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Psycho-organizational and medical factors in burnout in French medical and surgery residents

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ABSTRACT

Hospital residency is stressful, with a risk of burnout. To assess the prevalence of burnout in medical and surgical residents and identify psycho-organizational and medical risk factors with a view to prevention. A transverse study was conducted in France between September 2018 and November 2018, targeting 633 hospital residents. A self-administered questionnaire was delivered by e-mail. Burnout was assessed on the Maslach Burnout Inventory, anxiety/depression on the Hospital Anxiety and Depression Scale (HAD) and stress on a visual analogue scale (VAS). Two-hundred and sixteen of the targeted residents (34%) responded. Twenty-three (12%) showed severe burnout in all three dimensions, severe loss of empathy being the most frequent. Almost one-third showed symptoms of anxiety. Residents exposed to psycho-organizational constraints (stress, time pressure, intense work rhythm) and/or with symptoms of anxiety/depression more frequently showed burnout. Prevention of burnout requires reinforced medical monitoring and reduced psycho-organizational constraints.

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Burnout; stress; depression; anxiety; psychosocial factors

Introduction

Burnout was described by Maslach, Jackson and Leiter as a syndrome associating emotional exhaustion, depersonalization and diminished personal accomplishment (Maslach et al., 1996). The most recent versions of the International Classification of Diseases (ICD-10) and Diagnostic and Statistical Manual of Mental Disorders (DSM-5) did not recognize burnout as an entity. Both non-work-related and work-related factors influence burnout among physicians (Manit et al., 2013). Individual characteristics, such as personality and interpersonal skills, and personal experiences may influence how physicians cope with stress (West et al., 2018). Besides, work intensity and organization, high emotional demand with experience of suffering, death and emotional dissonance have been identified as psychosocial risk factors for caregivers (Gollac & Bodier, 2011). Medical and surgical residents, facing new responsibilities for patient care, exposed to emotional demands and time pressures, are the population at-risk of burnout (Goldhagen et al., 2015; Romani & Ashkar, 2014). Burnout among resident physicians has implications for patient care (Kang et al., 2013).

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The present study aimed to assess burnout prevalence in medical and surgical residents and to identify psycho-organizational and medical risk factors, with a view to prevention.

Material and methods

A transverse study was conducted in 633 hospital residents in France: 376 medical/surgical, 257 in general medicine.

Data were collected via a self-administered questionnaire e-mailed to eligible residents.

The main endpoint (burnout) was assessed on the French version of the Maslach Burnout Inventory (MBI) (Maslach et al., 1996).

The three score dimensions are assessed independently:

Emotional exhaustion: nine questions, burnout is mild for a total score ≤ 17 , moderate for 18–29 and severe for ≥ 30 .

Loss of empathy or depersonalization: five questions, burnout is mild for a total score ≤ 5 , moderate for 6–11 and severe for ≥ 12 .

Personal accomplishment: eight questions, burnout is mild for a total score ≥ 40 , moderate for 34–39 and severe for ≤ 33 .

The self-administered questionnaire covered three areas;

Sociodemographic: gender, family situation and children.

Occupational: years of residency, specialty plus psycho-organizational: weekly workload, intensity of work rhythm, autonomy at work, task interruption, recognition, mutual assistance and access to training. Perceived stress was assessed on a visual analogue scale (VAS) (Lesage & Chamoux, 2008).

Medical: perceived health status, frequency of physical activity, skipping meals, sleep time, drug consumption for sleep or anxiety, alcohol consumption, smoking, cannabis consumption. Anxiety/depression was assessed on the validated French version of the Hospital Anxiety and Depression Scale (HAD) (Bjelland et al., 2002). The “anxiety” and “depression” dimensions are rated on three levels: no symptoms (score ≤ 7), low (8–10) and high (≥ 11).

As emotional exhaustion is predictive of burnout, assessment focused on the association between emotional exhaustion and psycho-organizational and medical factors.

Analysis

A descriptive analysis was made of the sample’s sociodemographic, occupational and medical characteristics.

