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Discrimination, Abuse, Harassment, and Burnout in Surgical Residency Training

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BACKGROUND

Physicians, particularly trainees and those in surgical subspecialties, are at risk for burnout. Mistreatment (i.e., discrimination, verbal or physical abuse, and sexual harassment) may contribute to burnout and suicidal thoughts.

BURNOUT, A SYNDROME OF EMOTIONAL exhaustion, cynicism, and reduced effectiveness at work, has been linked to poor health, alcoholism, depression, and suicide in physicians.^{1,2} Burnout has adverse effects on patient care and the physician workforce, since burned-out physicians are more likely to report that they have made medical errors, more frequently reduce their work efforts, change jobs, or leave the field of medicine.^{3,4} The prevalence of burnout appears to be higher among surgeons, trainees, and women than in other groups.⁵

Table 1. Demographic Characteristics of Residents from 262 U.S. Surgical Residency Programs.*

Characteristic	Overall (N = 7409)	Men (N = 4438)	Women (N = 2935)
<i>number (percent)</i>			
Gender†			
Male	4438 (59.9)	—	—
Female	2935 (39.6)	—	—
Data not available	36 (0.5)	—	—
Clinical postgraduate year			
1	2108 (28.5)	1269 (28.6)	825 (28.1)
2–3	2893 (39.0)	1708 (38.5)	1167 (39.8)
4–5	2408 (32.5)	1461 (32.9)	943 (32.1)
Relationship status			
Married or in a relationship	5467 (73.8)	3537 (79.7)	1908 (65.0)
Not in a relationship	1812 (24.5)	838 (18.9)	961 (32.7)
Divorced or widowed	130 (1.8)	63 (1.4)	66 (2.2)
Program size — no. of residents			
Quartile 1: <26	2042 (27.6)	1309 (29.5)	723 (24.6)
Quartile 2: 26 to 37	1721 (23.2)	1033 (23.3)	679 (23.1)
Quartile 3: 38 to 51	1920 (25.9)	1124 (25.3)	786 (26.8)
Quartile 4: >51	1726 (23.3)	972 (21.9)	747 (25.5)
Program type			
Academic	4439 (59.9)	2567 (57.8)	1854 (63.2)
Community	2729 (36.8)	1711 (38.6)	1002 (34.1)
Military	218 (2.9)	148 (3.3)	68 (2.3)
Unknown	23 (0.3)	12 (0.3)	11 (0.4)
Program location			
Northeast	2424 (32.7)	1434 (32.3)	981 (33.4)
Southeast	1505 (20.3)	921 (20.8)	578 (19.7)
Midwest	1567 (21.1)	960 (21.6)	600 (20.4)
Southwest	876 (11.8)	527 (11.9)	343 (11.7)
West	1037 (14.0)	596 (13.4)	433 (14.8)

* Percentages may not total 100 because of rounding.

† Residents were asked to report their gender.

Table 2. Frequency of Mistreatment, Duty-Hour Violations, Burnout, and Suicidal Thoughts among U.S. Surgical Residents.*

Variable	Overall (N = 7 409)	Men (N = 4 438)	Women (N = 2 935)
	<i>number (percent)</i>		
Gender discrimination	2366 (31.9)	442 (10.0)	1912 (65.1)
A few times per year	1453 (19.6)	325 (7.3)	1123 (38.3)
A few times per month or more frequently	913 (12.3)	117 (2.6)	789 (26.9)
Racial discrimination	1227 (16.6)	671 (15.1)	547 (18.6)
A few times per year	859 (11.6)	477 (10.7)	379 (12.9)
A few times per month or more frequently	368 (5.0)	194 (4.4)	168 (5.7)
Discrimination based on pregnancy or childcare status	532 (7.2)	144 (3.2)	383 (13.0)
A few times per year	361 (4.9)	84 (1.9)	275 (9.4)
A few times per month or more frequently	171 (2.3)	60 (1.4)	108 (3.7)
Any discrimination on the basis of gender, race, or pregnancy or childcare status†	2848 (38.4)	884 (19.9)	1950 (66.4)
A few times per year	1773 (23.9)	645 (14.5)	1122 (38.2)
A few times per month or more frequently	1075 (14.5)	239 (5.4)	828 (28.2)

