SUPPLEMENTARY MATERIALS

Supplementary file - S1

Database search strategy in MEDLINE via OVID database

1. (physicians or physicians role).sh.

2. workload.sh.

3. burnout, professional.sh.

4. job satisfaction.sh.

5. 2 or 3 or 4

6. 1 and 5

7. Physicians.af.

8. doctor.af.

9. medic.af.

10. medical practitioner.af.

11. specialist.af.

12. intern.af.

13. 7 or 8 or 9 or 10 or 11 or 12

14. job satisfaction.mp. or work satisfaction.af. [mp=title, abstract, original title, name of substance word, subject heading word, keyword heading word, protocol supplementary concept word, rare disease supplementary concept word, unique identifier]

15. career satisfaction.af.

16. job dissatisfaction.mp. or work dissatisfaction.af. [mp=title, abstract, original title, name

of substance word, subject heading word, keyword heading word, protocol supplementary concept word, rare disease supplementary concept word, unique identifier]

17. career dissatisfaction.af.

18. burnout.af.

19. workload.af.

20. 14 or 15 or 16 or 17 or 18 or 19

21. 13 and 20

22. 6 or 21

23. limit 22 to (humans and yr="2000 -Current")

24. Europe.af.

25. european.af.

26. (Austria or Belgium or Bulgaria or Croatia or Cyprus or Czech Republic or Denmark or Estonia or Finland or France or Germany or Greece or Hungary or Ireland or Italy or Latvia or Lithuania or Luxembourg or Malta or Netherlands or Poland or Portugal or Romania or Slovakia or Slovenia or Spain or Sweden or United Kingdom).af.

27. 24 or 25

28. 26 or 27

29. 23 and 28

Supplemantary file S2

S2 – List of the studies included in the analysis

1. Aalto, A.M.; Heponiemi, T.; Vaananen, A.; Bergbom, B.; Sinervo, T.; Elovainio, M. Is working in culturally diverse working environment associated with physicians' work-related well-being? A cross-sectional survey study among Finnish physicians. *Health Policy* **2014**, *117*, 187–194.
2. Bauer, J.; Groneberg, D.A. Distress among physicians in hospitals—An investigation in Baden-Wurttemberg, Germany. *Deutsche Medizinische Wochenschrift (1946)* **2013**, *138*, 2401–2406.
3. Van Beuzekom, M.; Akerboom, S.; Boer, F.; Dahan, A. Influence of latent risk factors on job satisfaction, job stress and intention to leave in anaesthesia teams: A cross-sectional survey. *Eur. J. Anaesthesiol.* **2013**, *30*, 222–228.
4. French, F.; Ikenwilo, D.; Scott, A. What influences the job satisfaction of staff and associate specialist hospital doctors? *Health Serv. Manag. Res.* **2007**, *20*, 153–161.
5. Gaszynska, E.; Stankiewicz-Rudnicki, M.; Szatko, F.; Wieczorek, A.; Gaszynski, T. Life satisfaction and work-related satisfaction among anesthesiologists in Poland. *Sci. World J.* **2014**, *2014*, 601865.
6. a. Heponiemi, T.; Aalto, A.M.; Puttonen, S.; Vänskä, J.; Elovainio, M. Work-related stress, job resources, and well-being among psychiatrists and other medical specialists in Finland. *Psychiatr. Serv.* **2014**, *65*, 796–801.
   b. Heponiemi, T.; Kouvonen, A.; Vanska, J.; Halila, H.; Sinervo, T.; Kivimaki, M. Effects of active on-call hours on physicians' turnover intentions and well-being. *Scand. J. Work Environ. Health* **2008**, *34*, 356–363.
   c. Heponiemi, T.; Kouvonen, A.; Virtanen, M.; Vanska, J.; Elovainio, M. The prospective effects of workplace violence on physicians' job satisfaction and turnover intentions: The buffering effect of job control. *BMC Health Serv. Res.* **2014**, *14*, 19.
   d. Heponiemi, T.; Kuusio, H.; Sinervo, T.; Elovainio, M. Job attitudes and well-being among public vs. private physicians: Organizational justice and job control as mediators. *Eur. J. Public Health* **2010**, *21*, 520–525.
   e. Heponiemi, T.; Puttonen, S.; Elovainio, M. On-call work and physicians' well-being: Testing the potential mediators. *Occup. Med. Oxf. Engl.* **2014**, *64*, 352–357.
7. Janus, K.; Amelung, V.E.; Baker, L.C.; Gaitanides, M.; Schwartz, F.W.; Rundall, T.G. Job satisfaction and motivation among physicians in academic medical centers: Insights from a cross-national study. *J. Health Politics Policy Law* **2008**, *33*, 1133–1167.
8. Jonsson, S. Psychosocial work environment and prediction of job satisfaction among Swedish registered nurses and physicians—A follow-up study. *Scand. J. Caring Sci.* **2012**, *26*, 236–244.
9. Kinzl, J.F.; Knotzer, H.; Traweger, C.; Lederer, W.; Heidegger, T.; Benzer, A. Influence of working conditions on job satisfaction in anaesthetists. *Br. J. Anaesth.* **2005**, *94*, 211–215.
10. Laubach, W.; Fischbeck, S. Job satisfaction and the work situation of physicians: A survey at a German University hospital. *Int. J. Public Health* **2007**, *52*, 54–59.
11. Mache, S.; Vitzthum, K.; Nienhaus, A.; Klapp, B.F.; Groneberg, D.A. Physicians' working conditions and job satisfaction: Does hospital ownership in Germany make a difference? *BMC Health Serv. Res.* **2009**, *9*, 148.