Univariate analysis then assessed the association between emotional exhaustion and sociodemographic, occupational and medical factors. Chi-square and Fisher’s tests were applied as appropriate. The significance threshold was set at 5%. Analyses used SAS 9.3 software.

Ethical statements

The study protocol had approval from the *Terre d’Ethique* committee, 14 June 2018 (n° IRBN412018/CHUSTE). Data collection and processing were declared to the CNIL data protection commission on 2 October 2018 (n°2 207 966 v 0). Eligible subjects received clear and comprehensible information on study objectives and procedures and were free to decline participation.

Results

Description of sociodemographic, occupational and medical characteristics (Table 1)

Two-hundred and sixteen of the 633 eligible residents (130 females, 86 males) responded: response rate of 34%.

Prevalence of burnout (Table 2)

Twenty-three respondents (12%) presented associated severe emotional exhaustion, severe loss of empathy and severe loss of personal accomplishment. Almost a third presented severe emotional exhaustion, almost half severe loss of empathy and fewer than 30% severe loss of personal accomplishment.

Relation between emotional exhaustion and sociodemographic factors (Table 3)

Severe emotional exhaustion was significantly associated with being single, but not with the number of children, gender or age-group.

Relation between emotional exhaustion and occupational factors (Table 4)

Severe emotional exhaustion was significantly associated with several psycho-organizational factors: high perceived stress, heavy workload, time pressure, task interruption, lack of autonomy, lack of means for good-quality work, non-recognition, lack of mutual assistance, and impact of workload on occupational performance and social and family life. Emotional exhaustion was not associated with the type of work structure or seniority in medical studies.

Relation between emotional exhaustion and medical factors (Table 5)

Severe emotional exhaustion was significantly associated with anxiety, depression, mediocre perceived health, and regular drug use for sleep or anxiety. Smoking and use of cannabis or alcohol did not show association with emotional exhaustion.

PR: prevalence ratio; CI: confidence

NS: non-significant; PR: prevalence ratio; CI: confidence interval

* p-value < 0.05; ** p-value < 0.01; *** p-value < 0.001; ****p-value < 0.0001

NS: non-significant; PR: prevalence ratio; CI: confidence interval

* p-value < 0.05; ** p-value < 0.01; *** p-value < 0.001; **** p-value < 0.0001

Table 1. Sociodemographic, medical and occupational characteristics.

Sociodemographic factors			Occupational factors		
	N	%		N	%
Gender					
Male	86	39.8		77	35.7
Female	130	60.2		102	47.2
Family situation			Specialty		
Couple	54	75.0	General medicine		
Single	161	25.0	Other medical		
Age group			Surgery		
20–24 years	12	5.5	1 st	48	22.2
25–29 years	178	82.4	2 nd	53	24.5
≥30 years	26	12.1	3 rd	63	29.2
Children			4 th	34	15.8
Yes	27	12.5	5 th	18	8.3
No	189	87.5	University Hospital	126	58.3
Medical factors			Other	90	41.7
Mediocre	54	25.1	Never/rarely	30	16.1
Good	130	60.5	Often	75	40.3
Excellent	31	14.4	Always	81	43.6
Physical activity			Never	19	10.2
>1/month and <1/week	63	33.9	Rarely	63	33.9
1/week	57	30.7	Often	85	45.7
Several/week	30	16.1	Very often	19	10.2
<6 h	33	15.3	No	30	16.1
6–8 h	164	76.3	Yes	156	83.9
Sleep			Never	19	10.2
8–10 h	18	8.4	Occasionally	50	26.9
Never	19	10.2	Often	55	29.6
Rarely	63	33.9	Always	62	33.3
Often	85	45.7	No	91	49.0
Skipping meals			Yes	95	51.0
Very often	19	10.2	No	69	37.1
No symptoms	154	73.7	Yes	117	62.9
Low symptoms	37	17.7			
High symptoms	18	8.6			
Depression symptomatology					
No symptoms	154	73.7			
Low symptoms	37	17.7			
High symptoms	18	8.6			

(Continued)

Table 1. (Continued).