Verbal or emotional abuse	2238 (30.2)	1257 (28.3)	968 (33.0)
A few times per year	1593 (21.5)	882 (19.9)	704 (24.0)
A few times per month or more frequently	645 (8.7)	375 (8.5)	264 (9.0)
Physical abuse	166 (2.2)	108 (2.4)	57 (1.9)
A few times per year	95 (1.3)	54 (1.2)	41 (1.4)
A few times per month or more frequently	71 (1.0)	54 (1.2)	16 (0.5)
Any abuse: verbal, emotional, or physical	2243 (30.3)	1259 (28.4)	971 (33.1)
A few times per year	1598 (21.6)	884 (19.9)	707 (24.1)
A few times per month or more frequently	645 (8.7)	375 (8.4)	264 (9.0)
Sexual harassment	761 (10.3)	172 (3.9)	583 (19.9)
A few times per year	574 (7.7)	109 (2.5)	460 (15.7)
A few times per month or more frequently	187 (2.5)	63 (1.4)	123 (4.2)
Any mistreatment exposure†	3694 (49.9)	1605 (36.1)	2073 (70.6)
A few times per year	2289 (30.9)	1120 (25.2)	1162 (39.6)
A few times per month or more frequently	1405 (19.0)	485 (10.9)	911 (31.0)

Duty-hour violations of the 80-hr rule in the previous 6 mo — no. of mo			
0	4518 (61.0)	2952 (66.5)	1548 (52.7)
1–2	1869 (25.2)	954 (21.5)	906 (30.9)
≥3	1022 (13.8)	532 (12.0)	481 (16.4)
Outcome measures			
Burnout‡	2849 (38.5)	1591 (35.9)	1245 (42.4)
Suicidal thoughts	333 (4.5)§	173 (3.9)	156 (5.3)

* Residents were asked to report their gender. Excluded were data from 36 residents who did not report gender.

† Shown is the highest reported cumulative frequency of discrimination based on gender, race, or pregnancy or childcare status.

‡ Burnout is defined as symptoms of emotional exhaustion or depersonalization occurring at least weekly.

§ Data were missing for 15 persons (9 men and 6 women).

Table 3. Sources of Discrimination, Harassment, and Abuse Reported in a Survey of U.S. Surgical Residents.*

Source of Mistreatment	Gender Discrimination			Racial Discrimination			Verbal or Emotional Abuse		
	<i>number (percent)</i>			<i>number (percent)</i>			<i>number (percent)</i>		
	All	Men	Women	All	Men	Women	All	Men	Women
	2366	442	1912	1227	671	547	2238	1257	968
Patient or patient's family	1032 (43.6)	87 (19.7)	940 (49.2)	581 (47.4)	257 (38.3)	320 (58.5)	181 (8.1)	108 (8.6)	73 (7.5)
Attendings	468 (19.8)	126 (28.5)	337 (17.6)	213 (17.4)	151 (22.5)	61 (11.2)	1173 (52.4)	652 (51.9)	512 (52.9)
Administration	16 (0.7)	10 (2.3)	6 (0.3)	20 (1.6)	13 (1.9)	7 (1.3)	25 (1.1)	14 (1.1)	11 (1.1)
Co-residents	179 (7.6)	56 (12.7)	121 (6.3)	101 (8.2)	59 (8.8)	41 (7.5)	451 (20.2)	232 (18.5)	217 (22.4)
Nurses or staff	503 (21.3)	50 (11.3)	452 (23.6)	131 (10.7)	73 (10.9)	56 (10.2)	177 (7.9)	102 (8.1)	73 (7.5)
Source not identified	169 (7.1)	113 (25.6)	56 (2.9)	181 (14.8)	118 (17.6)	62 (11.3)	231 (10.3)	149 (11.9)	82 (8.5)
	Physical Abuse			Sexual Harassment			Pregnancy or Childcare Discrimination		
	<i>number (percent)</i>			<i>number (percent)</i>			<i>number (percent)</i>		
	All	Men	Women	All	Men	Women	All	Men	Women
	166	108	57	761	172	583	532	144	383
Patient or patient's family	20 (12.0)	11 (10.2)	9 (15.8)	205 (26.9)	21 (12.2)	182 (31.2)	29 (5.5)	7 (4.9)	22 (5.7)
Attendings	36 (21.7)	19 (17.6)	17 (29.8)	207 (27.2)	26 (15.1)	180 (30.9)	196 (36.8)	27 (18.8)	168 (43.9)
Administration	10 (6.0)	8 (7.4)	2 (3.5)	9 (1.2)	6 (3.5)	3 (0.5)	35 (6.6)	8 (5.6)	26 (6.8)
Co-residents	17 (10.2)	11 (10.2)	6 (10.5)	111 (14.6)	20 (11.6)	90 (15.4)	120 (22.6)	30 (20.8)	90 (23.5)
Nurses or staff	10 (6.0)	6 (5.6)	3 (5.3)	108 (14.2)	39 (22.7)	68 (11.7)	23 (4.3)	7 (4.9)	15 (3.9)
Source not identified	73 (44.0)	53 (49.1)	20 (35.1)	121 (15.9)	60 (34.9)	60 (10.3)	129 (24.2)	65 (45.1)	62 (16.2)

* Data reflect responses from 7409 residents in 262 surgical residency programs. Residents were asked to report their gender. The total for each category of mistreatment is the number of residents reporting exposure to that mistreatment. Data from residents who did not report their gender are included in the total number reporting but are not included in values shown according to gender. Percentages may not total 100 because of rounding.

