Supplement A: validated instruments used in this study

	Measured concepts	Number of items	Scale of item measurement	Range
Moral distress scale Revised version (MDS-R)	Moral distress	21	0-4 Likert scale on frequency and intensity of examples of morally distressing events	0-336
MBI-NL/Utrecht Burnout Scale for health care personnel (UBOS-C)	Emotional exhaustion	8	0-6 Likert scale (frequency)	0-6
	Depersonalization	5	0-6 Likert scale (frequency)	0-6
	Personal accomplishment	7	0-6 Likert scale (frequency)	0-6
Short Big Five Inventory (BFI-XS)	Agreeableness	3	1-5 Likert scale (applicability)	1-5
	Conscientiousness	3	1-5 Likert scale (applicability)	1-5
	Extraversion	3	1-5 Likert scale (applicability)	1-5
	Neuroticism	3	1-5 Likert scale (applicability)	1-5
	Openness	3	1-5 Likert scale (applicability)	1-5
Survey Work-home interaction Nijmegen (SWING)	Negative work-home interaction	3	0-4 Likert scale (frequency)	0-4
	Negative home-work interaction	3	0-4 Likert scale (frequency)	0-4
Culture of Care Barometer (CoCB)	Organizational values	12	1-5 Likert scale (applicability)	1-5
	Managerial support	11	1-5 Likert scale (applicability)	1-5
	Relationships with colleagues	4	1-5 Likert scale (applicability)	1-5
	Absence of job constraints	3	1-5 Likert scale (applicability)	1-5
Teamwork Climate Inventory (TCI) from the Safety Attitudes Questionnaire (SAQ)	Teamwork Climate	6	1-5 Likert scale (applicability)	1-5

Supplement B: Cross-study comparison of prevalence estimates, using ten different methods for estimating BOS-prevalence

Method	Country	Study	Discipline	Reported prevalence %	Total prevalence Nijmegen %	Prevalence physicians Nijmegen (n=53)	Prevalence nurses Nijmegen (n=194)
Pre-defined cut off values							
Cumulative MBI > -9	France	Embriaco et al, 2007	Intensive care	46.5	22.7	13.2	25.8
	France	Poncet et al, 2007	Intensive care	32.8			
	Switzerland	Merlani et al, 2011	Intensive care	29			
	Switzerland	Ricoe et al, 2018	Intensive care	32 / 24[b]			
	Switzerland	Verdon et al, 2008	Intensive care	28			
MBI-HSS EE ≥ 27 AND/OR DP ≥ 10	Denmark	Pedersen et al, 2018	General Practice	25.0	11.6	20.8	9.3
	United States	Shanafelt et al, 2015	Multiple	54.4			
	United States	Shanafelt et al, 2012	Multiple	45.4			
	United States	Shanafelt et al, 2009	Internal medicine	34.0			
MBI EE > 30 OR DEP > 12 OR > PA < 33	France	Quenot et al, 2012	Intensive care	28 / 14[b]	36.7	20.8[a]	41.8[a]
MBI-HSS EE ≥ 25, DP ≥ 10 AND PA ≤ 32	Portugal	Pereira et al, 2016	Intensive care	9.0	2.8	3.8	2.6
	Portugal	Teixeira et al, 2013	Intensive care	9.0			
MBI-HSS EE ≥ 27, DP ≥ 10 AND PA ≤ 33	Denmark	Brøndt et al, 2008	General practice	2.6	2.8	3.8	2.6
	Denmark	Pedersen et al, 2013	General practice	2.6			
	Denmark	Pedersen et al, 2016	Multiple	4.8			
	France	Lesage et al, 2013	Occupational medicine	11.8			
	Germany	Pantenburg et al, 2016	Multiple	10.9			
	Switzerland	Arigoni et al, 2009	Multiple	6			
	Switzerland	Goehring et al, 2005	Primary care	3.5			
UBOS-C EE ≥2.38, DP ≥1.6 (women)/DP ≥1.8 (men), and PA ≤ 3.7	Netherlands	Meynaar et al, 2016	Intensive care	4.4	6.6	5.7	7.0
UBOS-C EE ≥2.5, DP ≥1.6 (women)/DP ≥1.8 (men), and PA ≤ 3.7	Belgium	Vandenbroeck et al, 2017	Multiple	5.1	2.0	3.8	1.6
Percentile-based cut off values							
MBI-GS EE > top tertile AND DP > top tertile	UK	Upton et al, 2012	Multiple	19.8	20.8	18.4	21.9
MBI-HSS EE > top quartile, DP > top quartile AND PA < lowest quartile	Spain	Riquelme et al, 2018	Multiple	7.3	6.4	5.7	6.7
UBOS-C EE > top quartile AND DP > top quartile OR PA < lowest quartile	Netherlands	Twellaar et al, 2008	General practice	19.5	16.7	15.1	17.5
	Netherlands	Van der Wal et al, 2016	Anesthesia	19.8			

[a] significantly different according to Fisher's exact test ($p < .01$).

b These studies reported pre- and post-intervention prevalence.