12. Mache, S.; Vitzthum, K.; Klapp, B.F.; Groneberg, D.A. Improving quality of medical treatment and care: Are surgeons' working conditions and job satisfaction associated to patient satisfaction? *Langenbeck's Arch. Surg./Deutsche Gesellschaft fur Chirurgie* **2012**, *397*, 973–982.
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17. Peña-Sánchez, J.N.; Lepnurm, R.; Morales-Asencio, J.M.; Delgado, A.; Domagała, A.; Górkiewicz, M. Factors identified with higher levels of career satisfaction of physicians in Andalusia, Spain. *Health Psychol. Res.* **2014**, *2*, 58–62.
18. Psilopanagioti, A.; Anagnostopoulos, F.; Mourtou, E.; Niakas, D. Emotional intelligence, emotional labor, and job satisfaction among physicians in Greece. *BMC Health Serv. Res.* **2012**, *12*, 463.
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23. a. Tartas, M.; Walkiewicz, M.; Budzinski, W.; Majkowicz, M.; Wojcikiewicz, K. The sense of coherence and styles of success in the medical career: A longitudinal study. *BMC Med. Educ.* **2014**, *14*, 254.
b. Tartas, M.; Walkiewicz, M.; Majkowicz, M.; Budzinski, W. Psychological factors determining success in a medical career: A 10-year longitudinal study. *Med. Teach.* **2011**, *33*, e163–e172.
c. Walkiewicz, M.; Tartas, M.; Majkowicz, M.; Budzinski, W. Academic achievement, depression and anxiety during medical education predict the styles of success in a medical career: A 10-year longitudinal study. *Med. Teach.* **2012**, *34*, e611–e619.
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Supplementary file S3

Table 1. Results of the studies' quality assessment based on Critical Appraisal of a Survey developed by the Centre for Evidence-Based Management

	Study/Question	Did the study address a clearly focused question/ issue?	Is the research method (study design) appropriate for answering the research question?	Is the method of selection of the subjects (employees, teams, divisions, organizations) clearly described?	Could the way the sample was obtained introduce (selection) bias?	Was the sample of subjects representative with regard to the population to which the findings will be	Was the sample size based on pre-study considerations of statistical power?	Was a satisfactory response rate achieved?	Are the measurements (questionnaires) likely to be valid and reliable?	Was the statistical significance assessed?	Are confidence intervals given for the main results?	Could there be confounding factors that haven't been accounted for?	Overall score
1	Aalto et al. (2014)[17]	Yes	Yes	No	No	No	No	No	Yes	Yes	No	Yes	5
2	Bauer et al. (2016)[18]	Yes	Yes	Yes	Yes	Can'tell	Can'tell	No	Yes	Yes	Yes	Yes	8
3	van Beuzekom et al. (2013)[19]	Yes	Yes	Yes	Yes	Can'tell	Can'tell	Yes	Yes	Yes	Yes	Yes	9
4	French et al. (2007)[20]	Yes	Yes	Yes	Yes	Yes	No	No	Yes	Yes	No	Yes	8
5	Gaszynska et al. (2014)[21]	Yes	Yes	Can'tell	Can'tell	Yes	Can'tell	Yes	Yes	Yes	Yes	No	7