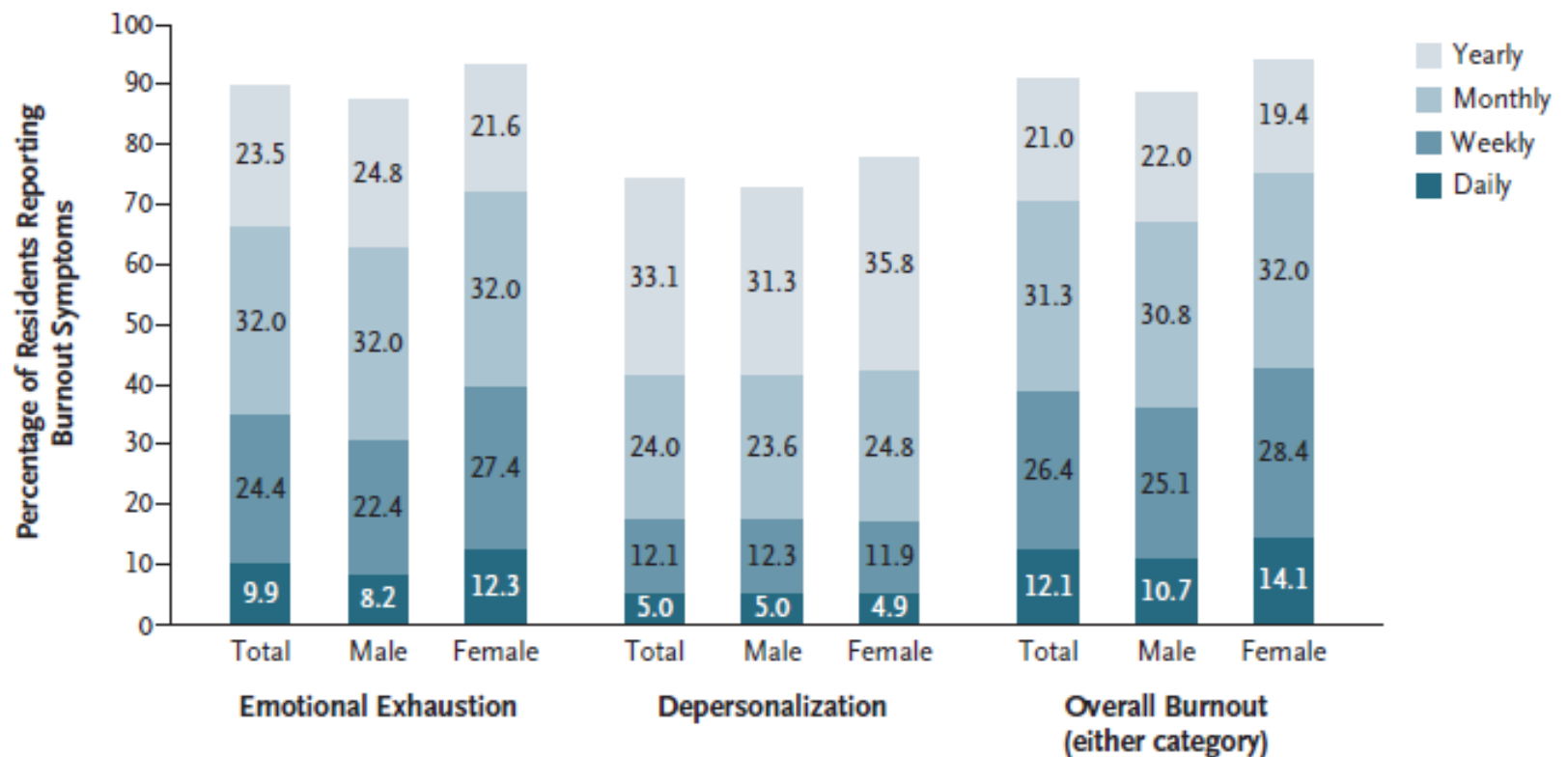


Figure 1. Frequency of Burnout Symptoms Reported by Surgical Residents, According to Self-Identified Gender.

Shown are the percentages of residents with symptoms of emotional exhaustion, depersonalization, and burnout (either emotional exhaustion or depersonalization).