Supplement C: Scores of emotional exhaustion, depersonalisation and personal accomplishment categorized into subgroups of respondents without burnout symptoms and respondents with burnout symptoms using the estimation method of a cumulative MBI > -9

Subdomain of burnout	Respondents without indication for burnout symptoms (N=194)	Respondents with indication for burnout symptoms (N=57)
Emotional exhaustion, mean (SD)	.94 (.52)	2.23 (.86)
Depersonalisation, mean (SD)	.65 (.54)	1.52 (.79)
Personal accomplishment, mean (SD)	4.57 (.65)	3.60 (.79)
Percentage (%) of total (N=251)	77.3%	22.7%

Supplement D: Missing data analysis

Variable	**Missing count**	**Missing percent**
Sex	0	-
Age	6	2.4%
Years in current job	5	2.0%
Working hours per week	1	.4%
Pre-school or young child at home	0	-
Partner	13	5.2%
Profession	4	1.6%
Burnout syndrome		
Emotional exhaustion	0	-
Depersonalisation	0	-
Personal accomplishment	0	-
Moral distress	20	8.0%
Personality		
Agreeableness	4	1.6%
Conscientiousness	3	1.25
Extraversion	0	-
Neuroticism	4	1.6%
Openness	2	.8%
Work-home balance		
Negative work-to-home spill over	1	.4%
Negative home-to-work spill over	3	1.2%
Culture of care[1]		
Organisational values	74	29.5%
Support from supervisor	74	29.5%
Relationships with colleagues	71	28.3%
Absence of job constraints	71	32.7%
Teamwork Climate	82	32.7%

[1]The many missing values on 'culture of care' were due to the fact that the data were gathered three months prior to this study

Supplement E: Univariate and multivariable linear regression analysis for emotional exhaustion, depersonalization and personal accomplishment with culture included in the multivariable model

