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Prevalence and causes of burnout amongst oncology residents: A comprehensive nationwide cross-sectional study ☆

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ABSTRACT

Background: Burnout syndrome occurs frequently amongst oncology healthcare workers. It has a detrimental effect on the patient–physician relationship. Little is known about the prevalence and causes of burnout amongst junior doctors in oncology.

Methods: An anonymous questionnaire was sent out to every medical or radiation oncology or haematology resident in France ($n = 340$). It included: demographical data, burnout level (Maslach Burnout Inventory), sources of stress, sense of equity at work, sources of support, and general health questions. Validated scales were used when available. Two reminder e-mails were sent to increase the response rate.

Results: Questionnaires were despatched during Spring 2009. The response rate was 60% (204/340). Emotional exhaustion (EE) and Depersonalisation (DP), the major components of burnout, were reported, respectively, by 26% ($n = 53$) and 35% ($n = 72$) of the residents. Burnout prevalence was 44% ($n = 89$), defined as a severely abnormal level of either EE or DP. Eighteen percent of the residents ($n = 36$) had severely abnormal levels of both EE and DP. The burnout level was not significantly different between the three specialties, but was higher amongst residents who do not feel adequately rewarded for their work ($p < 0.001$). Burnout was associated with a lower perception of one's general health status ($p < 0.001$) and the desire to quit Medicine or to change specialty ($p < 0.001$).

Conclusion: The burnout level is high amongst oncology residents. It probably discourages vocations for oncology. Interventions are needed and could include support groups, more

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intense coaching by senior physicians, training programmes on 'breaking bad news' and teaching of stress management skills.

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1. Introduction

Burnout is a professional psychological stress-induced syndrome defined by the three dimensions: emotional exhaustion, depersonalisation and low personal accomplishment.^{1–3} Its prevalence is high amongst oncology physicians. Whippen and Canellos randomly surveyed 1000 oncologists and showed that 56% of them reported being burnt out.⁴ In a recent meta-analysis of 10 observational studies in oncology, the overall prevalence of high emotional exhaustion, depersonalisation and low personal accomplishment were, respectively, 36% (95% confidence interval (CI): 31–41), 34% (95% CI: 30–39) and 25% (95% CI: 16–34).⁵

Burnout has a detrimental effect on the physician's quality of life and is associated with an increased risk of suicidal ideation.⁶ It has also been linked to poorer quality of care, increased medical errors and lawsuits, decreased empathy^{6,7}, job withdrawal and absenteeism.⁸

Some medical specialties are at higher risk of burnout. Although a study comparing burnout amongst residents in various medical specialties in the United States reported no significant differences between specialties⁹, two Finnish studies^{10,11} reported more burnout amongst doctors who more often treat chronically ill, incurable or dying patients. Oncology was one of these specialties. The factors associated with stress and burnout in Oncology are insufficient personal or vacation time, a sense of failure, unrealistic expectations of patients, cognitive or ethical dissonance, repeated losses and grieving or problems concerning managed care.¹²

Burnout is highly prevalent amongst medical residents. Reported levels of burnout attained 76% amongst the residents in an internal Medicine programme⁷ and 49.6% amongst US medical students.⁶ However, the prevalence and causes of burnout amongst oncology residents have never been properly studied.

The aims of this study were to quantify the frequency of burnout amongst oncology residents, to determine demographic and psychological factors and related symptoms associated with burnout and to identify the sources of stress amongst residents.

2. Methods

2.1. Study design and population

This is a nationwide cross-sectional study. Three national associations of oncology residents were involved, one in each sub-specialty: SFJRO (French Society of Young Radiation Oncologists), AERIO (French Association for Teaching and Research of Junior Oncologists) and AIH (Association of Haematology Residents). These associations are involved in the medical education of residents and have conducted demographic surveys about residents in their specialty.^{13,14} They