6	Heponiemi et al. (2008-2015)[22]	Yes	Yes	Yes	Yes	Yes	Can'tell	No	Yes	Yes	No	No	7
7	Janus et al. (2008)[23]	Yes	Yes	Yes	No	Yes	Can'tell	Yes	Yes	Yes	No	Yes	8
8	Jönsson (2012)[24]	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes	10
9	Kinz et al. (2005)[25]	Yes	Yes	Yes	Yes	Can'tell	Yes	No	Can'tell	Yes	Yes	Yes	8
10	Laubach and Fischbeck (2007)[26]	Yes	Yes	No	Yes	Can'tell	No	Yes	Yes	Yes	No	Yes	7
11	Mache et al. (2009)[27]	Yes	Yes	Yes	No	Yes	No	Yes	Yes	Yes	No	No	7
12	Mache et al. (2012)[28]	Yes	Yes	Yes	Yes	No	No	No	Yes	Yes	No	Yes	7
13	Mache et al. (2014)[29]	Yes	Yes	No	Can'tell	Can'tell	Yes	Can'tell	Yes	Yes	No	Yes	6
14	Mascia et al. (2014)[30]	Yes	Yes	No	Yes	Yes	Can'tell	Yes	Yes	Yes	No	Yes	8
15	Michinov et al. (2008)[31]	Yes	Yes	Yes	Can'tell	Yes	Can'tell	Can'tell	Yes	Yes	Yes	No	7
16	Ommen et al. (2009)[32]	Yes	Yes	Yes	Yes	Can'tell	Can'tell	No	Yes	Yes	Yes	Yes	8
17	Peña-Sánchez et al. (2014)[33]	Yes	Yes	Yes	Yes	Can'tell	Can'tell	No	Yes	Yes	No	Yes	7
18	Psilopanagioti et al. (2012)[34]	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	No	Yes	9
19	Rosta and Gerber (2008)[35]	Yes	Yes	Yes	Yes	Can'tell	Can'tell	No	Yes	Can'tell	No	Yes	6
20	Schmit Jongbloed et al.	Yes	Yes	Yes	No	Yes	Can'tell	No	Yes	Yes	No	Yes	7

	(2014)[36]												
21	Strömgren et al. (2016)[37]	Yes	Yes	Yes	No	Yes	Can'tell	No	Yes	Yes	No	Yes	7
22	Szilvia et al. (2009)[38]	Yes	Yes	Yes	Yes	Can'tell	No	No	Yes	Yes	No	Yes	7
23	Tartas et al. (2011)[39]	Yes	Yes	Yes	Yes	Yes	No	Can'tell	Yes	Yes	No	Yes	8
24	Visser et al. (2003)[40]	Yes	Yes	Yes	Yes	Can'tell	Can'tell	No	Yes	Yes	Yes	Yes	8

Supplementary file 4

Factors affecting physician satisfaction - analyzed in include studies

□ - statistically significant association □ - statistically not significant association

1. PERSONAL FACTORS

Physician age

Study ID	Type of measure	Main value	Low range	High range	p value reported	Subgroup/ Comment
Mache et al.[27]	β	-0.02	NR	NR	>0.05	NA
	R	-0.10	NR	NR	>0.05	NA
Ommen et al.[32]	B	-0.12	0.01	NR	0.11	NA
	β	-0.02	0.44	NR	0.11	NA
Psilopanagioti et al.[34]	B	0.41	-2.21	3.04	0.76	Self- Emotion Appraisal
	β	0.03	NR	NR		
	B	0.46	-1.96	2.87	0.71	Use of Emotion
	β	0.03	NR	NR		
Heponiemi et al.[22]	β	0.11	NR	NR	<0.001	117
	F	9.80	NR	NR	0.002	38
Rosta and Gerber[35]	β	0.12	NR	NR	<0.001	326
Bauer and	OR	1.54	0.94	2.54	>0.05	<35

Gronenberg[18]	OR	1.02	0.65	1.61	>0.05	35-59
	OR	1.04	0.86	1.25	>0.05	35-59
	OR	1.1	0.70	1.72	>0.05	>59
Michinov et al.[31]	β	0.1	NR	NR	>0.05	<36
French et al.[20]	β	0.002	NR	NR	NS	staff grade
	β	-0.04	NR	NR	NS	associate specialists
Mascia et al.[30]	CC	0.14	NR	NR	<0.01	<36
	CC	−0.01	NR	NR	NS	36-40
	CC	0.12	NR	NR	NS	41-45
	CC	-0.06	NR	NR	NS	=>56
	CC	−0.07	NR	NR	NS	46-55

