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Mistreatment, discrimination and burn-out in Neurosurgery

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ABSTRACT

Objective: Issues concerning harassment, bullying and discrimination are not unknown to medical specialties and are likely to be present in neurosurgery as well. The aim of this study was to estimate the extent to which neurosurgeons are faced with issues pertaining to this mistreatment.
Methods: A survey consisting of fourteen questions was distributed among members of the Congress of Neurological Surgeons (CNS). The survey consisted of three parts: 1) demographics; 2) exposure to mistreatment; 3) experienced burnout symptoms.
Results: In total 503 out of the 5665 approached CNS members filled in a survey (response rate 8.9 %). Respondents consisted for 85.9 % out of neurosurgeons and for 13.9 % out of residents. Overall, 61.4 % of the respondents was a victim of form of abusive behavior, while 47.9 % was a victim of at least one form of discrimination. Most reported sources of these mistreatments were other neurosurgeons or (family of) patients. Overall, 49.9 % of the respondents experienced burnout symptoms.
Multivariable logistic regression analysis showed that female respondents had higher odds of being a victim of abuse (OR 2.5, 95 % CI 1.4–4.6). Female respondents (OR 19.8, 95 % CI 8.9–43.9) and ethnic minorities (OR 3.8, 95 % CI 2.3–6.2) had higher odds of being a victim of discrimination. Furthermore, victims of abuse were at higher odds (OR 1.7, 95 % CI 1.1–2.6) of having burnout symptoms.
Conclusions: Mistreatment and experiencing burnout symptoms frequently occurs among neurosurgeons and residents.

1. Introduction

In a field in which professional ethics play a vital role in day-to-day activities, harassment and bullying among physicians remain very actual and important problems. Unfortunately, a significant amount of medical specialists and residents have encountered one or several forms of harassment and/or discrimination during their professional career. Harassment-related problems, including issues involving sexual harassment [1,2], gender inequality, ethnic/racial discrimination [3] and harassment of medical trainees [4], have all been extensively reported in academic literature amongst a wide array of medical specialties. Rates of harassment and mistreatment vary among physicians with studies reporting rates of harassment from 18 % up to 50 % in their respective study populations [5,6].

The impact of harassment on physicians is profound [6]. Physicians might feel more scrutinized and in general more uncomfortable at work, reducing job satisfaction and intercollegiate relationships [3]. Bullying amongst medical specialist and residents may even lead to serious adverse outcomes including burn-out, depression, substance abuse and even suicidal ideations [5,6], severely affecting the lives and well-being of physicians. Additionally, physicians experiencing burn-out complaints may inadvertently offer suboptimal quality of care, negatively effecting general healthcare quality and patient safety [7,8].

Literature seems to indicate that issues concerning harassment, discrimination and mistreatment are particularly present amongst surgical medical specialties, specifically in female surgeons and surgical residents [2,5,6,9,10]. Seeing that neurosurgery is regarded as one of the most physically and mentally demanding surgical subspecialties, it is very likely that these issues also exist in the neurosurgical community. The global presence of gender inequality and gender discrimination in

Abbreviations: CNS, Congress of Neurological Surgeons; OR, Odds ratio; CI, Confidence interval.

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neurosurgery is already well established in prior research [11–14]. It is, however, unclear to what extent neurosurgeons and neurosurgical residents are faced with issues pertaining to harassment, discrimination and bullying in general. Therefore, the goal of the current study is to survey the frequency of experiencing abuse, discrimination and bullying by neurosurgeons, how neurosurgeons and residents cope with these incidents and which specific groups are more at risk of being subjected to these forms of mistreatment.

2. Methods

The Checklist for Reporting Results of Internet E-Surveys was adhered for the reporting in this manuscript [15].

2.1. The survey

A fourteen-question survey was developed based on previous surveys [5,6,16]. The survey consisted of three main parts:

1 Demographics

This part contained eight questions regarding respondents' demographics such as function, age, ethnicity, gender and relationship status.

2 Exposure to mistreatment

This part, based on the Short-Negative Act Questionnaire, required respondents to score their exposure to discrimination, abuse and bullying on a 5-point Likert-scale ranging from never to daily [5,6]. In addition to scoring the frequency of exposure to the mistreatments, respondents were asked to indicate the source of the mistreatment among different groups such as colleagues, (family of) patients and nurses.