therefore have the e-mail and postal addresses of every French resident in their specialty. They partnered with CNEC (College National des Enseignants de Cancérologie), which is the national body for all teaching Professors in oncology. In France, residents are called 'Internes'. They are graduate medical students who work full time in teaching hospitals. Having completed the first six years of medical education, they must sit a national competitive examination after which, and according to their rank, they choose their medical specialty and the teaching hospital where they would like to work for the next five years. Overall, there are 340 oncology residents in France: 125 are fellows in haematology, 120 in radiation oncology and 95 in medical oncology. Oncology is also practiced by organ specialists, e.g. gastroenterologists for digestive oncology, but these residents were not included in the survey because there was no way of comprehensively identifying or reaching all of these fellows. The questionnaires were handed out or mailed by each association during Spring 2009 to every resident of the specialty in France, and two reminder e-mails were sent out to increase the response rate. Responses were collected until July 2009 at a central mailbox, and the data were keyboarded by an independent data manager.

2.2. Description of the survey

The survey was strictly confidential and anonymous. No geographical data were requested. The questionnaire was divided into six sections: demographical data, burnout level, sources of stress, perception of equity at work, type of support and general health questions. A blank space was left at the end of the questionnaire for free comments.

2.3. Survey measures

2.3.1. Demographic characteristics

The following items were collected: sex, year of birth, specialty, year of training, marital and parental status, current and last rotations. The questionnaire did not ask residents to name their hospital nor the region where they were working, in order to ensure respondent anonymity and to encourage participation and honest reporting.

2.3.2. Burnout

The Maslach Burnout Inventory (MBI) is a 22-item questionnaire that is considered as the gold standard measure for burnout.¹ It evaluates the three independent dimensions of burnout: emotional exhaustion, depersonalisation and personal accomplishment. Low, average and high scores for each dimension are based on the low, medium and high tertiles of scores from a study of 1104 US doctors.² Based on the definition proposed by Grunfeld et al.¹⁵ we defined burnout in our study as a high score on the emotional exhaustion (EE) or

depersonalisation (DP) subscales using the cut-offs published by Maslach and Jackson² Most empirical studies showed a low correlation between EE and DP and the original third dimension of burnout, i.e. reduced personal accomplishment.^{3,16} Actually, recent findings led scholars to the conclusion that exhaustion and depersonalisation were the core burnout dimensions, whilst reduced personal accomplishment seemed to develop in parallel.¹⁷ Furthermore, amongst patients suffering from burnout, reduced professional efficacy is much less frequent than emotional exhaustion and depersonalisation.¹⁸ We therefore limited our measure of burnout to emotional exhaustion and depersonalisation. The French translation of the MBI has similar internal consistencies and its factorial and construct validity is similar to that of the original version.¹⁹

2.3.3. Sources of stress

In order to evaluate psycho-social stressors we used a scale previously elaborated and validated by Rasclé et al.²⁰ amongst a national sample of French oncology healthcare workers. This list of 50 questions was then adapted to include items specific to residents, e.g. 'Wondering whether my theoretical classes are sufficient for my future work' or 'Wondering whether I'll find a position as an assistant professor'. Respondents were asked to indicate on a 5-point scale the frequency at which they experienced these stressors. Two questions about the desire to quit Medicine or to change specialty were included in this questionnaire.

2.3.4. Perception of equity at work

This questionnaire consisted of six questions studying the balance between investments/rewards regarding patients, colleagues and senior staff with two additional items about procedural equity. For example, to the question on equity towards patients, residents had to answer using a 7-point scale how much they agreed with the sentences: 'In general, my involvement (time, energy...) with patients is extensive' and 'In return, I get a lot of rewards from the patients'. In an exploratory analysis, equity towards patients was calculated as the score of the first sentence minus the score of the second. Therefore a positive score meant that the involvement was greater than the reward.

2.3.5. Type and quality of support

These 14 items addressed the type and quality of support for moral or practical issues, as well as the presence of support groups within the hospital.

2.3.6. General Health and drug abuse

One question explored the person's perceived general health status using a 5-point scale from very bad to excellent. The following questions addressed the frequency of psychosomatic disorders, e.g. sleep or eating disorders, and lastly the consumption of hypnotic drugs, antidepressants or alcohol.