B - unstandardized coefficients; Beta (β) - standardized coefficients; CC - Correlation coefficients, NA – not applicable, NR – not reported, NS – not significant

Gender

Study ID	**Type of measure**	**Reference group**	**Main value**	**Low range**	**High range**	**p value reported**	**Subgroup/ Comment**
French et al.[20]	β	F	-0.05	NR	NR	NS	staff grades
	β	F	0.27	NR	NR	NS	associate specialists
Mache [28]	r	NA	-0.08	NR	NR	NR	NA

Gaszynska at al.[21]	NR	F	4.89	NR	NR	NS	NA
Rosta and Gerber[35]	β	F	-0.84	SE	0.52	0.11	NA
	β	F	0.002	NR	NR	0.92	NA
Aalto et al.[17]	NR	F	-0.05	NR	NR	<0.01	NA
Bauer and Gronenberg[18]	OR	F	1.98	1.18	3.32	0.01	NA
	OR	M	1.11	0.88	1.39	NS	NA
Psilopanagioti at al.[34]	B	NA	-1.95	−5.53	1.64	0.29	Self- Emotion Appraisal
	β	NA	-0.09	NR	NR		
	B	NA	−2.55	−5.86	0.76		Use of Emotion
	β	NA	-0.11	NR	NR		
Heponiemi at al.[22]	β	F	0	NR	NR	0.824	NA
	F	NA	0.20	NR	NR	0.664	NA
Schmit Jongbloed et al.[36]	B	NA	0.16	NR	NR	0.002	NA
	β	NA	0.19	NR	NR	0.002	NA
Michinov et al.[31]	β	NA	0.11	NR	NR	>0.05	NA
	r	F	-0.18	NR	NR	<0.05	NA
Mascia et al.[30]	SE		0.06	0.21	NR	NS	NA
Mache et al.[27]	β	NA	-0.03	NR	NR	>0.05	NA
	R	NA	-0.07	NR	NR	>0.05	NA
Ommen et al.[32]	B	NA	-0.13	0.13	NR	0.31	NA
	β	NA	-0.05	0.94	NR	0.31	NA

B - unstandardized coefficients; Beta (β) - standardized coefficients; F – female, M - male, NA – not applicable, NR – not reported, NS – not significant

Gender/Years of practice (interaction)

Study ID	Type of measure	Main value	Low range	High range	p value reported
Schmit Jongbloed et al.[36]	β	-0.02	NR	NR	NS
	B	-0.02	NR	NR	0.734
B - unstandardized coefficients; Beta (β) - standardized coefficients, NR – not reported, NS – not significant					

Years of experience

Study ID	Definition	Type of measure	Main value	Low range	High range	p value reported
Mache et al.[28]	years of experience	β	-0.14	NR	NR	<0.05
		R	-0.15	NR	NR	NR
Michinov et al.[31]	tenure in the team and job satisfaction	Rho	0.18	NR	NR	0.05
	tenure in the team and identification with team	r	0.18	NR	NR	<0.05
	tenure	β	0.12	NR	NR	>0.05
Schmit Jongbloed et al.[36]	years of practice	B	-0.03	NR	NR	>0.05
		β	-0.03	NR	NR	0.66

Gaszynska et al.[21]	=<10 years since graduation	NR	5.31	NR	NR	NS
	11-20 years since graduation	NR	5.04	NR	NR	NS
	21-30 years since graduation	NR	4.57	NR	NR	NS
	>30 years since graduation	NR	4.83	NR	NR	NS
Mascia et al.[30]	tenure	corr ceof	−0.14	NR	NR	<0.01
		B	−0.04	SE	0.01	≤0.01

B - unstandardized coefficients; Beta (β) - standardized coefficients, NR – not reported, NS – not significant

Marital status or having a partner

Study ID	**Definition**	**Subgroup**	**Type of measure**	**Main value**	**Low range**	**High range**	**p value reported**
French et al.[20]	partner (yes)	Staff	β	0.25	NR	NR	NS
	family effect		β	-0.11	NR	NR	NS
	partner (yes)	Assoc specialists	β	0.18	NR	NR	NS
	family effect		β	-0.19	NR	NR	NS
Gaszynska et	marital status	single	NR	4.89	NR	NR	NS

al.[21]		married	NR	4.85	NR	NR	NS
Beta (β) - standardized coefficients; NR – not reported, NS – not significant							