Table 4. Characteristics Associated with Burnout and Suicidal Thoughts among U.S. Surgical Residents.*

Characteristic	Burnout†			Suicidal Thoughts		
	Percentage of Residents	Excluding Mistreatment Measures	Including Mistreatment Measures	Percentage of Residents	Excluding Mistreatment Measures	Including Mistreatment Measures
	<i>odds ratio (95% CI)</i>			<i>odds ratio (95% CI)</i>		
Overall	38.5			4.5		
Gender						
Male	35.9	Reference	Reference	3.9	Reference	Reference
Female	42.4	1.33 (1.20 to 1.48)	0.90 (0.80 to 1.00)	5.3	1.31 (1.03 to 1.67)	0.90 (0.69 to 1.18)
Clinical postgraduate year						
1	40.3	1.20 (1.06 to 1.36)	1.21 (1.06 to 1.38)	4.8	1.10 (0.81 to 1.49)	1.13 (0.83 to 1.55)
2–3	38.6	1.10 (0.97 to 1.24)	1.09 (0.96 to 1.24)	4.4	1.01 (0.77 to 1.32)	1.01 (0.76 to 1.33)
4–5	36.7	Reference	Reference	4.3	Reference	Reference
Relationship status						
Married or in a relationship	38.9	Reference	Reference	4.0	Reference	Reference
No relationship	37.2	0.86 (0.77 to 0.97)	0.83 (0.74 to 0.94)	5.6	1.33 (1.06 to 1.68)	1.31 (1.03 to 1.66)
Divorced or widowed	38.5	0.95 (0.65 to 1.39)	0.86 (0.58 to 1.28)	10.0	2.47 (1.36 to 4.51)	2.32 (1.29 to 4.18)
Program size						
Quantile 1: <26	35.2	Reference	Reference	4.4	Reference	Reference
Quantile 2: 26 to 37	39.7	1.17 (0.97 to 1.42)	1.14 (0.95 to 1.37)	4.7	1.18 (0.85 to 1.64)	1.15 (0.84 to 1.59)
Quantile 3: 38 to 51	39.7	1.11 (0.88 to 1.40)	1.04 (0.83 to 1.28)	4.7	1.18 (0.79 to 1.77)	1.12 (0.74 to 1.69)
Quantile 4: >51	39.6	1.09 (0.87 to 1.36)	1.00 (0.80 to 1.24)	4.2	1.11 (0.72 to 1.71)	1.06 (0.68 to 1.61)
Program type						
Academic	39.6	Reference	Reference	4.4	Reference	Reference
Community	36.9	0.92 (0.75 to 1.14)	0.96 (0.79 to 1.17)	4.8	1.18 (0.84 to 1.66)	1.22 (0.86 to 1.73)
Military	36.2	0.84 (0.60 to 1.16)	1.06 (0.78 to 1.46)	3.2	0.80 (0.33 to 1.93)	0.99 (0.42 to 2.33)
Program location						
Northeast	38.4	Reference	Reference	4.4	Reference	Reference
Southeast	37.1	0.96 (0.78 to 1.17)	1.07 (0.88 to 1.30)	4.3	0.98 (0.72 to 1.35)	1.08 (0.78 to 1.48)
Midwest	36.6	0.92 (0.78 to 1.10)	1.02 (0.86 to 1.21)	4.9	1.18 (0.88 to 1.58)	1.31 (0.98 to 1.75)
Southwest	36.5	0.91 (0.74 to 1.13)	1.04 (0.86 to 1.25)	3.8	0.88 (0.58 to 1.34)	0.98 (0.64 to 1.48)
West	44.9	1.32 (1.08 to 1.61)	1.40 (1.15 to 1.71)	5.0	1.16 (0.78 to 1.72)	1.20 (0.81 to 1.78)

80-hour-rule violations — no. of mo						
0	29.4	—	Reference	3.2	—	Reference
1–2	47.3	—	1.82 (1.61 to 2.05)	5.3	—	1.41 (1.07 to 1.87)
≥3	62.1	—	2.91 (2.52 to 3.35)	8.7	—	2.12 (1.56 to 2.88)
Mistreatment‡						
Never	27.3	—	Reference	2.5	—	Reference
A few times per year	45.3	—	2.02 (1.81 to 2.25)	5.3	—	2.08 (1.57 to 2.76)
A few times per month or more frequently	56.8	—	2.94 (2.58 to 3.36)	8.4	—	3.07 (2.25 to 4.19)

CONCLUSIONS

Mistreatment occurs frequently among general surgery residents, especially women, and is associated with burnout and suicidal thoughts.

High Prevalence of Burnout Among US Emergency Medicine Residents: Results From the 2017 National Emergency Medicine Wellness Survey

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- 1,522 residents (21.1% of all US emergency medicine residents), representing 193 of 247 US emergency medicine residency programs (78.1%) were included.
- Within this sample, the prevalence of burnout was 76.1% (95% confidence interval 74.0% to 78.3%). With alternative definitions applied, burnout prevalence rates for this same sample were 18.2% (95% confidence interval 16.3% to 20.1%) with the more restrictive definition and 80.9% (95% confidence interval 78.9% to 82.9%) with the more inclusive definition.

