

Prevalence and Factors Associated with Burnout Syndrome among Resident Doctors at Tertiary Teaching Hospitals in Dar es Salaam, Tanzania

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Abstract

Introduction: Burnout syndrome is prevalent to a great extent among medical residents, and this can interfere with their training and patient management. However, the extent of the problem is still unknown in our setting. This study therefore aimed at determining prevalence and factors associated with burnout syndrome among resident doctors at tertiary teaching hospitals in Dar es Salaam, Tanzania. **Method:** A cross-sectional study of resident doctors was carried out in four teaching hospitals of Muhimbili University of Health and Allied Sciences between January 2021 and March 2021. Participants were interviewed using a structured questionnaire and Maslach Burnout Inventory. **Results:** The study had 398 participants with a mean age of 35 ± 3.5 years. Overall burnout prevalence was 33.7%, as for the burnout dimensions, 205 (51.5%) respondents reported burnout in the dimension of emotional exhaustion (EE), 177 (44.5%) in the dimension of depersonalization (D), and 144 (36.2%) in the dimension of reduced personal accomplishment (RPA). Independent factors associated with burnout syndrome were: inadequate support from residency program supervisors (Odds Ratio (OR) 1.97, 95% CI: 1.23 - 3.14, $p = 0.005$), work-related family conflicts (Odds Ratio (OR) 3.2, 95% CI: 1.35 - 7.71, $p = 0.008$), stressful call perception (Odds Ratio (OR) 3.31, 95% CI: 1.90 - 5.76, $p = 0.001$) and each added year of study (Odds Ratio (OR) 3.46, 95% CI: 1.08 - 6.73, $p = 0.009$). **Conclusion:** Burnout is a problem among resident doctors in Tanzania. This could be addressed by directing preventive and intervention measures in the residency training pro-

gram. Periodic assessment is also needed to mitigate factors associated with burnout among resident doctors.

Keywords

Burnout, Resident Doctors, Emotional Exhaustion (EE), Depersonalization (DP), Reduced Personal Accomplishment (RPA)

1. Introduction

Burnout is a state of physical, mental, and emotional exhaustion arising from a continued response to chronic interpersonal stressors while at work, which in turn affects the working efficiency of a person [1]. The term was first introduced by Freudeberger and Maslach who independently studied the social issues faced by underprivileged citizens in 1970, and in 1974 it was described among health care professionals [2]. Burnout syndrome among health care professionals has become a serious health problem and the mental health of doctors is an issue of growing concern all over the world as it frequently interferes with their professional training and responsibilities [3]. Among practicing physicians, it has reached epidemic levels with a prevalence that approximates 50% [4]. The condition is also well associated with negative physiological, cognitive, psychological, and behavioral manifestations which create severe pressure on the whole health care system threatening patients' care and safety. It is not a sign of weakness, mental illness, or inability to cope with life and it can be treated, and prevented [5].

Burnout appears to be quite prevalent in both developing and developed countries and probably represents considerable economic, social and psychological costs to employees and employers in these countries. The problem of residents' burnout is widely recognized with diverse solutions implemented across developed countries. However, there is a lack of clarity about the global prevalence of burnout among medical residents due to limited evidence on residents' burnout in low-income and middle-income countries (LMIC). This affects interventions to prevent and reduce residents' burnout as most of the studies of sufficient quality have only been done in high-income countries [6].

Although the factors that contribute to residents' burnout are unclear, several studies have explored possible reasons for burnout in residency training. In these studies, residents report that time demands, workload, practice setting, lack of control over time management, work planning, work organization, specialty choice, inherently difficult job situations, sleep deprivation, problems with work-life balance and interpersonal relationships are stressors that may contribute to burnout [7] [8].