Work-family conflict

Study ID	Definition	Type of measure	main value	low range	high range	p value reported
Szilvia et al.[38]	work-family conflict all	β	–0.14	–0.22	–0.04	<0.01
	female - work-family conflict	β	–0.17	–0.31	–0.04	<0.05
Heponiemi et al.[22]	work interference with family	B	-0.1	NR	NR	<0.001
B - unstandardized coefficients; Beta (β) - standardized coefficients, NA – not applicable, NR – not reported						

Health status

Study ID	Definition	Subgroup	Type of measure	Main value	Low range	High range	p value reported
French et al.[20]	health state (excellent)	staff	β	0.49	NR	NR	<0.05
		assoc specialist	β	0.43	NR	NR	NS
Heponiemi et al.[22]	sleeping problems	NA	β	-0.12	NR	NR	<0.001
Laubach and Fischbeck[26]	personal health	NA	β	-0.19	NR	NR	<0.05

Beta (β) - standardized coefficients; NA – not applicable, NR – not reported, NS – not significant

Life satisfaction

Study ID	Definition	Type of measure	Main value	Low range	High range	p value reported
Rosta and Gerber[35]	life satisfaction	β	0.56	NR	NR	<0.05
Beta (β) - standardized coefficients, NR – not reported						

Coping strategies/psychological construct

Study ID	Definition	Type of measure	main value	Low range	High range	p value reported	Subgroup/ Comment
Psilopanagioti et al.[34]	surface acting	β	-0.44	NR	NR	<0.001	model with Self-Emotion Appraisal as one of the predictors
		B	-1.14	-1.56	-0.72	<0.001	
	self-emotion appraisal	B	0.01	-0.42	0.44	NS	
		β	0.003	NR	NR	NS	
	surface acting	β	-0.42	NR	NR	<0.001	model with Use of Emotion as one of the predictors
		B	−1.07	−1.45	-0.69	<0.001	
	use of emotion	B	0.89	0.5	1.29	<0.001	
		β	0.33	NR	NR	<0.001	
Kinzl et al.[25]	satisfactory	corr	0.25			0.005	NA

	emotional well-being	coef					
Visser et al.[40]	communicative responsiveness	OR	1.39	1.2	1.61	<0.05	NA
Tartas et al.[39]	sense of coherence	R2	0.40	NR	NR	<0.05	NA
	depression	R2	0.12	NR	NR	<0.05	NA
	anxiety (state and trait)	R2	0.17	NR	NR	<0.01	NA
	coping styles	R2	0.69	NR	NR	<0.01	NA
Aalto et al.[17]	optimism	Bivariate correlations	0.34	NR	NR	<0.01	NA
B - unstandardized coefficients; Beta (β) - standardized coefficients; NA – not applicable, NR – not reported, NS – not significant							

Being a foreign physician

Study ID	Definition	Reference group	Type of measure	Main value	Low range	High range	p value reported
Peña-Sánchez et al.[33]	internationally trained physicians (MD training outside of Spain)	Locally trained	Exp beta (OR)	7.81	1.4	43.48	<0.05

II. INTRINSIC FACTORS

Medical specialty

Study ID	Definition	Reference group	Type of measure	Main value	Low range	High range	p value reported
Laubach& Fischbeck[26]	non-surgical/ conservative, surgical, clinical-theoretical	NA	β	0.08	NR	NR	NR
Aalto et al.[17]	specialty was coded 0 for other medical specialists and 1 for psychiatrists	NA	β	-0.06	NR	NR	<0.01
Heponiemi et al. [22]	Specialization was coded: 0 = not specialized; 1 = specialized or specialization on-going	NA	β	0.05	NR	NR	0.007
French eat al.[20]	general surgery	SG	β	-0.31	NR	NR	NR
		AS	β	0.70	NR	NR	NR
	anaesthetics	SG	β	0.45	NR	NR	NR
		AS	β	0.47	NR	NR	NR
	paediatrics	SG	β	-0.11	NR	NR	NR
		AS	β	1.57	NR	NR	NR
	laboratory medicine and radiology	SG	β	1.51	NR	NR	NR
		AS	β	0.08	NR	NR	NR
	psychiatry	SG	β	-0.04	NR	NR	NR