3 Burnout symptoms as scored on the abbreviated Maslach Burnout Inventory [6,17]. This specific questionnaire scores symptoms of burnout on three different domains: (1) emotional exhaustion which is defined as 'being emotionally overextend and exhausted by work'; (2) depersonalization which is defined as 'an unfeeling and impersonal response toward patients'; and (3) personal accomplishment which is defined as 'feelings of competence and successful achievement in one`s work'.

2.2. Study population and distribution

The study population was derived by querying the Congress of Neurological Surgeons (CNS) member directory. The CNS is a U.S. based international, professional organization with mostly neurosurgeons as members. As no patients were involved, no institutional review board approval was required for the conduction of this study. The survey was entered in SurveyMonkey and was pilot tested among local neurosurgeons before distribution. The survey was sent in July 2020, accompanied with a letter explaining the subject and relevance of this study. Furthermore, it contained a statement that all information obtained from the survey would be processed and kept anonymous and cannot be traced back to the respondents. By clicking on the survey invitation, respondents provided informed consent. No incentives were offered for participation in this study. To ensure all parts of the survey were filled in equally, the three parts of the survey were presented to each individual respondent randomly. Only one survey could be completed per email address. Three reminders were sent the following months to improve the response rate.

2.3. Statistical analysis

Demographics are shown using descriptive statistics with valid percentages. To study the association between demographics and different forms of mistreatment univariate, chi-square tests were applied. Multivariable logistic-regression models were used to study the association between demographics and being a victim of abuse, discrimination or with having burnout symptoms. Exposure to abuse or discrimination on any basis was compared to never experiencing this. Furthermore, experiencing symptoms of either emotional exhaustion or depersonalization at least weekly, was considered as having burnout symptoms. Odds ratios (ORs) were calculated alongside their 95 % confidence intervals (CI) to show the extent of association, with a p-value <0.05 considered to be statistically significant. All statistical analyses were performed using IBM SPSS version 25.

3. Results

3.1. Respondents

The CNS-database contained 6336 enlisted members of which 5665 had functional email addresses. Eventually 503 were completed which yields a response rate of 8.9 %. The majority (85.9 %) of respondents were employed as neurosurgeons, while 13.9 % were residents (see Table 1). Of all respondents, 20.3 % were female and 32.9 % of all respondents identified themselves as ethnic minority. Fig. 1 gives an overview of the respondent`s working locations. The vast majority was located in the U.S. (78.5 %), followed by India (3.0 %) and Mexico (2.0 %).

Table 1
Demographics of the respondents.

	N (%)		N (%)
Function	468	**Gender**	468
Neurosurgeon	402 (85.9 %)	Male	373 (79.7 %)
Neurosurgeon in training	65 (13.9 %)	Female	95 (20.3 %)
Other	1 (0.2 %)		
		Years of clinical experience	465
Age	468	≤5 years	38 (8.2 %)
20 – 29 years	8 (1.7 %)	6–10 years	68 (14.6 %)
30 – 39 years	103 (22.0 %)	11–20 years	147 (31.6 %)
40 – 49 years	131 (28.0 %)	>20 years	212 (45.6 %)
50 – 59 years	118 (25.2 %)		
≥60 years	108 (23.1 %)	**Continent of employment**	503
		Africa	2 (0.4 %)
Specialty*		Asia and Oceania	35 (7.0 %)
Epilepsy	36 (7.2 %)	Europe	30 (6.0 %)
Functional	60 (11.9 %)	North America	417 (82.9 %)
General neurosurgery	18 (3.6 %)	South America	19 (3.8 %)
Peripheral nerve	29 (5.8 %)		
Pediatrics	72 (14.3 %)	**Relationship status**	468
Neuro-oncology	148 (29.4 %)	Married or in a relationship	417 (89.1 %)
Neurovascular	115 (22.9 %)	Not in a relationship	27 (5.8 %)
Neurotrauma	120 (23.9 %)	Divorced or widowed	24 (5.1 %)
Skull base	84 (16.7 %)		
Spine	215 (42.7 %)	**Ethnicity**	468
Other	9 (1.8 %)	Non-Hispanic white	308 (65.8 %)
		Ethnic minority	154 (32.9 %)
		Other	6 (1.3 %)

* Multiple answers were possible.