Sociodemographic factors			Occupational factors					
	N	%		N	%			
Anxiety symptomatology	No symptoms	71	34.0	Recognition in work	No	56	30.1	
	Low symptoms	72	34.4		Yes	130	69.9	
	High symptoms	66	31.6		No	19	10.2	
Drugs to sleep	Never	151	81.2	Workload impact on performance	Sometimes	124	66.6	
	<Once/month	18	9.7		Often	43	23.1	
	>Once/month	16	8.6		No	8	4.3	
	Every day	1	0.5		Sometimes	70	37.6	
Drugs for anxiety	Never	148	79.5	Workload impact on family life	Often	108	58.1	
	<Once/month	20	10.8		No	12	6.4	
	>Once/month	11	5.9		Sometimes	74	39.8	
	Every day	7	3.8		Often	100	53.8	
Smoking	Never	138	73.8	Work day after night duty	No	120	64.5	
	<5 cigarettes/d	25	13.4		Yes	66	35.5	
	5–10 cigarettes/d	16	8.5		Rest after night duty	No	140	75.3
	10–20 cigarettes/d	8	4.3			Yes	46	24.7
Cannabis	No	164	88.6	Telephone on-call at night	No	159	86.4	
	Yes	21	11.4		Yes	25	13.6	
Alcohol	Never	20	10.7	Mutual assistance	No	49	26.3	
	<1/month	26	14.0		Yes	137	73.6	
	Several times/month	93	50.0	Stress	VAS <7	102	54.8	
	At least several times/week	47	25.3		VAS ≥7	84	45.2	

Table 2. Prevalence of burnout.

	Mild		Moderate		Severe	
	N	%	N	%	N	%
Emotional exhaustion	65	33.8	64	33.3	63	32.8
Loss of empathy	61	31.8	40	20.8	91	47.4
Loss of personal accomplishment	75	39.0	61	31.8	56	29.2

Table 3. Relation between emotional exhaustion and sociodemographic factors.

Sociodemographic factors		Emotional exhaustion					
		Mild or moderate		Severe		PR	CI
		N	%	N	%		
Family situation**	Couple	103	72.5	39	27.5	1	
	Single	26	52.0	24	48.0	1.75	1.18–2.59
Children	Yes	15	65.2	8	34.8	1.07	0.58–1.95
	No	114	67.5	55	32.5	1	
Gender	Male	53	72.3	20	27.4	1	
	Female	76	63.9	43	36.1	1.31	0.85–2.05
Age	20–24 years	8	66.6	4	33.3	0.55	0.23–1.30
	25–29 years	112	71.3	45	28.7	0.47	0.31–0.71
	≥30 years	9	39.1	14	60.9	1	

**p-value < 0.01

Discussion

In this study, 23 respondents (12%) showed severe burnout on all three dimensions. This was comparable to the findings of Costal et al. (Costa et al., 2012).

Severe loss of empathy was the most frequent dimension. This is in agreement with Doolittle et al. and Dyrbye et al., although at a higher level in the present study (Doolittle et al., 2013; Dyrbye et al., 2014).

Among sociodemographic factors, being single was more frequently associated with burnout than living in a couple, in agreement with previous reports (McManus et al., 2004; Willcock et al., 2004). Emotional exhaustion showed no association with gender, in agreement with Soler et al. (Soler et al., 2008).

Certain psychosocial factors showed association with severe emotional exhaustion: high stress, intense workload, time pressure, task interruption, lack of autonomy, lack of means for good-quality work, non-recognition, lack of mutual assistance. Previous studies reported that lack of social and supervisory support, lack of reciprocity in relationships at work, high workloads, and long and irregular working hours are residency characteristics linked to stress and burnout (Prins et al., 2010; Prins et al. 2007; Prins et al. 2007, 2008). Time demands, lack of control, work planning, work organization, inherently difficult job situations and interpersonal relationships are considered factors contributing to residents' burnout (Ishak et al., 2009).

Higher levels of stress coupled with poor coping strategies may be the major factors responsible for the development of burnout among medical students, due to the cyclic relation between stress and emotional exhaustion (Kajjimu et al., 2021; Lebares et al., 2018).

