

The prevalence of burnout amongst registrars at the School of
Clinical Medicine at the University of the Witwatersrand,
Johannesburg, South Africa

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Abstract:

Background: Burnout is a response to prolonged stress and consists of three elements: Emotional Exhaustion (EE); Depersonalisation (DP); and Personal Accomplishment (PA). Existence of burnout under doctors is often not acknowledged but has major consequences for personal and professional life. Only limited research done regarding prevalence of burnout amongst registrars in South Africa.

Objectives: To describe the prevalence of burnout, and assess for relationships between burnout and socio-demographic factors.

Methods: A cross-sectional descriptive, internet survey was conducted. Respondents were registrars within the departments of the School of Clinical Medicine at the University of the Witwatersrand. To measure burnout the Mashlach Burnout Inventory (MBI) was used. Relationships were assessed by independent samples t-test and ANOVA.

Results: Of the 585 successfully delivered questionnaires, 201 registrars started the survey (response rate of 34%). 170 questionnaires were analysed. The mean age of the respondents was 33 years, the male to female ratio was 1:1.8. The average score for EE was 3,5 (SD1.2), for DP 2.7 (SD1.1) and for PA 4.1 (SD1.1). The overall level of burnout was 84%. None of the respondents scored low over all categories. No significant association between socio-demographics and MBI dimensions was found.

Conclusion: The prevalence levels found in this study was higher than found in national and international literature. Extremely high levels of DP were found. This is worrisome as DP affects professionalism and engagement of doctors. In keeping with international literature no associations were found with socio-demographic factors and burnout, suggesting the cause of burnout should truly be sought out in the work environment. Efforts to improve autonomy in the workspace, development opportunities and promoting peer collaboration, are needed to prevent of burnout.

Introduction:

Medical doctors are at high risk of burnout compared to other professionals.^[1] At the onset of medical training their mental health profiles are similar to peers, but through medical school, into registrar training, there is a progressive downward trend.^[2] In the United States of America (USA) sixty per cent of registrars suffered burnout in 2014.^[2] In South Africa, limited research has been done regarding the prevalence of burnout among registrars.

Burnout is a response to prolonged occupational stress and consists of three different elements that may co-exist to varying degrees. Firstly, Emotional Exhaustion (EE): the feeling that work is overwhelming and energy levels are depleted; secondly, Depersonalisation (DP): a personal detachment from work, resulting in unfeeling and impersonal responses towards colleagues and patients; and lastly, low Personal Accomplishment (PA): the feeling of inefficacy, incompetence and lack of personal achievement. This is the theoretical framework most commonly used in the literature on burnout and informs the Maslach Burnout Inventory (MBI), the tool most commonly used in the literature.

The existence of burnout is often not acknowledged. Medical doctors have poor insight into their symptoms; it is difficult to admit to weaknesses and play the patient role. Not recognizing the existence of burnout leads to poor coping strategies and help-seeking behaviour.^[3,4,5]

The consequences of burnout are well-studied and affect both personal and professional life. Studies done on the impact of burnout on personal life, found associations with alcohol abuse and dependence. Also, suicidal thoughts and ideation are found to be more common amongst doctors with burnout. Other personal effects of burnout are noted in increased relationship stress and motor vehicle accidents.^[6]

Secondly, professional development is affected in a variety of qualities: concentration, honesty, integrity, empathy, altruism, and self-regulation.^[6] Literature suggests these may lead to an increased risk of medical errors and poorer medical care.^[7,8] Furthermore, burnout affects the cognitive processes needed to gain knowledge and skills. A study testing medical knowledge of internal medicine registrars, done by West in the USA, showed significantly lower results in registrars with burnout.^[9] Lastly, burnout impedes the outlook of registrars on their careers, leading to changes of specialty, changes of career, or migration.^[6] In South Africa these effects can be detrimental to the existing compromised workforce in the medical field.