Other factors cited in the literature include age, gender, marital status and parenting responsibilities. Concerning gender, the previous speculation had led to

the hypothesis that women residents are more prone to stress and be at a greater risk of burnout as a result of conflicts between traditional gender roles and professional practice and because of the climate of medical education which is competitive and oriented towards masculine tradition [9]. These stressors have resulted in reported incidence of psychological symptoms with feelings of becoming less humanistic, more cynical and “burning out” during residency training [10]. While previous studies done elsewhere have focused on identifying stress factors as perceived by resident doctors [11], there is insufficient information on burnout among doctors in residency training in our country. This study was therefore conducted to help us understand the prevalence and factors associated with burnout syndrome among resident doctors at Tertiary Teaching Hospitals in Dar es Salaam, Tanzania.

2. Methodology

Study setting. Data were collected from four University teaching hospitals located in Ilala district of Dar es Salaam, Tanzania. Involved hospitals were; Muhimbili National Hospital (MNH), Muhimbili Orthopaedics Institute (MOI), Jakaya Kikwete Cardiac Institute (JKCI) and Ocean Road Cancer Institute (ORCI) where the Muhimbili University of Health and Allied Sciences resident doctors do their clinical rotations.

Muhimbili National Hospital, is a national referral hospital with a bed capacity of 1500 beds, attending 1000 to 1200 outpatients per day, and 1000 to 1200 inpatients per week. Muhimbili Orthopaedics Institute, is a national specialized hospital offering Orthopedic and Neurosurgical care with a bed capacity of 362 beds, attending on average 4000 outpatients and 700 inpatients per week.

Jakaya Kikwete Cardiac Institute, is a national specialized hospital offering cardiovascular care. The Institute has 103 bed capacity attending on average 700 outpatients and 100 inpatients per week.

Ocean Road Cancer Institute, is a national specialized hospital in cancer treatment and care with a bed capacity of 270 beds attending on average 1800 outpatients and 150 inpatients per week.

Study Design. A prospective cross-sectional study was conducted.

Study population. The study population comprised of Muhimbili University of Health and Allied Sciences resident doctors (first to third year), doing clinical rotations in 4 involved teaching hospitals between January 2021 and March 2021.

Sample size. Assumptions made in determining the sample size were: prevalence of burnout syndrome among resident doctors is 55% [12], precision of 5% and confidence level of 95%. Formula for sample size calculation [13],

$$N = Z^2 P(1 - P) / e^2 .$$

(N = Sample size; Z at 95% confidence level ($p = 0.05$) = 1.96; P = prevalence; e = precision level).

$$N = 1.96^2 \times 0.55(1 - 0.55) / 0.05^2 = 380,$$

Taking a non-response rate of 10% into consideration, the corrected sample size was 420.

Sampling. All residents were grouped according to their specialties of training. The number selected in each department was obtained by the proportional sampling method. Enrollment was done after proper explanation to the residents about the study aim and written informed consent was obtained. The inclusion criteria were resident doctors who consented to participate.

Data collection and management. Data were collected using a structured self-administered questionnaire designed by principal investigator. It comprised of two sections, section one which consisted of socio-demographic characteristics and relevant work-related characteristics (including specialty, year of study, number of working hours per day, number of night calls per month, working relationship with colleagues, average night's sleep hours, support from supervisors, work-related family conflict, work autonomy, call perception, years of experience, sponsorship, and remuneration). Section two comprised of an adapted Maslach Burnout Inventory-Human Services Survey (MBI-HSS) designed to measure the presence of burnout (Appendix). A pilot study was conducted to ensure validity and reliability of the data collection tool. Direct scoring was used for the items in each subscale (emotional exhaustion, depersonalization and personal accomplishments) by adding together the values of the ratings. A high degree of burnout is represented by high score of emotional exhaustion (score of ≥ 27) and depersonalization (score of ≥ 13) and a low score of personal accomplishments (score of ≤ 33). To determine the prevalence of burnout syndrome amongst resident doctors in this study, we used the tridimensional diagnosis criteria for Burnout Syndrome using Maslach Burnout Inventory (emotional exhaustion, depersonalization and personal accomplishment). Accordingly, those who scored high on both emotional exhaustion (score of ≥ 27) and depersonalization (score of ≥ 13) plus low personal accomplishment domains (score of ≤ 33), were considered to have burnout. Data were double-entered into Excel (Microsoft® Excel, Seattle Washington), Statistical analysis was conducted using Statistical Package for Social Sciences (SPSS) version 23 (IBM Corp. IBM SPSS Statistics for Windows [Internet]. Armonk, NY: IBM Corp; 2017).