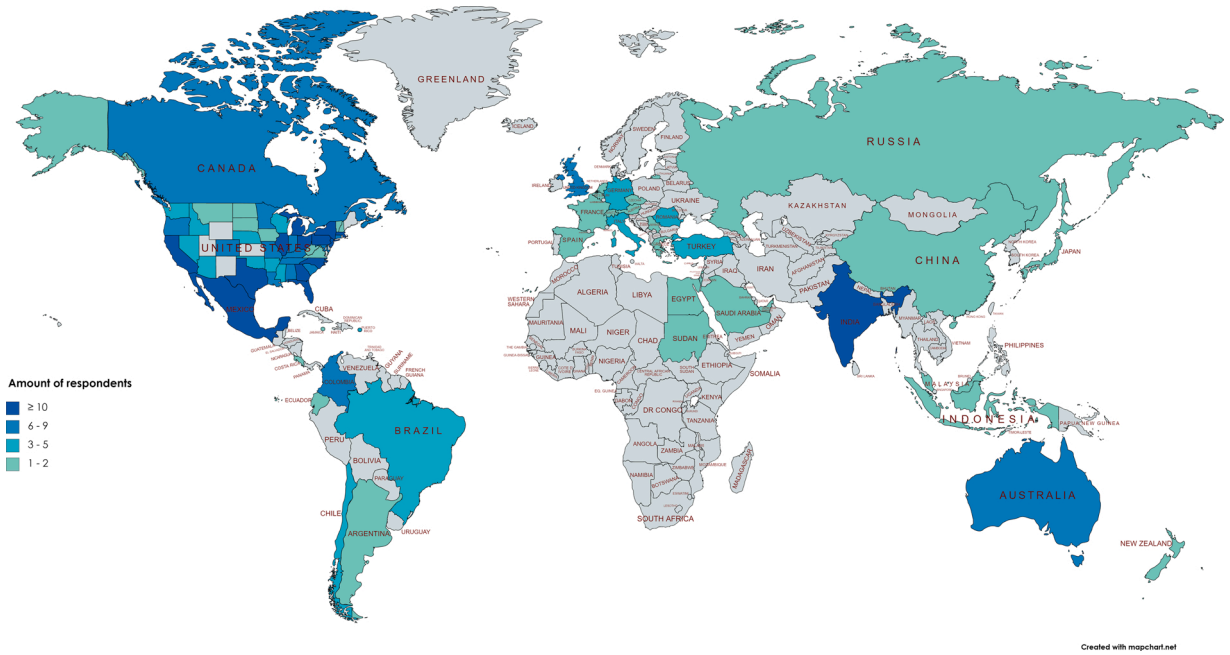

Fig. 1. Map of the survey respondents.

3.2. Abuse, discrimination and bullying experienced

Table 2 gives an overview of the frequency respondents deal with discrimination, abuse or bullying. Overall, 47.9 % of the respondents reported to have been a victim of a form of discrimination. Based on univariate analyses, being a resident (54.2 % vs. 25.0 %), being female (90.2 % vs. 13.0 %) and an age lower than 60 years (46 % vs 24 %) were associated with reporting more gender discrimination (all $p < 0.001$). Being part of an ethnic minority (56.8 % vs. 18.6 %, $p < 0.001$) and an age lower than 60 (35.3 % vs. 19.8 %, $p = 0.013$) were associated with reporting more racial discrimination. Discrimination based on pregnancy or child care status, was more frequently reported ($p < 0.001$) by residents (44.1 % vs. 15.1 %), females (63.0 % vs. 7.4 %) and an age lower than 60 years (22.7 % vs. 6.0 %). Other neurosurgeons were most frequently the source of gender discrimination (35.4 %), discrimination based on pregnancy or child care status (50.4 %), while (family of)

Table 2
Frequency and sources of discrimination, abuse and bullying experienced by respondents.