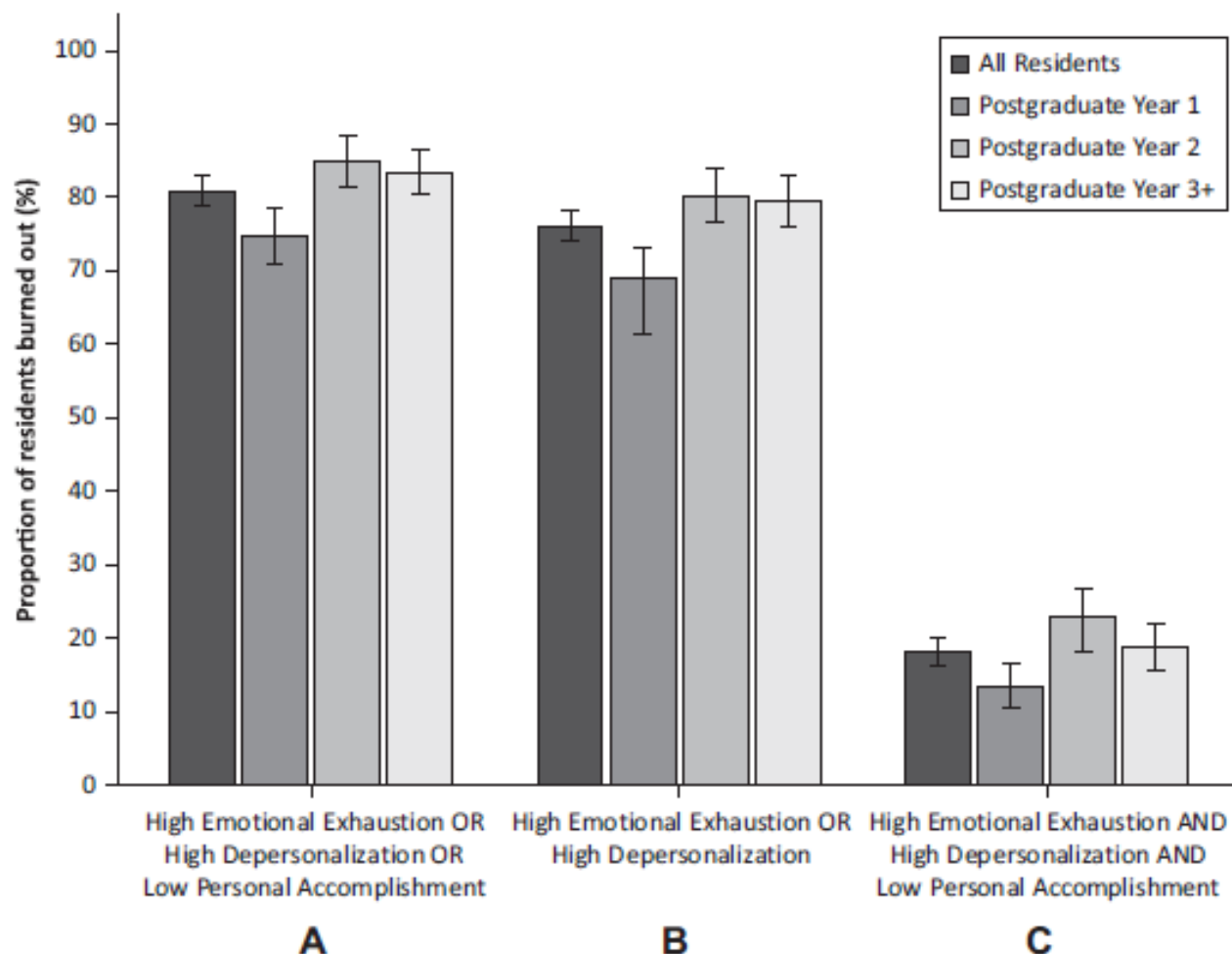


Figure. Prevalence of emergency medicine resident burnout, based on 3 different definitions of burnout in the literature, stratified by residency training year (raw data in Table E1, available online at <http://www.annemergmed.com>). A, More inclusive definition. B, Study definition. C, More restrictive definition. The vertical brackets denote 95% CIs.

- Compared with PGY 1 residents, PGY 2 and 3 (or longer) residents were more likely to report burnout, with adjusted odds ratios for primary burnout of 1.7 (95% CI 1.1 to 2.8) and 2.0 (95% CI 1.2 to 3.2), respectively.