2.4. Statistical analysis

Factorial analysis using the promax rotation method was used to categorise the 52 work stressors by extracting underlying factors. Internal consistency of each subscore was as-

sessed by Cronbach's alpha. Solutions using three, four and five factors were initially considered and the 5-factor solution was chosen for its internal properties and ease of interpretation. Analysis of variance (ANOVA) was used to compare continuous variables. Chi-squared or Fisher's exact tests were used for dichotomous variables. We performed a stepwise linear regression to assess independent associations between variables and the two burnout subscores. We used a linear regression rather than a logistic regression because the cut-offs published in the original paper² have not been validated in a European population^{1,19} and because MBI subscores are better handled as continuous variables.²¹ All covariates with a P-value ≤ 0.1 in the univariate analysis were included in the multivariate analysis. We performed a backward stepping procedure and a stepwise regression. The questions on the desire to quit Medicine or to change specialty were not included in this multivariate analysis as they seemed to be more a consequence of burnout rather than a related factor. Missing data were rare (<1.5%) and were therefore omitted. A two-sided P-value <0.05 was considered significant. All analyses were performed using software SPSS version 15.0 (SPSS Inc., Chicago, Illinois).

3. Results

3.1. Population characteristics and response rate

Overall 204 responses were collected, corresponding to a response rate of 60%. Response rates were higher in radiation oncology and medical oncology (72% and 71%, respectively) than in haematology (40%) without an identified explanation. Sixty percent of the respondents were women, median age was 28 years, 35% were married and 15% had children (Table 1). The median training year was four, corresponding to the 10th year after the beginning of medical school. Haematology fellows were more frequently single and without children than radiation or medical oncology fellows. Eighty-nine percent of the residents perceived their health status as good or very good whereas 11% considered themselves in a poor physical condition. Only sixteen residents (8%) declared that they drunk alcohol four times per week or more frequently. Twenty percent of the residents were taking hypnotic/anxiolytic medications on a regular basis, 88% of these were self-prescribed. Two percent were taking antidepressants (Table 2).

3.2. Burnout levels and the desire to quit Medicine

Overall 89 residents (44%) reported a severely high score for either EE or DP, thus meeting the burnout criteria. Fifty-three residents (23%) reported emotional exhaustion and 72 (35%) reported depersonalisation. Table 3 shows the levels of burnout, EE and DP for the entire population and for each specialty. There was no significant difference between the three specialties, either using a chi-squared test ($p = 0.4$) or using ANOVA to compare the mean EE and DP scores between the three groups ($p = 0.1$). Fifteen percent of the residents wanted to quit Medicine often or very often, and 11% wanted to change specialty often or very often.

Table 1 – Population characteristics amongst the respondents overall and between the three specialties.

	Overall	Radiation oncology	Medical oncology	Haematology
Population (total number of residents in France)	340	120	95	125
Respondents (response rate)	204 (60%)	87 (72%)	67 (71%)	50 (40%)
Sex: n (%)				
Females	122 (60%)	49 (56%)	42 (63%)	31 (62%)
Males	82 (40%)	38 (44%)	25 (37%)	19 (38%)
Median age (years)	28	29	28	28
Single: n (%)				
Yes	72 (35%)	26 (30%)	22 (33%)	24 (48%)
No	132 (65%)	61 (70%)	45 (67%)	26 (52%)
Have children: n (%)				
Yes	30 (15%)	17 (20%)	10 (15%)	3 (6%)
No	174 (85%)	70 (80%)	57 (85%)	47 (94%)

Table 2 – Perceived general health status, consumption of alcohol, anxiolytic-drugs or antidepressants in the overall population.

Characteristics	n (%)
General health status	
Good/very good	178 (89)
Average/poor	22 (11)
No answer	4
Alcohol consumption	
Never	13 (6)
Less than once a week	68 (33)
Between one and three times a week	107 (52)
Four times a week or more	16 (8)
Hypnotic drug intake	
No	162 (80)
Yes	41 (20)
No answer	1
Antidepressant intake	
No	199 (98)
Yes	5 (2)
No answer	0

3.3. Analysis of stressors

Five independent sources of stress were identified. Firstly, the emotional load which involved dealing with frequent and repeated losses, especially of young patients or patients one liked most. The second factor was related to the status of the residents and included items on disagreement with senior physicians, anxiety about their future position or the quality of their medical training. The third factor was the total workload. The fourth factor was related to existential questioning, an example of which was the feeling of being fallible or dealing with patients with whom one identified one's self. The last factor concerned three items evaluating the demands of patients and patients' relatives. The consistency was good, with Cronbach's alphas over 0.80 for all factors except the dimension of existential questioning whose alpha was at 0.73. Details on the questions, number of items and consistency for each factor can be found in Table 4.