		Frequency			Source of behavior					
		Frequently	*Occasionally*	*Never*	*(family of) patients*	*Other neurosurgeons*	*Residents*	*Chair*	*Officers*	*Nurses*
Discrimination	*… based on gender*	54 (11.6 %)	85 (18.2 %)	327 (70.2 %)	42 (21.9 %)	68 (35.4 %)	9 (4.7 %)	17 (8.9 %)	31 (16.1 %)	25 (13.0 %)
	… based on race	27 (5.8 %)	124 (26.6 %)	315 (67.6 %)	69 (39.0 %)	45 (25.4 %)	7 (4.0 %)	13 (7.3 %)	34 (19.2 %)	9 (5.1 %)
	… based on pregnancy or child care status	11 (2.4 %)	78 (16.7 %)	377 (80.9 %)	10 (7.6 %)	66 (50.4 %)	10 (7.6 %)	23 (17.6 %)	16 (12.2 %)	6 (4.6 %)
Abuse	*Physical abuse*	5 (1.1 %)	30 (6.4 %)	431 (92.5 %)	18 (26.5 %)	20 (29.4 %)	14 (20.6 %)	7 (10.3 %)	6 (8.8 %)	3 (4.4 %)
	Verbal or emotional abuse	70 (15.0 %)	201 (43.1 %)	195 (41.8 %)	53 (19.8 %)	100 (37.3 %)	18 (6.7 %)	49 (18.3 %)	39 (14.6 %)	9 (3.4 %)
	Sexual harassment	13 (2.6 %)	82 (17.6 %)	371 (79.6 %)	18 (15.5 %)	46 (39.7 %)	9 (7.8 %)	8 (6.9 %)	8 (6.9 %)	27 (23.3 %)
Bullying	*Being shouted at*	47 (10.4 %)	232 (51.1 %)	175 (38.5 %)	104 (20.7 %)	107 (20.7 %)	19 (6.0 %)	44 (13.9 %)	32 (10.1 %)	13 (4.1 %)
	Exclusion	102 (22.5 %)	186 (41.0 %)	166 (36.6 %)	14 (4.5 %)	132 (42.9 %)	29 (9.4 %)	50 (16.2 %)	64 (20.8 %)	19 (6.2 %)
	Hostility	102 (22.5 %)	237 (52.2 %)	115 (25.3 %)	81 (23.6 %)	118 (34.4 %)	21 (6.1 %)	42 (12.2 %)	54 (15.7 %)	27 (7.9 %)
	Offensive remarks	82 (18.1 %)	238 (52.4 %)	134 (29.5 %)	73 (23.0 %)	117 (36.9 %)	28 (8.8 %)	34 (10.7 %)	35 (11.0 %)	30 (9.5 %)
	Persistent criticism	100 (22.0 %)	171 (37.7 %)	183 (40.3 %)	26 (9.3 %)	120 (42.7 %)	19 (6.8 %)	50 (17.8 %)	51 (18.1 %)	15 (5.3 %)
	Subject of gossip	100 (22.0 %)	219 (48.2 %)	135 (29.7 %)	11 (3.8 %)	100 (34.1 %)	41 (14.0 %)	16 (5.5 %)	38 (13.0 %)	87 (29.7 %)
	Unwanted jokes	54 (11.9 %)	179 (39.4 %)	221 (48.7 %)	18 (7.4 %)	111 (45.7 %)	38 (15.6 %)	18 (7.4 %)	18 (7.4 %)	40 (16.5 %)
	Repeated reminders of mistakes	73 (16.1 %)	168 (37.0 %)	213 (46.9 %)	11 (4.3 %)	122 (47.5 %)	21 (8.2 %)	50 (19.5 %)	40 (15.6 %)	13 (5.1 %)
	Withholding important information	81 (17.8 %)	186 (41.0 %)	187 (41.2 %)	16 (5.8 %)	70 (25.2 %)	27 (9.7 %)	57 (20.5 %)	83 (29.9 %)	25 (9.0 %)

patients were the most frequent source (39.0 %) of racial discrimination.

Overall, 61.4 % of the respondents reported to have been a victim of abusive behavior. Physical abuse was reported by 7.4 % of the respondents and was more frequently reported by residents (15.3 % vs. 6.5 %, $p = 0.004$) and respondents with a tenure of 10 years or less (13.0 % vs. 5.6 %, $p = 0.22$). Verbal or emotional abuse was reported by 58.3 % of all respondents and was more frequently (all $p < 0.001$) reported by residents (72.9 % vs. 55.5 %), females (68.5 % vs. 55.3 %) and respondents with a tenure of 10 years or less (70.0 % vs. 50.3 %). In total, 20.2 % of the respondents reported to have been a victim of sexual harassment. Residents (37.3 % vs 17.2 %), females (63.1 % vs. 8.8 %), respondents who identified ethnically as non-Hispanic white (24.4 % vs. 11.8 %) and a tenure of 10 years or less (34.0 % vs. 15.9 %) were all associated with a higher reported rate of sexual harassment. For all these three forms of abusive behavior, other neurosurgeons were most frequently named as the source (29.4–39.7%).