Data analysis. All variables were categorized and described using frequency distribution. Chi-square test was used for bivariate analysis and those variables with observed frequency less than five Fisher's exact test was applied. A variable with ($p \leq 0.05$) burnout was considered to be statistically significant. Variables that demonstrated significant bivariate association with burnout were entered into the multivariate logistic regression modal to assess independent effects. Parameter of measurement to assess association was odds ratio.

Ethical consideration. Ethical approval for the study was obtained from the Muhimbili University of Health and Allied Sciences Research Ethics Committee. An informed written consent was sought from participants.

3. Results

A total of 420 residents were enrolled in our study, from which 406 (96.6%) responded. Eight (2%) were excluded due to incomplete data. Data from 398 residents were analyzed (**Figure 1**).

3.1. Socio-Demographic and Work-Related Characteristics of the Participants

The participants' age ranged between 24 and 50 years with a mean age of 35 ± 3.5 years. Majorities 243/398 (61.1%) were males, 256/398 (64.3%) were married, and 256/398 (64.3%) had children. Three hundred and twenty-five (81.7%) had employment, and 277/398 (69.6%) of the residents were living outside the university campus. One hundred and fifty-nine (39.9%) residents were in their first year of training, and 100/398 (25.1%) were in their third year of training. Majorities 284/398 (71.4%) had sponsorship for their studies, 341/398 (85.7%) reported inadequate night sleep hours, 208/398 (52%) reported inadequate remuneration and over half 256/398 (64.3%) reported working more than >9 hours per day. Two hundred and six (65.8%) of residents perceived call duty as stressful, and 167/398 (42%) reported inadequate support from their supervisors (**Table 1**).

3.2. Prevalence of Burnout

Out of 398 residents involved in this study, burnout syndrome accounted for 134/398 (33.7%) of participants (**Figure 2**).

3.3. Prevalence of Burnout across Dimensions among Participants

Analyzing each sub-scale separately according to Maslach's categorization, 205/398

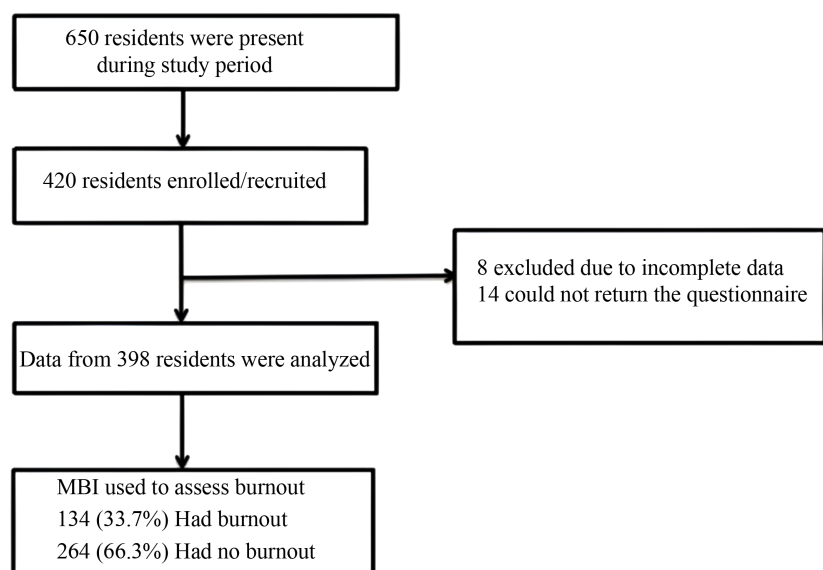
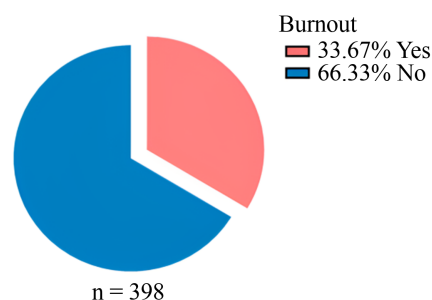


Figure 1. Schematic of residents' enrolment.