3.4. Perception of equity at work

The mean scores (standard deviation) for equity at work were 0.84 (1.3), 0.66 (1.2) and 1.14 (1.5), respectively, for patients, colleagues and senior staff. As mentioned above, these positive values indicate that residents believe that their work is not rewarded enough compared to what they invest in it. There was no significant difference per specialty ($p=0.4$, 0.9 and 0.1 for perceived equity towards patients, colleagues and senior staff).

3.5. Factors associated with burnout

Table 5 shows the results of the univariate linear regression of MBI emotional exhaustion and depersonalisation scores with relevant covariates measured in the study. Emotional exhaustion was more frequent amongst women, residents who perceived themselves as being in a poor physical condition, were suffering from psychosomatic disorders and taking anxiolytics. Depersonalisation was more pronounced amongst residents who reported a poor physical condition, were taking anxiolytics and had psychosomatic disorders. Each stressor dimension and each equity dimension were significantly associated with higher levels of EE and DP. The desire to quit Medicine or to change specialty was strongly associated with higher EE scores ($p < 0.001$).

In the multivariate analysis, an excessive workload ($p < 0.001$), the presence of psychosomatic disorders ($p < 0.001$) and anxiolytics intake ($p = 0.02$) were independently associated with EE score. Existential questioning ($p = 0.04$) and anxiolytics intake ($p = 0.02$) were independently associated with DP score, as shown in Table 6.

4. Discussion

This large nationwide study demonstrated that the prevalence of burnout and of anxiolytic consumption are high amongst oncology residents. An excessive workload, psychosomatic disorders or anxiolytics intake were independently associated with increasing emotional exhaustion scores, whereas existential questioning or anxiolytics intake was

Table 3 – Burnout, emotional exhaustion, depersonalisation and the desire to quit Medicine or to change specialty in the overall population and in each specialty (P-values indicate the difference between the three specialties and were calculated using Pearson's chi-squared test).

	Overall	Radiation oncology	Medical oncology	Haematology	p
Burnout: n (%)	89 (44%)	40 (46%)	25 (37%)	24 (48%)	0.4
Emotional exhaustion: n (%)	53 (23%)	22 (25%)	16 (24%)	15 (30%)	0.7
Depersonalisation: n (%)	72 (35%)	36 (41%)	19 (28%)	17 (34%)	0.2
Want to quit medicine: n (%)					
Often/very often	31 (15%)	16 (19%)	12 (18%)	3 (6%)	0.1
Sometimes/rarely/never	171 (85%)	70 (81%)	55 (85%)	46 (94%)	
No answer	2	1	0	1	
Want to change specialty: n (%)					
Often/very often	22 (11%)	12 (14%)	6 (12%)	4 (6%)	0.3
Sometimes/rarely/never	181 (89%)	74 (86%)	44 (88%)	63 (94%)	
No answer	1	1	0	0	

Table 4 – Factorial analysis of the list of 50 stressors.

Dimension	Number of items	Cronbach's alpha	Examples of items
Emotional load	15	0.86	Being confronted with patients' suffering Taking care of young people Often Breaking bad news The repetition of deaths
Status of residents	15	0.84	Absence of communication between colleagues Disagreement with therapeutic choices Not being rewarded for the work done Wondering whether my theoretical background is solid enough Feeling under pressure (patients, publication. . .)
Workload	11	0.86	Anxiety about finding an assistant professor position Excessive workload Not enough time to offer patients psychological support Personal life unstable due to late changes of schedule
Existential questioning	6	0.73	Not knowing what to say to a patient Fearing that you or a relative may have cancer Being afraid of making mistakes
Patient demands	3	0.82	Excessive demands of patients or their relatives

independently associated with increasing depersonalisation scores. About a sixth of the residents wanted to quit Medicine often or very often, thus depicting a high level of job-related anxiety.