Looking at the causes of burnout, a reason why registrars explicitly would be affected by burnout may be explained in the demand-control-support model. This model explains how burnout from work related stress is triggered. If workload is increased whilst individual autonomy at work is decreased, work stress starts affecting the registrar's personal life.^[10]

Associations between demographics and burnout may be expected but, so far, review studies have failed to prove them.^[10] Although women have a higher lifetime risk of depression, several studies on registrar burnout showed no difference in the

prevalence of burnout between genders.^[10] The cause of burnout could possibly lay in the discipline in which the registrar specialises. One study found doctors working on the front line of service (family medicine, emergency medicine, internal medicine and neurology) had a higher prevalence of burnout.^[11] Whether this difference in discipline-associated burnout, can be extrapolated to registrars has not been studied. Lastly, stress is a continuous process from graduation onwards; therefore, one might expect higher levels of burnout amongst doctors with more years post-qualification experience or registrars that have spent a longer time in the programme.

Literature on the prevalence of burnout amongst South African registrars is limited. Two studies done amongst doctors in the Western Cape and the Free State both showed similar severe levels of burnout. The study in the Western Cape only included three registrars, whereas in the Free State, the majority of participating doctors were registrars. Further details besides the description of the registrars were, however, not captured in the study in the Free State.^[11,12]

In a study done amongst anaesthetists in Gauteng, the registrars showed higher, but not statistically significant, burnout scores compared to medical officers and specialists.^[13]

Registrars are the future specialists in our health care system and burnout will impede the quality and quantity of this new generation. It is, therefore, of great importance to get a better understanding of burnout levels amongst registrars. The aim of this study was to explore the prevalence of burnout amongst registrars training at the School of Clinical Medicine at the University of the Witwatersrand, including socio-demographics of registrars and correlations.

Methods:

Study design:

The study design was cross-sectional and descriptive.

Setting/ Study Population:

With assistance from the School of Clinical Medicine at the University of the Witwatersrand, a study population of 759 email addresses were obtained, of registrars in nine departments: Family Medicine, Paediatrics, Surgery, Internal Medicine, Radiation Sciences, Neurosciences, Anaesthesia, Obstetrics and Gynaecology and Psychiatry. Supernumerary registrars were excluded from the study. The initial sample size was estimated at 170, with 95% confidence interval and the assumptions of 5% precision, and an estimated 80% prevalence.^[2,11,12] However, all emails were sampled due to the predicted low response rate for internet surveys.^[14] Of the 759 addresses emailed, 585 emails were successfully delivered. Of those, 201 registrars started the survey, meaning a response rate of 34%. Two reminder emails were sent out four days apart. The study was closed once the sample target of 170 was reached.

Intervention/ Data collection method:

The questionnaire consisted of two parts. The first part of the questionnaire contained questions on socio-demographics: gender, age, clinical discipline, years since graduation and years in the programme. The second part of the questionnaire consisted of the Maslach Burnout Inventory (MBI). The Maslach Burnout Inventory is an instrument to measure burnout and is the most validated and widely used survey tool. According to literature, the reliability, using Cronbach's alpha, is 0.71-0.9.^[15] The MBI consists of a 22-item questionnaire. 22 Questions are answered in a 7-point scale, from 0 (never) to 6 (very often), to reflect the frequency with which the registrar experiences certain feelings and responses. The 22 questions assess and score the three aspects of burnout i.e. EE, DP and PA.^[15]

In clinical practice the MBI score should not be seen as dichotomous variable, meaning burnout is either present or not present. Therefore Maslach, the founder of the MBI tool, has moved away from using cut-off scores to define burnout. For research purposes, however, cut-of scores are needed. Review of the literature shows that 79,49% of studies use ≥ 27 as a cut-off score for high EE.^[16] For DP the recommendation is set at 10, although scores varying between 9 and 30 are used. In this study, the recommendations provided by Mashlach, Schaufeli, and Leiter (2001) were used, see Table 1.^[15] Respondents with burnout are defined as having a high score in either the EE category or the DP category. In the EE and DP category, higher scores are an indication of a worse level of burnout, whereas a higher score in PA correlates with a lower level of burnout and is regarded as protective against burnout.