		PGY 1	PGY 2	PGY ≥3	All Residents
Burnout Severity		(n = 523), No. (%)	(n = 437), No. (%)	(n = 562), No. (%)	(n = 1,522), No. (%)
EE	Low (≤18)	169 (32.3) [28.3–36.3]	98 (22.4) [18.5–26.4]	140 (24.9) [21.3–28.5]	407 (26.7) [24.5–29.0]
	Moderate (19–26)	145 (27.7) [23.9–31.6]	115 (26.3) [22.2–30.5]	154 (27.4) [23.7–31.1]	414 (27.2) [25.0–29.4]
	High (≥27)*	209 (40.0) [37.8–44.2]*	224 (51.3) [46.6–56.0]*	268 (47.7) [43.5–51.8]*	701 (46.1) [43.6–48.6]*
Depersonalization	Low (≤5)	85 (16.3) [13.1–19.4]	37 (8.5) [5.6–11.1]	54 (9.6) [7.2–12.1]	176 (11.6) [10.0–13.2]
	Moderate (6–9)	95 (18.2) [14.9–21.5]	66 (15.1) [11.7–18.5]	82 (14.6) [11.7–17.5]	243 (16.0) [14.1–17.8]
	High (≥10)*	343 (65.6) [61.5–69.7]*	334 (76.4) [72.4–80.4]*	426 (75.8) [72.2–79.4]*	1,103 (72.5) [70.2–74.7]*
Personal accomplishment	High (≥40)	211 (40.3) [36.1–44.6]	154 (35.2) [30.7–39.7]	197 (35.1) [31.1–39.0]	562 (36.9) [34.5–39.4]
	Moderate (34–39)	170 (32.5) [28.5–36.5]	131 (30.0) [25.7–34.3]	193 (34.3) [30.4–38.3]	494 (32.5) [30.1–34.8]
	Low (≤33)*	142 (27.2) [23.3–31.0]*	152 (34.8) [30.3–39.3]*	172 (30.6) [26.8–34.4]*	466 (30.6) [28.2–32.9]*

The denominator used to calculate percentages is the number of residents (n) in that PGY class. Numbers within brackets denote 95% CI.

*At high risk for burnout according to MBI-HSS definitions.

- This study reports the results of the largest national survey of emergency medicine residents to date, to our knowledge. Among respondents, 76.1% met criteria for burnout. Burnout within the emergency medicine specialty seems to begin as early as residency training, although PGY 1 residents seem less burned out.

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Research Article

Burnout Syndrome among Emergency Department Staff: Prevalence and Associated Factors



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Table 2: Univariate linear regression of MBI emotional exhaustion, depersonalization, and personal achievement with relevant covariates.

Category	Covariate	EE		DP		PA	
		Coefficient [SD]	p	Coefficient [SD]	p	Coefficient [SD]	p
Demographics	Age (years)	-0.03 [0.06]	0.591	-0.14 [0.03]	<0.001	0.07 [0.4]	0.057
	Sex: Male versus Female	-0.45 [1.30]	0.731	1.82 [0.78]	0.019	-1.37 [0.90]	0.127
	Live in couple: Yes versus No	1.65 [1.25]	0.187	1.51 [0.75]	0.043	0.25 [0.87]	0.770
	Have children: Yes versus No	0.06 [1.14]	0.960	0.58 [0.69]	0.398	0.30 [0.79]	0.704
Professional characteristics	ED						
	Marseille versus Avignon	2.32 [1.33]	0.246	3.02 [0.78]	<0.001	-1.97 [0.91]	0.095
	Marseille versus Montpellier	2.03 [1.42]	0.458	1.03 [0.85]	0.223	0.14 [0.99]	1.000
	ED professional categories						
	Physician versus Paramedic	4.18 [1.47]	0.014	2.7 [0.88]	0.006	-2.22 [1.03]	0.094
	Physician versus A/T	8.42 [2.13]	<0.001	5.05 [1.28]	<0.001	-0.48 [1.49]	1.000
	1 st job in an ED: Yes versus No	-1.29 [1.23]	0.294	-0.15 [0.74]	0.838	0.79 [0.85]	0.350
	Time working in the ED: >5 years versus ≤5 years	1.96 [1.13]	0.085	0.003 [0.68]	0.997	-0.15 [0.79]	0.851
	Work rhythm: Night or Day/Night versus Day	2.66 [1.16]	0.022	1.84 [0.69]	0.008	-2.02 [0.79]	0.012
	Job strain: Yes versus No	8.33 [1.16]	<0.001	2.67 [0.7]	<0.001	-3.58 [0.83]	<0.001
	Wish to quit the ED: Yes versus No	12.23 [1.44]	<0.001	4.26 [0.91]	<0.001	-4.17 [1.02]	<0.001

- This is the first French study that included all permanent professional working in three emergency departments, namely, physicians, paramedics and administrative/support staff (response rate 71.6%).
- The results show that significant burnout was reported by 34.6% of respondents, and that it was mainly associated with two factors: job strain and low MCS. It was also more pronounced for the medical category.