The number of working hours and caseload was shown to increase the likelihood of burnout indirectly, via their effects on either perceived workload or autonomy (Shirom et al., 2009; Soler et al., 2008). Work overload made the greatest contribution to overall stress (Ramirez et al., 1996).

Table 4. Relation between emotional exhaustion and socio-occupational factors.

Socio-occupational factors		Emotional exhaustion				PR	CI	
		Mild/moderate		Severe				
		N	%	N	%			
Specialty	General medicine	47	71.2	19	28.0	NS		
	Other medical	61	67.0	30	33.0			
	surgery	21	60.0	14	40.0			
Structure	University hospital	73	65.0	40	35.0	NS		
	Other	56	71.0	23	29.0			
Years in residency	1 st	27	62.8	16	37.2	NS		
	2 nd	31	66.0	16	34.0			
	3 rd	43	79.6	11	20.3			
	4 th	18	60.0	12	40.0			
	5 th	10	55.6	8	44.4			
Stress***	VAS <7	87	85.3	15	14.7	1	2.18–6.01	
	VAS ≥ 7	42	46.7	48	53.3	3.63		
Work >48 h/ week***	Never/rarely	26	86.5	4	6.5	1	0.7–5.12	
	Often	56	74.7	19	25.3	1.9		
	Always	44	54.3	37	45.7	3.43		
Operate to fast***	Never	11	78.6	3	21.4	1	0.29–2.94	
	Rarely	40	80.0	10	20.0			0.93
	Often	70	67.3	34	32.7			1.52
	Very often	5	27.8	13	72.2			3.37
	No	26	86.7	4	13.3			1
Frequently drop a task*	Yes	100	64.1	56	35.9	2.69	1.06–6.86	
Go to classes	Never	11	57.9	8	42.1	NS		
	Occasionally	29	58.0	21	42.0			
	Often	42	76.4	13	23.6			
	Always	44	70.9	18	29.1			
Choose how to work***	No	51	56.04	40	43.96	2.09	1.33–3.28	
	Yes	75	78.95	20	21.5			1
Means for quality work***	No	36	52.2	33	47.8	2.07	1.37–3.13	
	Yes	90	76.9	27	23.1			1
Recognition at work****	No	25	44.6	31	50.4	2.48	1.67–3.69	
	Yes	101	77.7	29	22.3			1
Workload impact on performance ****	No	18	94.7	1	5.3	5.05	0.73–34.8	
	Sometimes	91	73.4	33	26.6			11.48
	Often	17	39.5	26	60.5			1.68–78.59
Workload impact on social life****	No	6	75	2	25	2.5	0.62–10.04	
	Sometimes	63	90	7	10			1
	Often	53	52.8	51	47.2			4.72
Workload impact on family life****	No	10	83.3	2	16.7	1.12	0.28–4.45	
	Sometimes	63	85.1	11	14.9			1
	Often	53	53.5	46	46.5			3.12
Work day after night duty**	No	90	75.0	30	25.0	1	1.21–2.73	
	Yes	36	54.5	30	45.4			1.82
Rest after night duty	No	96	68.6	44	31.4	NS		
	Yes	30	65.2	16	34.8			
Mutual assistance****	No	22	44.9	27	55.1	2.29	1.55–3.38	
	Yes	104	75.9	33	24.1			1
Telephone on-call*	No	112	70.4	47	29.6	1	1.12–2.75	
	Yes	12	48.0	13	52.0			1.75

A cross-sectional study of medical residents showed that working hours and major stress were significant independent determinants of emotional exhaustion (Ashkar et al., 2010). Another study reported a reduction in the prevalence of burnout after implementation of a work-week hour limit (Martini et al., 2004).

Ramirez et al. showed that perceived job demands and lack of support from colleagues emerged as important stressors for medical specialists (Ramirez et al., 1996).

Table 5. Relation between emotional exhaustion and medical factors.