Table 1: Classification of Burnout according to the Maslach Burnout Inventory ¹⁵

Category	Low range	Average range	High range
EE (9 questions)	≤ 18	19-26	≥ 27
DP (5 questions)	≤ 5	6-9	≥ 10
PA (8 questions)	≥ 40	39-34	≤ 33

The email invitation contained information regarding the study. But to avoid sensitisation to burnout, the invitation email did not use the term ‘burnout’; instead ‘work related feelings affecting psychological well-being’ was used. The information leaflet gave more detailed background on the purpose of the study. Respondents were required to consent before proceeding with the online questionnaire. Participation was anonymous. Administration instructions of the questionnaire tool were provided to reduce response bias.^[15] The study facilitator was a registrar, and so an equal to the respondents. Respondents were requested to provide an email address if they wanted feedback on their scores. In addition, no identifiers were captured in order to ensure confidentiality. By motivating the respondents to complete the questionnaire in a private environment, privacy would be ensured, which reduced social desirability bias. The smartphone-friendly software programme chosen facilitated this. On completion of the questionnaire, information about psychological support from Student Services was provided. Reference to a general article about resilience training was also provided.^[17] Respondents could request to be informed by the researcher of their individual burnout score and its meaning. The Human Research Ethics Committee (HREC) of the University of the Witwatersrand granted permission to conduct the study. Permission to use the MBI tool was granted from the patent holders.

Data analysis:

A statistician assisted with the data analysis. Data was transferred from Qualtrics® and analysis carried out using SAS version 9.4 for Windows and IBM SPSS Statistics for Windows, version 25 (IBM Corp., Armonk, N.Y., USA). The 5% significance level was used throughout. Scores for each of the three MBA dimensions were created on the scale of the original questions (0-6) by dividing the total score for each dimension by the number of questions contributing to that dimension. Age and years since graduation were categorised into approximate quartiles for between-group comparisons. Clinical discipline type was requested, but data analysis grouped disciplines according to poor response rates or cohorts with low numbers. The relationship between each MBI score and gender, age (categorised), clinical discipline, year in programme, and number of years since graduation (categorised) was assessed by the independent samples t-test for two categories and one-way Analysis of Variance (ANOVA) for more than two categories.

Results:

A total of 170 questionnaires were analysed. The mean age of the respondents was 33 years (interquartile range 29-37). There was a wide range of postgraduate experience, from 5 to 27 years. The average postgraduate experience was 9 years (interquartile range 6-12). Of the respondents, 64% (109) were female, and 36% (61) were male, which equals a male to female ratio of 1:1.8. Most departments within the School of Clinical Medicine were represented in the group of respondents. Best represented was Internal Medicine (21%), followed by Paediatrics (14%), Psychiatry (12%) and Surgery (11%). There was an interest in burnout amongst 86% of the respondents, as suggested by their requests for feedback. An overview of the socio-demographics is shown in Table 2.

Variables	<i>n (%)</i>	
Gender	Female	109 (64)
	Male	61 (36)
Discipline	Anaesthesia	15 (8.8)
	Cardiothoracic Surgery	1 (0.6)
	Emergency Medicine	11 (6.5)
	Family Medicine	15 (8.8)
	Internal Medicine	36 (21.2)
	Neurosurgery	4 (2.4)
	Obstetrics	7 (4.1)
	Ophthalmology	1 (0.6)
	Orthopaedic Surgery	8 (4.7)
	Paediatric Surgery	1 (0.6)
	Paediatrics	23 (13.5)
	Psychiatry	21 (12.4)
	Radiology	9 (5.3)
	Surgery	18 (10.6)
Programme	Year 1	24 (14.1)
	Year 2	45 (26.5)
	Year 3	39 (22.9)
	Year 4	38 (22.4)
	Year 5	7 (2.9)
	Year 6	1 (0.6)
	Finished	16 (9.4)
Total	170	

The average score for EE was 3.5 (SD 1.2); with a minimum average score of 0.2 and a maximum average 6.0. The average score for DP was 2.7 (SD 1.1); minimum average score 0.2 and the maximum average 4.8. The average score for PA was 4.1 (SD 1,1); minimum average 0.3 and the maximum average 6.0.

The distribution of respondents in terms of the MBI Classification of Burnout (as per table 1) is shown in Table 3. According to the definition, with a high score in the EE or DP category, 84% of the registrars had burnout. A lot of those registrars scored high in several of the categories. There was overall high scoring in all categories for 40.6% (58) of the registrars; 23.3% (39) had high scores in both, EE and DP, and 32.1% (46) had a high score in only EE or in DP.