Exclusion and hostility were the most frequent forms of bullying experienced by respondents (both by 22.5 %). Receiving persistent criticism and being the subject of gossip followed (both by 22.0 %). Other neurosurgeons were the most frequent source of the four forms of bullying.

Of the respondents who were victim of discrimination, abuse or bullying, 33.6 % complained to anyone about this. Male respondents were more likely to complain on this matter compared to females (77.2 % vs. 22.8 %, $p = 0.01$). Function, ethnicity, age or tenure of the respondent were not associated with complaining on this matter.

3.3. Burnout symptoms experienced

Fig. 2 gives an overview of burnout symptoms experienced by respondents. Emotional exhaustion gave the highest burden with 45.7 % experiencing symptoms of emotional exhaustion weekly or daily. Depersonalization followed by 23.4 %. In contrary to these rates, 99.0 % experienced daily or weekly feelings of personal accomplishment. Overall, the burnout symptom rate among respondents was 49.9 %.

3.4. Factors associated with abuse, discrimination or having a burnout

Table 3 presents the results of the multivariable logistic regression analyses on factors associated with being a victim of abuse, discrimination or experiencing burnout symptoms. Of the factors tested, female respondents had 2.5 times higher odds (95 % CI 1.4–4.6) to be a victim of abuse. Furthermore, female respondents and ethnic minorities had similarly higher odds of being a victim of discrimination, namely OR 19.8 (95 % CI 8.9–43.9) and OR 3.8 (95 % CI 2.3–6.2) respectively. Function, age, tenure, relationship status or being employed in the U.S. were not significantly associated with being a victim of abuse or discrimination. Respondents who were a victim of abuse had a higher odds of having burnout symptoms (OR 1.7, 95 % CI 1.1–2.6).

4. Discussion

Goals of the current study were to study the frequency in which abuse, discrimination and bullying is experienced and to identify which groups among neurosurgeons were more at risk of experiencing these forms of mistreatment. The results of the current study show that overall 61.4 % of the respondents were a victim of a form of abusive behavior, while 47.9 % were a victim of a form of discrimination. Most reported sources of this mistreatment were other neurosurgeons or (family of) patients. Male respondents were more likely to complain about mistreatment in comparison to females. Overall, 49.9 % of the respondents experienced burnout symptoms. Female respondents had a higher odds (OR 2.5) of being a victim of abuse, while female respondents (OR 19.8) and ethnic minorities (OR 3.8) had higher odds of being a victim of discrimination. Furthermore, victims of abuse were at higher odds (OR 1.7) of having burnout symptoms.

The prevalence of bullying, discrimination, harassment and their association with burnout among U.S. general surgery residents has been studied previously [5,6]. In a 2018 survey among 7409 residents, 31.9 % reported gender-discrimination, 16.6 % racial discrimination and 30.3 % verbal and/or physical abuse. Among these residents, 38.5 % had burnout symptoms occurring at least once a week. Mistreatment rates were higher among women and residents who reported exposure to mistreatment more frequently, were more likely to have burnout symptoms. In a 2019 survey by the same author group, 67 % of the residents reported experiencing at least one type of bullying behavior [6]. Women, divorced or widowed residents and residents belonging to an ethic minority were all more likely to report bullying, amongst others. Furthermore, residents who were frequently bullied, had higher rates of burnout and more thoughts of suicide and attrition.

The results of the current study are largely in line with the previously published work, identifying women and ethnic minorities as more prone to mistreatment. Rates of racial discrimination, abuse and having burnout symptoms tend to be higher in the current survey. This difference may be partially explained by the difference in target population (with the current survey being more focused on neurosurgeons than residents), difference in definitions of burnout or harassment, or the difference in response rate bias, as the current study has a fairly lower response rate [18]. Nevertheless, all of these studies show bothersome rates of mistreatment and burnout symptoms, with the current study showing that even after a (surgical) residency, mistreatment such as discrimination and bullying, continues to occur.

When compared to the general population in the U.S., the rates of racial discrimination found in this study are lower [19]. In the general U.