	Emotional exhaustion		**Depersonalisation**		**Personal accomplishment**	
	N = 251	**N = 122**	**N = 251**	**N = 122**	**N = 251**	**N = 122**
	Univariate	**Multivariable**	**Univariate**	**Multivariable**	**Univariate**	**Multivariable**
	β [95% CI]	**β [95% CI]**	**β [95% CI]**	**β [95% CI]**	**β [95% CI]**	**β [95% CI]**
Constant	**-**	**1.41 [.87 to 1.96]**	-	**1.01 [.45 to 1.58]**	-	**4.35 [3.66 to 5.04]**
Moral distress[1]	**.33 [.23 to .42]**	**.23 [.11 to .35]**	**.23 [.15 to .32]**	**.23 [.10 to .36]**	**-.14 [-.24 to -.04]**	-.09 [-.24 to .07]
Sociodemographics						
Sex (0=male)	.08 [-.15 to .31]	-.15 [-.47 to .16]	**-.22 [-.42 to -.02]**	-.26 [-.59 to .06]	-.21 [-.43 to .01]	.07 [-.33 to .46]
Age[1]	-.10 [-.20 to .00]	-.07 [-.25 to .12]	**-.20 [-.28 to -.11]**	**-.31 [-.50 to -.11]**	**-.10 [-.20 to -.00]**	.00 [-.23 to .24]
Years of experience in current job[1]	-.07 [-.17 to .03]	.00 [-.17 to .17]	**-.17 [-.25 to -.08]**	.14 [-.04 to .31]	-.09 [-.19 to .00]	.08 [-.13 to .30]
Working hours per week[1]	-.04 [-.15 to .06]	-.02 [-.21 to .17]	**.12 [.03 to .20]**	.02 [-.17 to .22]	**.12 [.03 to .22]**	**.31 [.07 to .55]**
Pre-school or Young child at home (0=no)	.09 [-.18 to .36]	-.20 [-.50 to .09]	.20 [-.03 to .44]	-.21 [-.52 to .10]	.13 [0.13 to .39]	.33 [-.05 to .71]
Partner (0=yes)[3]	-.15 [-.42 to .12]	-.09 [-.19 to .38]	-.21 [-.45 to .02]	.10 [-.19 to .40]	-.05 [-.32 to .22]	-.24 [-.60 to .12]
Profession (0=physician, 1=nurse)	.07 [-.18 to .32]	-.08 [-.49 to .33]	**-.32 [-.53 to -.10]**	-.20 [-.63 to .23]	**-.33 [-.57 to -.09]**	-.10 [-.63 to .42]
Personality						
Agreeableness[1]	**-.13 [-.23 to -.03]**	.01 [-.10 to .13]	**-.14 [-23 to -.05]**	-.10 [-.22 to .03]	**.20 [.10 to .30]**	**.19 [.04 to .34]**
Conscientiousness[1]	-.05 [-.15 to .05]	-.02 [-.14 to .11]	**-.11 [-.19 to -.02]**	-.08 [-.21 to .05]	**.18 [.08 to .28]**	.11 [-.05 to .27]
Extraversion[1]	**-.12 [-.22 to -.02]**	.00 [-.12 to 12]	-.07 [-.16 to .01]	-.06 [-.19 to .06]	**.21 [.11 to .30]**	.08 [-.08 to .23]
Neuroticism[1]	**.32 [.23 to .41]**	**.14 [.02 to .26]**	.07 [-.01 to .16]	-.01 [-.114 to .11]	**-.12 [-.22 to -.02]**	-.05 [-.20 to .11]
Openness[1]	.04 [-.06 to .14]	-.02 [-.12 to .08]	-00 [-.09 to .08]	-.02 [-.14 to .07]	**.13 [.03 to .22]**	**16 [.03 to .29]**
Work-home balance						
Negative work-to-home spill over[1]	**.53 [.46 to .61]**	**.32 [.18 to .46]**	**.30 [.22 to .38]**	.09 [-.06 to .24]	**-.10 [-.20 to .00]**	-.10 [-.28 to .09]
Negative home-to-work spill over[1]	**.40 [.31 to .49]**	.05 [-.08 to .17]	**.29 [.21 to .37]**	**.13 [.00 to .25]**	**-.18 [-.28 to -.08]**	-.04 [-.20 to .11]
Culture						
Organisational values	-.09 [-.21 to .03]	-.09 [-.35 to .16]	-.05 [-.15 to .05]	.13 [-.14 to .393]	.08 [-.03 to .20]	-.12 [-.44 to .20]
Support from supervisor	-.07 [-.19 to .04]	-.06 [-.33 to .22]	-.05 [-.15 to .05]	-.23 [-.51 to .06]	.07 [-.04 to .19]	-.10 [-.45 to .25]
Relationship with colleagues	-.07 [-.18 to .05]	.04 [-.19 to .27]	-.02 [-.12 to .08]	.11 [-.13 to .34]	.04 [-.08 to .15]	.06 [-.23 to .35]
Absence of job constraints	-.08 [-.20 to .04]	-.13 [-.24 to .31]	-.00 [-.10 to .11]	.16 [-.06 to .37]	.06 [-.05 to .17]	.20 [-.06 to .47]
Teamwork climate	-.01 [-.13 to .11]	.07 [-.07 to .21]	.06 [-.05 to .16]	.13 [-.02 to .28]	.19 [.07 to .30]	.04 [-.14 to .22]
Fixed effects Dummies (0=ICU 1)						
ICU 2	-	.04 [-.24 to .31]	-	.16 [-.13 to .45]	-	-.01 [-.37 to .34]
ICU 3	-	.04 [-.41 to .49]	-	.15 [-.31 to .62]	-	.42 [-.15 to 1.00]
ICU 4	-	-.09 [-.61 to .43]	-	-.04 [-.58 to .50]	-	-.12 [-.78 to .54]
ICU 5	-	.08 [-.38 to .55]	-	-.12 [-.61 to .37]	-	.42 [-.18 to 1.01]
ICU 6	-	-.21 [-.78 to .36]	-	.63 [.04 to 1.22]	-	.30 [-.43 to 1.03]
Model R-squared[2]		**.51***		**.33***		**.31***

[1] Independent variable scales have been transformed into z-score scales.

[2] Significant results are shown in bold, *=p < .001.

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