1) | 39.8 (8.0) | 40.0 (8.8) | 42.8 (8.5) | 40.1 (9.1) | 49.4 (9.6) |
| Coping | 50.4 (9.2) | 52.0 (9.4) | 47.1 (7.4) | 44.2 (8.2) | 49.4 (9.6) | 51.2 (8.8) |
| Self-efficacy | 52.7 (9.2) | 54.4 (8.7) | 49.3 (9.4) | 44.4 (7.7) | 51.5 (9.7) | 53.7 (8.8) |
| Self-verbalization | 44.3 (10.2) | 46.0 (10.1) | 39.9 (9.8) | 40.8 (7.7) | 44.1 (11.5) | 44.5 (9.1) |
| Hope | 52.0 (9.0) | 52.9 (8.4) | 50.0 (10.8) | 49.6 (8.8) | 49.9 (9.7) | 53.9 (8.0) |
| Social support | 50.8 (8.7) | 50.9 (8.4) | 50.5 (9.1) | 50.4 (13.4) | 50.7 (9.3) | 50.9 (8.4) |

**Supplementary Table 1: T-scores in FERUS sub-domains (n=86)**

| Dependent variables | General linear model<br>Wilks λ=0.02<br>F(148, 162.04)=1.80<br>p<0.001 | Linear regression |
|---|---|---|
| GAD-7 | $R^2$=0.67 | β=–0.47 ** |
| PHQ-2 | $R^2$=0.71 | β=–0.57 ** |
| SSS-2 | $R^2$=0.63 | β=–0.29 ** |
| MBI | $R^2$=0.80 | β=–0.43 ** |

**Supplementary Table 2: Results of general linear modeling of RS-13 as a predictor of psychological burden. GAD: general anxiety disorder, PHQ: patient health questionnaire, SSS: somatic symptom scale, MBI: Maslach burnout inventory; **p<.01**

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