**Figure 2.** Proportional of residents with burnout.**Table 1.** Socio-demographic and work-related characteristics of the participants.

Variable	Category	Frequency (n)	Percent (%)	Variable	Category	Frequency	Percent
Age group (years)	< 35	302	75.9	Year of residency	1 st year	159	39.9
	>35	96	24.1		2 nd year	139	34.9
Gender	Male	243	61.1		3 rd year	100	25.1
	Female	155	38.9	Sponsorship	Sponsored	284	71.4
Marital status	Married	256	64.3		Not Sponsored	114	28.6
	Single	146	35.7	Night sleep hours	Adequate	57	14.3
Having Children	Yes	256	64.3		Inadequate	341	85.7
	No	142	35.7	Number of night shifts per month	<5 calls	234	58.8
Employment status	Employed	325	81.7		5 - 10 calls	121	30.4
	Not Employed	73	18.3	Call perception	Stressful	206	65.8
Smoking	Yes	16	4		Not stressful	136	34.2
	No	382	96	Remuneration	Adequate	66	16.6
Alcohol use	Yes	112	28.1		Not adequate	208	52.3
	No	286	71.9	Support from supervisors	No remuneration	124	31.2
Exercise	Yes	260	65.3		Adequate	222	55.8
	No	138	34.7		Not adequate	167	42
Chronic disease	Yes	30	7.5	Years of experience	No support	9	2.3
	No	368	92.5		< 5	163	41.0
Accommodation	At University hostels	121	30.4		5 - 10	194	48.7
	Outside University hostels	277	69.6		>10	41	10.3

(51.5%) residents reported burnout in the dimension of emotional exhaustion, 177/398 (44.5%) in the dimension of depersonalization, and 144/398 (36.2%) in the dimension of reduced personal accomplishment.

3.4. Factors Associated with Burnout Syndrome

The following factors were significantly associated with burnout syndrome after bivariate analysis: Third year of study accounted for majority (47%) of residents with burnout syndrome compared to first- and second-year residents (p-value 0.001), burnout syndrome was more (38.3%) among those who reported little work autonomy compared to those who reported much work autonomy (p-value 0.023). Majorities (59.2%) of those with high work-related family conflict had burnout syndrome compared to those with low and none work-related family conflict (p-value < 0.001). Those who perceived call duty as stressful had more burnout syndrome (43.1%) compared to those who perceived call duty as not stressful (p-value < 0.001), and those with inadequate supervisor's support had more burnout syndrome (46.7%) compared to those with adequate support (p-value < 0.001) (**Table 2**).

The following factors remained statistically significant after multivariate logistic regression analysis: Residents who perceived call duty as stressful were found to be 3.3 times more likely to develop burnout compared to those who perceived it as not stressful. Burnout was about twice as prevalent in residents who reported inadequate support from their residency program supervisors compared to those who reported adequate support. Burnout was 3.2 times more frequent in those who reported having high home work-related conflicts compared to those who reported none conflict. Those in their third of study were 3.4 times more likely to develop burnout compared to those who were in first year of study (**Table 2**).

4. Discussion

This study examined the prevalence and factors associated with burnout syndrome among resident doctors at tertiary teaching hospitals in Dar es Salaam, Tanzania. It revealed the prevalence of 33.7%, which is within the range of burnout syndrome among health care workers reported globally 25% - 75% [14]. It is also within the range reported in a systematic review done in Nigeria 23.6% - 51.7% [15]. Our findings are also similar to a meta-analysis study results done in Brazil in which they reported overall prevalence of 35.7% [16].

Although the prevalence reported in this study is almost similar to what has been reported in other studies done elsewhere, the implication on health services delivery in Tanzania may be more serious taking into account that, resident doctors form the major part of health care delivery across tertiary hospitals in the country due to low doctor to patient ratio situation facing the country. So, there is a risk of negative impact of burnout on patient care including medical errors, patient safety risks, and potential compromise of quality of care. For

Table 2. Factors associated with burnout syndrome.