		AS	β	1.06	NR	NR	NR
	obstetrics & gynaecology	SG	β	0.41	NR	NR	NR
		AS	β	1.04	NR	NR	NR
	oral medicine	SG	β	-0.65	NR	NR	NR
		AS	β	-0.72	NR	NR	NR
	accident & emergency	SG	β	-0.4	NR	NR	NR
		AS	β	2.53	NR	NR	NR
AS - associate specialist; Beta (β) - standardized coefficients; NA – not applicable, NR – not reported, NS – not significant, SG – staff grade							

Patients interactions

Study ID	**Definition**	**Type of measure**	**Main value**	**Low range**	**High range**	**p value reported**
Mache et al.[28]	patients' overall satisfaction	r	0.49	NR	NR	<0.05
Janus et al.[23]	patient contact	Pearson correlation	0.117	NR	NR	<0.05
NR – not reported						

Work engagement

Study ID	**Definition**	**Type of measure**	**Main value**	**Low range**	**High range**	**p value reported**
Mache et al.[29]	work engagement	Regr coef adj	0.24	NR	NR	<0.01
		Pearson r	0.48	NR	NR	<0.01

	work engagement - vigor	Pearson r	0.46	NR	NR	<0.01
	work engagement - dedication	Pearson r	0.45	NR	NR	<0.01
	work engagement - absorption	Pearson r	0.41	NR	NR	<0.01
NR – not reported						

III. CONTEXTUAL FACTORS: WORK-PLACE RELATED

Hospital type and structure

Study ID	**Definition**	**Subgroup**	**Type of measure**	**Main value**	**Low range**	**High range**	**p value reported**
Heponiemi et al.[22]	private employer	*	β	0.09	NR	NR	<0.001
		job control*	β	0.04	NR	NR	0.013
		Interpersonal justice*	β	0.04	NR	NR	0.076
		Informational justice*	β	0.04	NR	NR	0.079
		Distributional justice*	β	0.03	NR	NR	NR
		Coded 0=public employer, 1=private employer	β	0.08	NR	NR	<0.001
Beta (β) - standardized coefficients, NR – not reported, * adjusted for gender, age, specialization, part-time employment							

Management/Leadership

Study ID	Definition	Type of measure	Main value	Low range	High range	p value reported
van Beuzekom et al.[19]	planning and coordination: 'Lack of advance planning within the department'	β	-0.41	NR	NR	<0.001
		BC	-0.7	NR	NR	NR
		BC	-0.36	NR	NR	NR
	Hierarchy: 'In my department, staff do not always dare to ask for an explanation	β	-0.26	NR	NR	<0.01
		BC	-0.64	NR	NR	<0.05
		BC	-0.40	NR	NR	<0.05
	Maintenance: 'Maintenance inspections are carried out on time'	BC	-0.28	NR	NR	<0.05
		BC	-0.4	NR	NR	<0.05
		β	-0.39	NR	NR	<0.05
Strömgren et al.[37]	trust regarding management	NR	0.11	NR	NR	<0.000
Laubach& Fischbeck[26]	superiors and hierarchy (FAÄ-V)	β	-0.49	NR	NR	NR
Heponiemi et al.[22]	procedural justice	PR	0.24	NR	NR	< 0.05
		PR	0.29	NR	NR	< 0.05
	interactional justice	PR	0.2	NR	NR	< 0.05
		PR	0.21	NR	NR	< 0.05
	distributive justice	PR	0.19	NR	NR	< 0.05

		PR	0.17	NR	NR	< 0.05
	organizational justice	β	0.39	NR	NR	<0.001
Visser et al.[40]	feeling poorly managed and resourced	OR	2.07	1.76	2.43	<0.05
Mache et al.[27]	quality of leadership =what extent would you say that your immediate superiors are good in solving conflicts	β	0.16	NR	NR	<0.01
		R	0.52	NR	NR	<0.01
Jönsson[24]	role conflicts T1	β	0.17	NR	NR	<0.001
	role conflicts T2	β	0.23	NR	NR	<0.001
Mascia et al.[30]	pioneeric change	B	−0.97	SE	0.3	≤0.01.
		CC	−0.05	NR	NR	NS
	process integration	CC	0.12	NR	NR	NS
	mixed intergation	CC	0.11	NR	NR	NS
	teaching hospital	CC	0.04	NR	NR	NS
	research hospital	CC	0.22	NR	NR	p < 0.01
		B	0.73	SE	0.3	<0.05
	LHA hospital	B	−0.61	SE	0.26	<0.05
		CC	−0.24	NR	NR	<0.01
	hospital trust	B	0.92	SE	0.32	≤0.01
		CC	0.08	NR	NR	S