The opposite of burnout is engagement (i.e. low scores). None of the participants scored low over all categories. The closest to engagement were 10 (5.9%) participants, who scored in the low range of burnout for PA in combination with low-to-moderate EE and DP.

	Low % (n)	Medium % (n)	High % (n)	Total
EE	14.1% (24)	19.4% (33)	66.5% (113)	170
DP	5.9% (10)	19.4% (33)	74.7% (127)	170
PA	22.4% (38)	25.3% (43)	52.4% (89)	170

The relationships between burnout and socio-demographics were analysed. The distribution of dimension scores across age, gender, discipline, programme year and postgraduate (PG) experience are shown in Table 4. There was no significant association between age, gender, discipline, year in the programme or PG experience, and any of the three MBI dimensions. The p-values for the between-group differences are shown in Table 4.

Table 4. Distribution of dimension scores across variables and variance				
		EE	DP	PA
		mean (SD)	mean (SD)	mean (SD)
Age (yr)	27-29	3.2 (1.1)	2.7 (1.2)	4.1 (1.2)
	30-31	3.4 (1.2)	2.9 (1.1)	4.2 (1.1)
	32-33	3.6 (1.2)	2.8 (1.1)	3.8 (1.0)
	34-35	3.5 (1.1)	2.6 (1.0)	4.1 (1.0)
	36y+	3.5 (1.2)	2.5 (1.0)	4.4 (0.9)
	Variance p-value	0.67	0.57	0.13
Gender	Female	3.6 (1.1)	2.6 (1.1)	4.0 (1.1)
	Male	3.3 (1.2)	2.9 (1.0)	4.1 (1.1)
	Variance p-value	0.095	0.19	0.19
Discipline	Anaesthetics	3.6 (1.3)	2.5 (1.1)	3.6 (1.3)
	Emergency Medicine	3.4 (1.3)	3.2 (1.0)	4.3 (1.3)
	Family Medicine	3.7 (1.2)	2.8 (1.1)	4.4 (0.9)
	Internal Medicine	3.3 (1.0)	2.5 (1.1)	4.0 (1.2)
	Obstetrics	3.7 (0.9)	2.9 (1.1)	3.7 (1.3)
	Orthopaedics	3.9 (1.2)	2.8 (1.1)	4.4 (0.8)
	Paediatrics	3.7 (1.2)	2.8 (1.1)	4.1 (0.9)
	Psychiatry	3.3 (1.4)	2.4 (1.1)	4.6 (0.9)
	Radiology	3.2 (1.4)	2.8 (0.7)	3.9 (0.9)
	Surgery Group*	3.4 (1.1)	2.9 (1.1)	3.8 (0.9)
Variance p-value	0.90	0.63	0.12	
Programme year	1	3.1 (1.1)	2.8 (1.1)	3.9 (1.0)
	2	3.5 (1.1)	2.7 (1.2)	4.0 (1.2)
	3	3.5 (1.2)	2.7 (1.1)	4.0 (1.0)
	4	3.7 (1.2)	2.7 (1.0)	4.2 (0.9)
	5	3.4 (1.2)	2.7 (1.2)	3.6 (1.1)
	6	3.4 (1.5)	2.6 (0.9)	4.6 (0.8)
	Variance p-value	0.64	> 0.99	0.19
PG experience (yr)	1-6	3.3 (1.2)	2.9 (1.3)	4.2 (1.3)
	7-8	3.5 (1.1)	2.8 (1.0)	4.1 (1.0)
	9-10	3.6 (1.3)	2.7 (1.1)	3.9 (1.1)
	11-12	3.7 (1.0)	2.7 (0.9)	3.9 (0.9)
	13+	3.2 (1.4)	2.4 (1.1)	4.5 (0.8)
	Variance p-value	0.63	0.61	0.21

* Due to small group size, Cardiothoracic Surgery, Neurosurgery, Ophthalmology, and Paediatric Surgery were combined into the Surgery group

Discussion:

Overall, a concerning high burnout level of 84% was found. This is higher than other national and international studies found. A survey from 2012 amongst 1701 registrars in the USA found a burnout level 60.3%.^[2] In Lebanon, a developing country, 155 medical registrars showed burnout levels of 80%.^[18] This number is, however, mildly overestimated as their definition of burnout was more lenient and defined as high level if high in any category. In South Africa, burnout levels amongst primary care doctors in the Western Cape was 76%.^[11] High levels of burnout amongst registrars were also found in the Free State but because of different cut-off points per category, the results cannot be compared.^[12]

Comparing the dimension of EE of the registrars with fellow registrars abroad, there was a similar high level of EE (66.5%) to Lebanese registrars (67.7%). This is much higher than their colleague registrars in the USA (44.4%).^[2,18] As EE is mostly related to the demands of work, it is interesting to see similarly high levels of EE in developing countries with possibly higher demands on their doctors.

Of note is the very high level of DP (74.7%) in this study. This is exceptionally high, as, aside from the data from the Western Cape which followed with a DP level of 64%, other studies previously mentioned have all shown levels in the range of 50% or below. High DP is concerning as this aspect of burnout reflects detachment and impersonal response towards patients and is associated with negative effects on professionalism.^[7]

PA is recognized as the protective aspect of burnout and in this study, the low range of burnout levels of 22% is comparable with registrars in other training institutions. On the contrary, in the high range of PA were 52.4% of registrars in this study and other studies' data all show levels far below this.

In keeping with international review studies, no associations of burnout with socio-demographics were found. This suggests that the causes of burnout lay in the work environment of registrars.

As mentioned in the demand-control-support model, burnout is caused by an imbalance of the demands and resources in the work atmosphere. EE is found to be directly associated with increased demands. The very high level of EE of registrars in this study could justify that unreasonably high demands are put upon registrars. It is suggested by Dyrbye that these increased demands could be triggered by the changes in the health care system, workforce shortages, "curriculumegaly", and increased competition for registrar posts.^[6]

The poor level of Personal Accomplishment is closely related to the lack of available resources. The COR theory, Conservation of Resources, links PA to the resources in the workspace. If the demands and resources are in balance, the system would be functioning optimally. With the increased EE component in these results, one could intervene by ensuring the resources needed to effectively meet the increased demands

are sufficient. In this model, resources related to PA are autonomy, development opportunities and job variety.^[3] The last could be addressed in the different rotations within the registrar programmes. Opportunities should be created by departments to increase autonomy and development opportunities within the current curricula.

Exploring further possibilities to target these high levels of burnout, both individual and group efforts could be made. For the individual, positive results have been achieved using mindfulness-based interventions.^[19] These could be utilized in example through meditation, cognitive or behavioural therapy. Systemic efforts could come from management level at the training institutions. An intervention shown to be successful is the CREW method (Civility, Respect, and Engagement at Work) in which a more civil working atmosphere is created by means of facilitations in regular workshops to create awareness of social behavior. In this intervention, the focus is on improving the working relationship between colleagues. The CREW method showed that peer collaboration in the learning environment contributed to the prevention of burnout.^[20] Besides preventing burnout, better collaboration and teamwork is also likely to benefit general health care outcomes.

A limitation of this study is the sample bias. Although the actual response rate was much higher than expected, a non-probability convenience sample was used to achieve a sufficient sample size. A large percentage of the email addresses provided by the departments were incorrect or inactive. Of the non-responders, it is unclear how many did not read the email, or perhaps were not interested in the topic. This method of sampling could have affected the statistical validity of the results.

Further research into the prevalence and management of burnout may assist in better understanding and preventing this under-recognized problem.

Conclusion:

Overall, a concerning high burnout level of 84% was found. This is higher than other national and international studies found. High EE is associated with high work demands, which seems higher for registrars training in developing countries. The extremely high level of DP is worrisome as this affects professionalism and negatively affects the engagement of doctors with their patients. The cause of burnout should be sought out in the work environment of the doctor, as, in keeping with international literature, no associations with socio-demographic factors were found. PA is protective of burnout. Improving autonomy and development opportunities could help prevent burnout. Efforts should be made to improve peer collaboration as this assist in preventing burnout.

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