Although this study provides a number of important contributions, it is important to point out its limitations. First, as the design of the study was cross-sectional, it does not allow causal interpretations between job characteristics and health-related variables. Respondents with poor psychological well-being, i.e. high burnout, may have reported a negative work environment. Nevertheless, longitudinal studies have shown that perceived work characteristics were predictive of psychological distress and not the reverse.^{22,23} Second, the present study, like most burnout and stress studies, is based on self-reported measures,²⁴ which could influence the statistical analysis. Indeed, the independent and dependent variables are based upon a single source of information, the participants.²⁵ This can result in an overestimation of the main effects by inflating the association between perceived

work environment factors and strain indicators. However, as pointed out by Spector,²⁶ there is a high consistency between objective and subjective ratings of variables such as those used in our study. Last, the analysis of the balance between investments and reward must be considered only exploratory. Indeed, the calculation methods assume that the rating of respondents follows a similar linear distribution for both questions, i.e. between investment and reward, but there is no evidence supporting this hypothesis.

Despite the limitations discussed above, this study has many strengths. Firstly, it is the first large nationwide multi-institutional study on the subject. Secondly, the response rate is high, somewhat higher than those usually found in studies on medical students.²⁷ Thirdly, the study included residents in medical oncology, haematology and radiation oncology, and thus evaluated the three clinical specialties of oncology.

The prevalence of burnout in this study is consistent with the levels reported in other studies amongst oncology health-care workers⁵ or amongst residents and medical students^{6,8}

Table 5 – Univariate linear regression of MBI emotional exhaustion and depersonalisation scores with relevant covariates. Abbreviations: SD, standard deviation; NR, not relevant; positive, an increase in value of the factor leads to an increase in the score considered.

Category	Covariate	Emotional exhaustion		Depersonalisation	
		Coefficient [SD]	p	Coefficient [SD]	p
Demographics	Sex: Female versus Male	3.8 [1.4]	0.008	−0.4 [0.8]	0.6
	Female				
	Male				
	Medical Specialty	NR	0.1	NR	0.1
	Radiation Oncology				
	Haematology				
	Medical Oncology				
	Age (years)	0.2 [0.3]	0.6	0.04 [0.2]	0.8
	Year of training	−0.28 [0.56]	0.6	−0.05 [0.2]	0.8
	Live in couple	−0.7 [1.5]	0.6	−0.3 [0.8]	0.7
Stressors	Yes				
	No				
	Have Children	−0.9 [2]	0.6	0.6 [1.1]	0.6
	Yes				
	No				
	Emotional load	Positive	<0.001	Positive	0.001
	Status of residents	Positive	<0.001	Positive	<0.001
	Workload	Positive	<0.001	Positive	0.001
	Existential questioning	Positive	<0.001	Positive	<0.001
	Demands of patients	Positive	<0.001	Positive	0.002
Equity at work	Towards patients	Positive	<0.001	Positive	0.003
	Towards colleagues	Positive	<0.001	Positive	0.006
	Towards senior staff	Positive	<0.001	Positive	0.01
	Total perceived equity	Positive	<0.001	Positive	<0.001
General health	Perceived health status very good/good/average/bad	5.5 [1]	<0.001	1.8 [0.5]	0.001
	Antidepressants intake	8.5 [4.5]	0.06	4.3 [2.7]	0.1
	Yes				
	No				
	Anxiolytics intake	7.8 [1.7]	<0.001	3.8 [0.9]	<0.001
	Yes				
Quit Medicine	No				
	Alcohol intake	NR	0.6	NR	0.9
	Psychosomatic disorders	Positive	<0.001	0.3 [0.07]	<0.001
	Yes	8.2 [1.9]	<0.001	1.5 [1]	0.2
Change specialty	No				
	Yes	9.3 [2.2]	<0.001	1.3 [1.2]	0.3

Table 6 – Multivariate linear regression of factors associated with MBI emotional exhaustion and depersonalisation scores.