B - unstandardized coefficients; Beta (β) - standardized coefficients; BC - Bivariate correlations, CC – Correlation coefficients, NR – not reported, NS – not significant, PR – Pearson R, S – significant

Opportunity for professional development

Study ID	**Definition**	**Type of measure**	**Main value**	**Low range**	**High range**	**p value reported**
Mache et al.[27]	possibilities for development “do you have the possibility of learning new things through your work?"	β	0.21	NR	NR	<0.001
		R	0.44	NR	NR	<0.01
Janus et al.[23]	continuous education and job security	PC	0.3	NR	NR	<0.000
	research and teaching	PC	0.09	NR	NR	0.074
	international exchange	PC	0.08	NR	NR	0.117
Mache et al.[28]	possibilities for development	r	0.54	NR	NR	<0.01
	feedback at work	r	0.41	NR	NR	<0.05
		β	0.05	NR	NR	>0.05
		R	0.26	NR	NR	<0.01
Visser et al.[40]	intellectual stimulation	OR	1.38	1.17	1.62	<0.05
Mache et al.[29]	possibilities for development	β	0.2	NR	NR	<0.05
		r	0.43	NR	NR	<0.05
	feedback	β	0.05	NR	NR	>0.05
		r	0.25	NR	NR	<0.05

Beta (β) - standardized coefficients, PC – Pearson correlations , NR – not reported

Colleague support (team work. relations with team)

Study ID	Definition	Type of measure	Main value	Low range	High range	p value reported
Strömgren et al.[37]	recognition	NR	0.32	NR	NR	<0.000
	increased social capital predicted increased job satisfaction	OR	2.2	1.4	3.4	S
	social reciprocity	NR	0.16	NR	NR	<0.0000
Visser et al.[40]	social support from colleagues	OR	1.14	1.18	1.62	S
Laubach & Fischbeck[26]	team ability in coping with conflicts	β	-0.13	NR	NR	NR
Laubach& Fischbeck[26]	workload cooperation in / organization of the ward	β	-0.13	NR	NR	NR
Kinzl et al.[25]	participation vs satisfaction	r	0.378	NR	NR	0.001
Janus et al.[23]	collegial relationships	PR	0.19	NR	NR	<0.000
Jönsson[24]	social supportT1	β	0.17	NR	NR	<0.001
	social supportT2	β	0.32	NR	NR	<0.001
Aalto et al.[17]	team climate	NR	0.42	NR	NR	<0.01
Mache et al.[29]	sense of community	β	0.25	NR	NR	<0.001
		R	0.48	NR	NR	<0.01

		r	0.49	NR	NR	<0.01
	social support	β	0.04	NR	NR	>0.05
		R	0.42	NR	NR	<0.01
		r	0.39	NR	NR	<0.01
	social relations	β	-0.03	NR	NR	>0.05
		R	0.16	NR	NR	<0.05
		r	0.42	NR	NR	<0.01
Ommen et al.[32]	social capital	B	0.16	SE	0.02	NS
		β	0.45	NR	NR	NS
Michinov et al.[31]	transactive memory system	Rho	NR	NR	NR	0.43
	size of the team	β	-0.27	NR	NR	< .001
	coordination	β	0.34	NR	NR	<0.001
	tenure in the team and work attitudes	r	0.21	NR	NR	<0.01
	tenure in the team and perceptions of team effectiveness	r	0.21	NR	NR	<0.01
	team size	r	-0.28	NR	NR	<0.01
	credibility	β	0.14	NR	NR	<0.001

B - unstandardized coefficients; Beta (β) - standardized coefficients; NR – not reported, NS – not significant, S – significant, PC – Pearson correlations

Access to resources

Study ID	Definition	Reference group	Type of measure	Main value	Low range	High range	p value reported
van Beuzekom et al.[19]	material resources	anesthetists	Bivariate correlations	-0.35	NR	NR	<0.05
		trainee anesthetists	Bivariate correlations	-0.17	NR	NR	NS
Janus et al.[23]	specialized technology	NA	Pearson correlation	0.13	NR	NR	<0.05
NA – not applicable, NR – not reported, NS – not significant							