Burnout among female emergency medicine physicians: A nationwide study

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- A total of 34% of participants were academic faculties. The level of burnout in three subscales of emotional exhaustion, depersonalisation and perceived low personal accomplishment was moderate to high in 84.5, 48.1 and 80.5% of participants respectively.
- A total of 94.8% of female emergency medicine physicians perceived their workload to be moderate to high and only 1.3% of them had high job satisfaction.
- There was no significant difference between academic and non-academic emergency physicians in terms of burnout and workload

TABLE 3. *The median and mean scores for each subscale of burnout, workload, job satisfaction and social support and the comparison between academic and non-academic emergency medicine specialists*

Variables	Mean \pm SD	Median	Min	Max	Group		P-value
					Non-academic	Academic	
Dimension of burnout							
Emotional exhaustion	24.22 \pm 8.63	23	7	47	21 (17–31)	26 (19–32)	0.19†
Depersonalisation	7.16 \pm 4.41	6	1	18	7 (5–11)	5 (2–10)	0.22†
Personal accomplishment	31.08 \pm 6.98	30	13	48	32.35 \pm 5.69	30.07 \pm 7.77	0.14‡
Workload	13.74 \pm 3.18	13	7	21	13.23 \pm 3.59	14.14 \pm 3.02	0.22‡
Job satisfaction	15.11 \pm 5.20	15	2	28	17.18 \pm 5.04	13.43 \pm 4.76	0.001‡
Social support	16.0 \pm 3.31	17	7	21	17 (7–21)	16 (7–21)	0.47†

†Median (IQR), Mann–Whitney test. ‡Mean (SD), independent sample *t*-test.

TABLE 4. *Results of important questions about job satisfaction*

Satisfaction with	Low (%)	Moderate (%)	High (%)
Salary and per-case payment	45.5	46.8	7.8
Interactions with hospital officials	39.0	40.3	20.8
System support and encouragement	71.4	18.2	10.4
Participation in decision makings in the workplace	57.1	33.8	9.1
Amount of recognition received for the work	50.6	39.0	10.4

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Prevalence of Burnout Among Physicians

A Systematic Review

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RESULTS: Burnout prevalence data were extracted from 182 studies involving 109 628 individuals in 45 countries published between 1991 and 2018. In all, 85.7% (156/182) of studies used a version of the Maslach Burnout Inventory (MBI) to assess burnout. Studies variably reported prevalence estimates of overall burnout or burnout subcomponents: 67.0% (122/182) on overall burnout, 72.0% (131/182) on emotional exhaustion, 68.1% (124/182) on depersonalization, and 63.2% (115/182) on low personal accomplishment. Studies used at least 142 unique definitions for meeting overall burnout or burnout subscale criteria, indicating substantial disagreement in the literature on what constituted burnout. Studies variably defined burnout based on predefined cutoff scores or sample quantiles and used markedly different cutoff definitions. Among studies using instruments based on the MBI, there were at least 47 distinct definitions of overall burnout prevalence and 29, 26, and 26 definitions of emotional exhaustion, depersonalization, and low personal accomplishment prevalence, respectively. Overall burnout prevalence ranged from 0% to 80.5%. Emotional exhaustion, depersonalization, and low personal accomplishment prevalence ranged from 0% to 86.2%, 0% to 89.9%, and 0% to 87.1%, respectively. Because of inconsistencies in definitions of and assessment methods for burnout across studies, associations between burnout and sex, age, geography, time, specialty, and depressive symptoms could not be reliably determined.

Table 15. Meta-analysis of the Prevalence of Overall Burnout Stratified by Country and Continent or Region

A. By Country:

	k	Prevalence (%)	LCI	UCI	Q	τ^2	I^2
Argentina	1	10.6%	6.2%	17.4%	0	--	--
Armenia	1	18.3%	12.4%	26.3%	0	--	--
Australia	1	25.0%	14.0%	40.5%	0	--	--
Australia, New Zealand	1	2.7%	1.2%	5.9%	0	--	--
Austria	1	50.7%	49.4%	52.0%	0	--	--
Belgium	1	5.1%	4.0%	6.6%	0	--	--
Brazil	7	11.2%	4.7%	24.3%	85	1.4	93.0%
Canada	1	61.1%	37.9%	80.2%	0	--	--
Canada, United States	1	61.8%	50.5%	72.0%	0	--	--
China	5	24.0%	6.7%	58.3%	1003	2.9	99.6%
Colombia	1	3.8%	1.4%	9.6%	0	--	--
Denmark	4	5.7%	1.5%	19.1%	191	1.9	98.4%
France	3	9.4%	5.9%	14.5%	20	0.2	89.8%
Germany	1	10.9%	9.6%	12.5%	0	--	--
India	1	10.0%	0.6%	67.4%	0	--	--
Ireland, United Kingdom	1	28.9%	25.3%	32.7%	0	--	--
Israel	1	55.9%	47.5%	64.0%	0	--	--
Italy	2	39.5%	19.7%	63.4%	7	0.4	85.5%
Japan	2	21.7%	20.2%	23.1%	0	0.0	0.0%
Kuwait	1	20.5%	15.5%	26.7%	0	--	--
Lithuania	2	31.1%	3.4%	85.5%	58	3.4	98.3%
Morocco	1	52.9%	39.4%	66.1%	0	--	--
Netherlands	5	12.5%	7.5%	20.2%	47	0.4	91.5%
New Zealand	2	15.7%	8.3%	27.7%	2	0.2	59.3%
Palestine	1	9.9%	5.9%	16.0%	0	--	--
Peru	1	3.7%	3.0%	4.6%	0	--	--
Portugal	3	16.5%	4.5%	45.1%	45	1.5	95.6%
Qatar	1	12.6%	8.5%	18.2%	0	--	--
Serbia	1	6.3%	3.7%	10.6%	0	--	--
Singapore	1	31.1%	19.4%	45.9%	0	--	--
Spain	7	22.1%	8.5%	46.2%	267	2.2	97.8%
Switzerland	4	12.9%	3.3%	39.5%	267	2.2	98.9%
United Kingdom	2	32.3%	11.4%	64.1%	24	0.9	95.9%
United States	51	28.3%	24.8%	32.1%	4283	0.4	98.8%
Uruguay	1	51.2%	40.5%	61.8%	0	--	--
Venezuela	1	55.9%	39.2%	71.4%	0	--	--
Yemen	1	11.7%	9.3%	14.7%	0	--	--
Test for subgroup differences:							
	Q	d.f.	p-value				
Between groups	2618	36	<0.0001				