Covariate	Emotional exhaustion		Depersonalisation	
	Coefficient [SD]	p	Coefficient [SD]	p
Excessive workload	0.6 [0.1]	<0.001	–	0.8
Psychosomatic disorders	0.6 [0.1]	<0.001	–	0.1
Existential questioning	–	0.2	0.26 [0.1]	0.04
Anxiolytics intake	2.9 [1.3]	0.02	2.1 [0.9]	0.02
Antidepressant intake	5.2 [3.1]	0.09	–	0.5

or with levels expected due to the internal validity of EE or DP scores.² However, there is a lot of heterogeneity between burnout levels reported by these studies. Indeed, virtually all the studies used the MBI to quantify burnout levels, but the cut-offs applied were usually those published in the initial study,² which are probably not relevant for all of these popu-

lations. Cut-offs should be adapted to take into account social and cultural differences.¹ As such cut-offs do not exist for the French population, we preferred to use a linear regression rather than a logistic regression to look for factors associated with EE or DP. This approach can be unsatisfactory because some significant linear associations may have no clinical

relevance unless an absolute benefit is found in the EE or DP score considered clinically meaningful.

Factors associated with burnout have previously been studied in oncology^{12,28} and reported in a meta-analysis.⁵ The most important ones are related to workload, insufficient personal or vacation time, feeling of being fallible as a doctor, excessive number of deaths, emotions and particularly emotional dissonance and problems related to the working environment (excessive paperwork team communication difficulties...). In our study, perceived equity at work was a factor associated with burnout, showing the importance of the subjective evaluation of one's work and reward. Residents could be more sensitive to this perceived inequity as they are still learning Medicine and therefore often look for approbation or recognition from senior doctors.

As residents are the future oncology physicians, their needs and aspirations should be taken into account, especially these days when cancer incidence is on the increase^{29,30} and the crude number of oncologists may become too low in some countries.¹⁴ Indeed, some countries are facing a demography crisis in oncology and should take notice of the fact that, as shown in our study, burnout is strongly associated with a desire to change specialty, or even to quit Medicine. In other studies, burnout was associated with job absenteeism, intention to leave the organisation and job turnover.⁸ Fatigue and depression have been associated with increased perceived medical errors.^{31,32} Interestingly, burnout was not always associated with higher rates of medical errors.^{32,33} Burnout is detrimental to the patient–physician relationship in general Medicine.³⁴ As such, they should be taken into account by university hospitals to improve both student well-being and patient care. To limit the incidence of stress and burnout, Shanafelt et al have proposed a multistep process including the identification of professional goals, the choice of the most fitting type of practice and the management of the stressors specific to that practice type. This process allows to determine how to balance competing personal and professional goals.³⁵

Intervention studies are needed, e.g. support groups, more intense coaching by senior physicians, training programmes on 'breaking bad news' and teaching of stress management skills to study how to prevent or reverse burnout. Such courses are feasible³⁶ and have proven their ability to reduce the levels of burnout in the short and long term, to improve physicians' well-being and attitudes associated with patient-centred care.³⁷ Recovery from burnout is possible and was associated with a reduction of suicidal ideation in a population of U.S. medical students, confirming that burnout is a reversible phenomenon.⁶ Simple items linked to burnout in our study, such as the presence of psychosomatic disorders and the consumption of anxiolytics, could be used to screen residents for burnout.

In brief, this study shows that the prevalence of burnout is high amongst oncology residents and is associated with a poorer perceived health status and the will to quit Medicine or change specialty. Medical schools and University hospitals should consider this a cause for concern and develop screening strategies and intervention programmes to improve residents' wellness. The results of our study need to be confirmed and confronted with equivalent approaches in

other major western countries. Nevertheless, a close and confident relationship between teachers and junior doctors needs to be maintained and enhanced during this intense period of training. Comparisons with senior oncologists or residents of other specialties are ongoing to evaluate factors related to burnout that could be specific to oncology or to residents.

Disclaimers

None.

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Conflict of interest statement

None declared.

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