III. CONTEXTUAL FACTORS: JOB RELATED

Workload and job demand

Study ID	Definition	Type of measure	Main value	Low range	High range	p value reported
Heponiemi et al.[22]	distress at first examination	PR	-0.21	NR	NR	< 0.05
	distress at second examination	PR	-0.21	NR	NR	< 0.05
Visser et al.[40]	stress	r	–0.25	NR	NR	0.001
Aalto et al.[17]	psychological distress	BC	-0.43	NR	NR	<0.01
BC - Bivariate correlations; NR – not reported, NS – not significant, PR - Pearson R						

Work control

Study ID	Definition	Reference group	Type of measure	Main value	Low range	High range	p value reported
French et	equal member	staff	β	1.01	NR	NR	<0.05

al.[20]	equal member	assoc specialist	β	1.42	NR	NR	<0.05
Mache et al.[28]	influence at work	NA	r	0.40	NR	NR	<0.05
	degree of freedom	NA	r	0.27	NR	NR	<0.01
B - unstandardized coefficients; Beta (β) - standardized coefficients, NA – not applicable, NR – not reported							

Work stability

Study ID	**Definition**	**Reference group**	**Type of measure**	**Main value**	**Low range**	**High range**	**p value reported**
Heponiemi et al.[22]	part-time employment	Coded 0 = full-time employment. 1 = part-time employment	β	-0.05	NR	NR	0.012
Visser et al.[40]	job security	NA	OR	1.65	1.39	1.95	<0.05
B - unstandardized coefficients; Beta (β) - standardized coefficients, NA – not applicable, NR – not reported							

Being a chief

Study ID	**Definition**	**Reference group**	**Type of measure**	**Main value**	**Low range**	**High range**	**p value reported**

Rosta and Gerber [35]	0=chief. 1-assistance	NA	β	-4.97	SE	0.66	0.0001
Bauer&Gronenberg[18]	being chief doctor	Medical Assistants	OR	3.50	1.94	6.32	S
Mascia et al.[30]	1=no role 2=semplice 3=complessa	no managerial role	CC	-0.1	NR	NR	NS
		manag. role "Str Complessa"	B	−0.19	SE	0.4	NS
			CC	0.06	NR	NR	NS
		manag. role "Str Semplice"	CC	0.07	NR	NR	NS
			B	0.55	SE	0.84	NS
B - unstandardized coefficients; Beta (β) - standardized coefficients, CC - Correlation coefficients, NA – not applicable, NR – not reported, NS – not significant							

Income

Study ID	**Definition**	**Reference group**	**Type of measure**	**Main value**	**Low range**	**High range**	**p value reported**
French et al. [20]	£20,000–£34,999 per year	staff grade	β	0.28	NR	NR	NS
	£20,000–£34,999 per year	associate specialist	β	0.16	NR	NR	NS
	£35,000–£49,999 per year	staff grade	β	0.53	NR	NR	S
	£35,000–£49,999 per year	associate specialist	β	1.07	NR	NR	NS

	>£49,999 per year	staff grade	β	0.61	NR	NR	NS
	>£49,999 per year	associate specialist	β	0.83	NR	NR	NS
Beta (β) - standardized coefficients, NR – not reported, NS – not significant, S – significant							

Non-financial incentives

Study ID	Definition	Reference group	Type of measure	Main value	Low range	High range	p value reported
Peña-Sánchez eat al.[33]	having received non-monetary incentives during last year	Have not received non-monetary incentives	Exp beta (OR)	3.11	1.19	8.13	<0.05
Visser et al.[40]	feeling valued	NA	OR	1.44	1.19	1.75	<0.05
NA – not applicable							

III. CONTEXTUAL FACTORS: OTHER

Intension to leave

Study ID	Definition	Subgroup	Type of measure	Main value	Low range	High range	p value reported
van Beuzekom et al.[19]	intention to leave	*anesthetists*	BC	-0.61	NR	NR	<0.05
		trainees	BC	0.42	NR	NR	<0.01
BC - Bivariate correlations, NR – not reported							

Prior achievement

Study ID	Definition	Type of measure	Main value	Low range	High range	p value reported
Schmit Jongbloed et al.[36]	curriculum (Traditional vs PBL)	β	0.04	NR	NR	NS
Beta (β) - standardized coefficients; NR – not reported, NS – not significant						