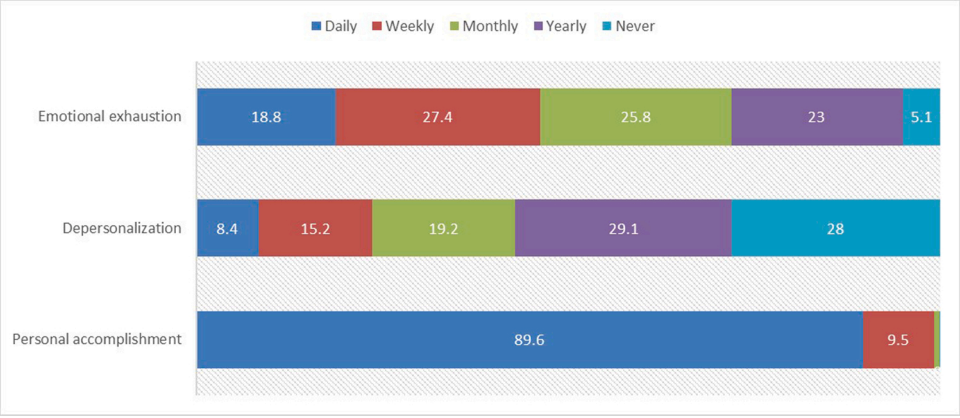

Fig. 2. Burnout symptoms experienced by respondents. *Emotional exhaustion is defined as 'being emotionally overextend and exhausted by work'. Depersonalization is defined as 'an unfeeling and impersonal response toward patients'. Personal accomplishment is defined as 'feelings of competence and successful achievement in one`s work'.*

Table 3
Factors associated with being a victim of abuse, discrimination or having a burnout.

Factor	Sample size	Victim of abuse			Victim of discrimination			Burnout		
	N (%)	Frequency	OR	95 % CI	Frequency	OR	95 % CI	Frequency	OR	95 % CI
Function	467									
Neurosurgeon	402 (86.1 %)	223 (58.1 %)	Reference		168 (43.8 %)	Reference		179 (47.1 %)	Reference	
Neurosurgeon in training	65 (13.9 %)	46 (78.0 %)	1.5	(0.6–3.5)	39 (66.1 %)	1.2	(0.5–3.1)	38 (64.4 %)	1.3	(0.6–2.9)
Gender	468									
Male	373 (79.7 %)	196 (55.7 %)	Reference		125 (35.5 %)	Reference		168 (48.3 %)	Reference	
Female	95 (20.3 %)	74 (80.4 %)	2.5*	(1.4–4.6)	83 (90.2 %)	19.8*	(8.9–43.9)	50 (54.3 %)	1.0	(0.5–1.7)
Ethnicity	468									
Non-Hispanic white	308 (65.8 %)	183 (62.9 %)	Reference		114 (39.2 %)	Reference		145 (49.7 %)	Reference	
Minority/other	160 (34.2 %)	87 (56.9 %)	0.8	(0.5–1.2)	94 (61.4 %)	3.8*	(2.3–6.2)	73 (49.3 %)	1.0	(0.6–1.5)
Age	468									
<60 years	360 (76.9 %)	216 (63.0 %)	Reference		178 (51.9 %)	Reference		178 (52.8 %)	Reference	
≥60 years	108 (23.1 %)	54 (53.5 %)	0.8	(0.5–1.3)	30 (29.7 %)	0.7	(0.4–1.2)	40 (38.8 %)	0.7	(0.4–1.1)
Years of clinical practice	465									
≤ 10 years	106 (22.8 %)	73 (73.0 %)	Reference		61 (61.0 %)	Reference		60 (60.6 %)	Reference	
> 10 years	359 (77.2 %)	194 (56.9 %)	0.8	(0.4–1.5)	146 (42.8 %)	0.9	(0.4–1.9)	156 (46.2 %)	0.7	(0.4–1.4)
Relationship status	468									
Married/relationship	417 (89.1 %)	235 (59.2 %)	Reference		177 (44.6 %)	Reference		194 (49.1 %)	Reference	
Not/divorced/widowed	51 (10.9 %)	35 (74.5 %)	1.6	(0.8–3.3)	31 (66.0 %)	1.5	(0.7–3.5)	24 (53.3 %)	1.1	(0.6–2.2)
Country of employment	503									
U.S.	395 (78.5 %)	227 (61.7 %)	Reference		178 (48.4 %)	Reference		177 (49.0 %)	Reference	
Non-U.S.	108 (21.5 %)	59 (60.2 %)	1.1	(0.7–1.8)	45 (45.9 %)	0.6	(0.3–1.1)	49 (53.3 %)	1.3	(0.8–2.2)
Victim of abuse	466		Not tested			Not tested				
Yes	286 (61.4 %)							148 (68.5 %)	1.7*	(1.1–2.6)
No	180 (38.6 %)							68 (31.5 %)	Reference	
Victim of discrimination	466		Not tested			Not tested				
Yes	223 (47.9 %)							111 (51.4 %)	1.0	(0.6–1.5)
No	243 (52.1 %)							105 (48.6 %)	Reference	