Burn Out					
Factor	Yes n (%)	No n (%)	P-Value	Multivariate OR (95% CI)	P-Value
Year of Study					
First year	39 (24.5)	120 (75.5)	0.001	1	0.046
Second year	48 (34.5)	91 (65.5)		1.63 (0.96 - 3.52)	
Third year	47 (47.0)	53 (53.0)		3.46 (1.08 - 6.73)	
Sponsorship					
Sponsored	99 (34.9)	185 (65.1)	0.428		
Not sponsored	35 (30.7)	79 (69.3)			
Autonomy					
Much	47 (27.5)	124 (72.5)	0.023	1	
Little	87 (38.3)	140 (61.7)		1.20 (0.74 - 1.94)	0.445
Conflicts					
None	23 (20.9)	87 (79.1)	<0.001	1	
Low	89 (35.5)	162 (64.5)		1.41 (0.77 - 2.56)	0.064
High	22 (59.5)	15 (40.5)		3.23 (1.35 - 7.71)	0.008
Night shift (Calls)					
<5	76 (32.5)	158 (67.5)	0.592		
5 - 10	45 (37.2)	76 (62.8)			
>10	13 (30.2)	30 (69.8)			
Call perception					
Not Stressful	21 (15.4)	115(84.6)	<0.001	1	
Stressful	113 (43.1)	149 (56.9)		3.31 (1.90 - 5.76)	0.001
Remuneration					
Adequate	17 (25.8)	49 (74.2)	0.283		
Not adequate	71 (34.1)	137 (65.9)			
No remuneration	46 (37.1)	78 (62.9)			
Supervisor's support					
Adequate	54 (24.3)	168 (75.7)	<0.001	1	
Not adequate	78 (46.7)	89 (53.3)		1.97 (1.23 - 3.14)	0.005
No support at all	2 (22.2)	7 (77.8)		0.47 (0.09 - 2.44)	0.056
Night sleep					
Inadequate	117 (34.3)	224 (65.7)	0.507		
Adequate	17 (29.8)	40 (70.2)			

Continued

Working hours			
≤9	42 (29.6)	100 (70.4)	0.198
>9	92 (35.9)	164 (64.1)	
Experience (years)			
<5	49 (30.1)	114 (69.9)	0.447
5 - 10	70 (36.1)	124 (63.9)	
>10	15 (36.6)	26 (63.4)	

resident doctors in training there is a risk of depression, suicidal tendencies, and medical illnesses, hence the need for mental health as well as support services to this important group of doctors.

Positive predictors of burnout among resident doctors revealed in this study included work related family conflict. The residency period is highly loaded with psychological stressors [17] and the addition of work-related family conflict could lead to residents having a higher risk of becoming burned out. This was confirmed in our study by the fact that those who admitted having high work-related family conflicts were significantly associated with burnout, the same factor has been reported in other studies done elsewhere [18] [19] [20]. Inadequate support from residency program supervisors was also found to be a positive predictor of burnout among resident doctors in this study. Those who reported inadequate support from their supervisors were more likely to have burnout syndrome compared to those who reported adequate support. Other studies conducted elsewhere have reported similar findings [21] [22], in which they revealed work place social support was a major characteristic related to good performance. This is an important modifiable finding and has a greater implication in policy change.

The current study also found that senior residents in their third year of study were more likely to develop burnout, similar findings were reported by Dhusia *et al.* [21]. The increased experience usually accounts for higher working hours, increased workload and it is a time when they are working on their dissertations in our settings, combining all those, puts much pressure on them and may exacerbate the syndrome. Residents who perceived call duty as stressful in this study were more likely to develop burnout compared to those who perceived it as not stressful. Our results are in line with a systematic review done in Nigeria by Ogunsuji *et al.* [15], which reported perception of call duty as stressful to be positive predictors of burnout among resident doctors. This can be due to the fact that night calls are associated with heavy workload especially handling emergencies, sleep deprivation and few staffs normally present during night shifts in our hospitals.