		Emotional exhaustion					
		Mild/moderate		Severe		PR	IC
Medical factors		N	%	N	%		
Health****	Mediocre	16	33.3	32	66.7	3.22	1.54–6.75
	Good	90	78.9	24	21.1	1.02	0.46–2.26
	Excellent	23	79.3	6	20.7	1	
Physical activity	Never	19	52.8	17	47.2	NS	
	>1/month and <1/week	44	52.8	19	47.2		
	1/week	43	69.8	14	30.2		
Sleep	Several/week	20	66.7	10	33.3		
	<6 h	15	50.0	15	50.0	NS	
	6–8 h	105	71.9	41	28.1		
Skipping meals*	8–10 h	9	60.0	6	20.0		
	Never	14	73.7	5	26.3	1.27	0.52–3.12
	Rarely	50	79.4	13	20.6	1	
Depression symptomatology***	Often	53	62.3	32	37.7	1.82	1.05–3.18
	Very often	9	47.4	10	52.6	2.55	1.34–4.86
	No symptoms	111	78.2	31	21.8	1	
Anxiety symptomatology****	Low symptoms	15	41.7	21	58.3	2.67	1.76–4.05
	High symptoms	3	21.4	11	78.5	3.59	2.38–5.45
	No symptoms	59	90.7	6	9.3	1	
Drugs to sleep***	Low symptoms	49	74.2	17	25.8	2.79	1.17–6.63
	High symptoms	21	34.4	40	65.6	7.10	3.24–15.55
	Never	110	72.8	41	27.2	1	
Drugs for anxiety***	<Once/month	10	55.5	8	44.4	1.64	0.92–2.92
	>Once/month	5	35.7	9	64.3	2.36	1.48–3.79
	Every day	1	33.3	1	66.6	2.46	1.06–5.70
Smoking	Never	111	70.0	37	30.0	1	
	<Once/month	9	45.0	11	55.0	2.2	1.35–3.57
	>Once/month	5	50.0	5	50.0	2	1.01–3.95
Cannabis	Every day	1	12.5	7	87.5	3.5	2.39–5.14
	Never	93	63.4	45	32.6		
	<5 cigarettes/d	18	72.0	7	28.0	NS	
Alcohol	5–10 cigarettes/d	12	75.0	4	25.0		
	10–20 cigarettes/d	3	42.9	4	57.1		
	No	108	65.8	56	34.2	NS	
Alcohol	Yes	17	80.9	4	19.1		
	Never	14	70	6	30		
	<1/month	17	65.4	9	34.6	NS	
Alcohol	Several times/month	64	68.8	29	31.2		
	At least several times/week	31	66.0	16	34.0		

In the present study, severe emotional exhaustion was associated with mediocre perceived health, anxiety symptoms and depressive symptoms. This is in agreement with the literature (Clark et al. 1984; Willcock et al., 2004).

In the present study, smoking and use of cannabis or alcohol did not show association with severe emotional exhaustion, in disagreement with Soler et al.'s findings (Soler et al., 2008), but in agreement with (Lebares et al., 2018).

This study showed that residents exposed to psycho-organizational constraints (stress, time pressure, intense work rhythm) and/or with symptoms of anxiety/depression are more likely to experience burnout. Qualitative future research should assess the training in dealing with the emotional demands to reduce the emotional exhaustion. The internal validity of the study was limited by the cross-sectional design. The present 34% response rate may limit extrapolation to all medical and surgical residents in the Saint Etienne area. Data entry error, however, was limited by the use of an on-line questionnaire, and assessment of burnout and anxiety/depression used validated questionnaires.

Conclusion

In the light of the present findings, it seems necessary to reinforce medical monitoring of French medical and surgical residents for early screening of clinical signs of burnout, anxiety and depression. Combining individual and organizational interventions could have a good impact in reducing burnout in medical residents.

Multidisciplinary actions that include changes in work environment factors along with stress management programs that teach people how to cope better with stressful events showed promising solutions to manage burnout (Romani & Ashkar, 2014).

Physical exercise has been shown to ameliorate depression, anxiety and mood, making it an ideal intervention for burnout (Ishak et al., 2009). Greater dispositional mindfulness and greater trait resilience were both significantly associated with decreased risk of burnout (Lebares et al., 2018). Meditation has been also shown to alleviate burnout (Shapiro et al., 2005).

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No potential conflict of interest was reported by the authors.

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