B. By Continent or Region:

	k	Prevalence (%)	LCI	UCI	Q	τ^2	I^2
Africa	1	52.9%	39.4%	66.1%	0	—	—
Asia	10	22.7%	11.5%	39.9%	1362	1.6	99.3%
Europe	37	15.8%	11.1%	21.8%	3424	1.5	98.9%
Middle East	5	19.0%	8.6%	36.8%	126	1.0	96.8%
North America	53	29.3%	25.7%	33.1%	4302	0.4	98.8%
Oceania	4	11.6%	4.7%	25.7%	27	0.9	89.1%
South America	12	12.9%	5.9%	25.9%	343	2.1	96.8%
Test for subgroup differences:							
	Q	d.f.	p-value				
Between groups	38	6	<0.0001				

eTable 19. Meta-analysis of the Prevalence of Overall Burnout Stratified by Specialty

	k	Prevalence (%)	LCI	UCI	Q	τ^2	I ²
Anesthesia	8	18.7%	6.6%	42.8%	640	2.7	98.9%
Emergency Medicine	8	25.0%	18.3%	33.2%	39	0.2	81.8%
ENT	5	5.3%	1.1%	22.2%	118	3.1	96.6%
Family Medicine	1	20.5%	15.5%	26.7%	0	--	--
Forensics	1	21.4%	13.9%	31.5%	0	--	--
General Practice	9	7.8%	4.2%	13.9%	157	0.9	94.9%
Headache Medicine	1	57.5%	48.7%	65.8%	0	--	--
Hospitalist Medicine	2	27.0%	21.0%	34.0%	4	0.0	76.5%
Intensive Care	8	27.6%	17.1%	41.4%	157	0.7	95.5%
Internal Medicine	5	35.8%	28.0%	44.4%	31	0.1	87.0%
Multiple Specialties	34	19.1%	14.8%	24.2%	5454	0.8	99.4%
Neonatology	1	20.8%	17.2%	24.9%	0	--	--
Neurology	1	60.1%	57.7%	62.5%	0	--	--
Neurosurgery	1	27.2%	18.6%	37.8%	0	--	--
Obstetrics and Gynecology	2	13.0%	1.5%	60.4%	25	2.7	96.1%
Occupational Medicine	1	11.8%	10.2%	13.6%	0	--	--
Oncology	3	54.3%	43.3%	64.9%	77	0.1	97.4%
Ophthalmology	1	8.9%	4.7%	16.3%	0	--	--
Orthopedic Surgery	1	16.7%	4.2%	47.7%	0	--	--
Palliative Care	3	31.6%	8.5%	69.8%	74	1.9	97.3%
Pediatric Critical Care	2	17.5%	11.4%	25.7%	6	0.1	82.4%
Pediatrics	5	21.8%	12.6%	35.0%	45	0.5	91.1%
Primary Care	8	20.6%	10.9%	35.5%	703	1.0	99.0%
Psychiatry	1	52.0%	38.4%	65.4%	0	--	--
Radiation Oncology	2	3.8%	1.7%	8.4%	2	0.1	33.2%
Radiology	1	80.5%	76.3%	84.1%	0	--	--
Surgery	6	32.8%	25.9%	40.6%	319	0.1	98.4%
Urology	1	28.9%	25.3%	32.7%	0	--	--
Test for subgroup differences:							
	Q	d.f.	p-value				
Between groups	1238	27	<0.0001				

- **Conclusions and Relevance** In this systematic review, there was substantial variability in prevalence estimates of burnout among practicing physicians and marked variation in burnout definitions, assessment methods, and study quality. These findings preclude definitive conclusions about the prevalence of burnout and highlight the importance of developing a consensus definition of burnout and of standardizing measurement tools to assess the effects of chronic occupational stress on physicians.