* $p < 0.05$.

S. population, overall 43.5 % of 3716 Americans experienced discrimination from time to time or regularly. In this group, 63.1 % of the minorities reported discrimination compared to 29.6 % of the White population. This was expected to be higher than the prevalence among the neurosurgeons as hospitals have zero-tolerance policies on discrimination. Therefore discrimination is detected and handled faster than in the hospital. If we compare the burn-out rate to those reported among the general population in the U.S., the rates found in the current study are higher [20]. Furthermore, the training period seems to have the highest rate of burn-out. When multiple surgical specialisms (n = 14) are compared with each other, trauma and otolaryngologist were at a higher risk for burn-out, while pediatric and cardiothoracic surgeons were at lower risk of developing a burn-out [21]. The neurosurgeons from the prior study were ranked at 8th (of 14) in terms of burn-out rate, 6th in their career satisfaction rate and 13th in their work/home conflict rate.

The current study has some limitations that have to be acknowledged. The first one is adherent to cross-sectional research which is bias introduced by the self-reporting of experiences such as social desirability bias. Furthermore, the response rate of 8.9 % may also be indicative of participation bias. Even though the response rate of the current study is comparable to the response rates of other recently conducted surveys among large member directories, cautious interpretation of the survey results is warranted [22–24]. It was also not possible to explore selection bias because of the absence of demographics of non-responders. It is, however, to be expected that the rate of harassment may be lower in real-world practice because victims of harassment may be more likely to respond to the survey than those who did not experience this.

To improve patient safety by addressing unprofessional behaviors such as bullying, among doctors, many initiatives have been developed. An example of this is the UK-based Anti-Bullying Alliance, which collectively published a document in which efforts of different organizations are described to reduce bullying [25]. For instance, The Royal College of Physicians of London, which launched a new code of conduct addressing issues such as #MeToo, to raise the awareness of the impact of their behaviors on others [26].

In the literature multiple strategies and solutions are proposed to manage burnout among physicians [27]. One part of the solution is facilitating reporting of mistreatment by doctors by reducing the stigma of being bullied and thus making it easier for physicians to speak out about mistreatment. In the current study, only 33.6 % of the respondents complained about being mistreated, which implies that institutions only oversee a small proportion of the mistreatment that occurs. An important cornerstone of the solution is to acknowledge the problem and have an environment in which staff is trained to recognize burnout symptoms among colleagues. Another cornerstone is offering structured wellness programs and having a wellness committee installed, focused on this issue. Other solutions may also lie within stress reduction techniques such as mindfulness training, yoga and exercise training on individual level. It is however, underlined, that to effectively target physician burnout, changes are needed at individual, institutional and community levels [27].

4.1. Conclusions

Mistreatment and experiencing burnout symptoms frequently occurs among neurosurgeons and residents. Other neurosurgeons and (family of) patients were most frequently identified as the source of mistreatment. Acknowledging the problem of physician mistreatment, having an environment on the work floor in which these problems can be discussed and having a wellness committee that can offer structured wellness programs could improve the work climate.

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Previous presentations

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CRediT authorship contribution statement

Pravesh S. Gadjradj: Conceptualization, Methodology, Formal analysis, Writing - original draft, Project administration. **Julian B. Ghobrial:** Conceptualization, Data curation, Writing - original draft. **Savina A. Booi:** Conceptualization, Data curation, Writing - review & editing. **Judith D. de Rooij:** Methodology, Data curation, Writing - review & editing. **Biswadjiet S. Harhangi:** Methodology, Formal analysis, Writing - review & editing, Supervision.

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