There are some key limitations in this study: firstly, the study was conducted at tertiary teaching hospitals in Dar es Salaam region. Therefore, it may be diffi-

cult to generalize the findings to doctors across the country, and hence it may not reflect what is happening in other centers. Secondly, data collectors not collecting all data and so some are missing. Thirdly, information bias from participants and data collectors may have affected the quality of data.

5. Conclusions

The study has shown that burnout is prevalent among resident doctors in our setting and it has illuminated some factors that influenced burnout among resident doctors in residency training. There is therefore a need for directing preventive and intervention measures in the residency training program. Periodic assessment is also needed to mitigate factors associated with burnout among resident doctors.

What Is Known about This Topic?

- Burnout among medical doctors is a global phenomenon.
- Burnout can hinder optimal healthcare delivery.
- Healthcare providers are in prolonged exposure to job stressors.

What This Study Adds

- This study provides valuable insight into the burden of burnout syndrome among resident doctors in Tanzania hospitals.
- It also points out the need for support services to resident doctors in Tanzania.

Authors' Contributions

Edwin Rwebugisa Lugazia, Happiness Charles Sway, Respicious Lwezimula Boniface and Asha Abdullah conceived and designed the study. Happiness Charles Sway undertook the data collection and statistical analysis and wrote the first draft of the manuscript. All authors contributed to the intellectual content and approved the final manuscript.

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Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

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Appendix

A questionnaire

Prevalence and Factors Associated with Burnout Syndrome among resident Doctors at Tertiary Teaching Hospitals in Dar es Salaam, Tanzania

Serial number: _____

PART I: Socio-demographic and professional characteristics

1. Age ... (years)

2. Gender

Male Female

3. Marital status

Married Single Widowed Separated

4. Do you have children?

Yes No

5. Employment status

Employed Not employed.

6. Do you smoke?

Yes No

7. Do you take alcohol?

No Yes

8. Practice of physical exercise

Yes No

9. History of any chronic disease?

Yes No

10. Accommodation status

At MUHAS hostels Outside MUHAS hostels

11. Year of study

1st year 2nd year 3rd year

12. Speciality/Department ...

13. Studies sponsorship

Sponsored (Government/Private) Not sponsored (Self sponsorship)

14. Work related Autonomy?

Little Much

15. Work /studies related family conflicts

High Low None

16. Relationship with co-workers/colleagues

Good Bad

17. Average working hours per day...

18. Average night's sleep hours...

19. Number of days on calls per month

Less than 5 5 - 10 More than 10

20. How do you perceive call duties?...

Stressful Not stressing

21. How is your remuneration?

Adequate Not adequate No remuneration at all.

22. Perception of support from the supervisors

Adequate Not adequate No support at all.

23. Number of years working in the health care profession...

PART II:

MBI–Human Services Survey							
How Often	0	1	2	3	4	5	6
	Never	A few times a year or less	Once a month or less	A few times a month	Once a week	A few times a week	Every day

How Often

0 - 6 Statements

1. I feel emotionally drained from my work.
2. I feel used up at the end of the workday.
3. I feel fatigued when I get up in the morning and have to face another day on the job.
4. I can easily understand how many my recipients feel about things.
5. I feel treat some recipients as if they were impersonal objects.
6. Working with people all day is really a strain for me.
7. I deal very effectively with the problems of my recipients.
8. I feel burned out from my work.
9. I feel I'm positively influencing other people's lives through my work.
10. I've become more unsympathetic toward people since I took this job.
11. I worry that this job is hardening me emotionally.
12. I feel very energetic.
13. I feel frustrated by my job.
14. I feel I'm working too hard on the job.
15. I don't really care what happens to some recipients.
16. Working with people directly puts too much stress on me.
17. I can easily create a relaxed atmosphere with my recipients.
18. I feel very happy working closely with my recipients.
19. I have accomplished many worthwhile things in this job.
20. I feel like I'm at the end of my rope.
21. In my work, I deal with emotional problems very calmly.