RESEARCH ARTICLE

STRESS AND BURNOUT AMONG CLINICAL RESIDENTS OF THE UNIVERSITY OF NAIROBI POSTGRADUATE TRAINING PROGRAMS

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ABSTRACT

Background: Stress is an underestimated clinical entity especially among trainee clinicians.
Objective: This study aimed at describing perceived stress and burnout experienced by postgraduate students at the university of Nairobi clinical residency programs in terms of the prevalence, clinical subtypes and sociodemographic determinants. This study will help in raising awareness on stress and burnout and stimulate interventions to improve the quality of work life of residents. This will improve the quality of residency training locally and internationally.
Design: This was a cross-sectional descriptive study.
Methods: The study was carried out among clinical residents of all clinical specialties and at all levels of residency, at the Kenyatta National Hospital (KNH) and Chiromo Campuses of the University of Nairobi (UoN). Data collection tool was a 72-item questionnaire that captured information on demography, characteristics and clinical subtypes of stress and burnout experienced by clinical residents using the 10-item Perceived Stress Scale (PSS-10), Maslach Burnout Inventory (MBI) and the 36-item Burnout Clinical Subtypes Questionnaire (BCSQ-36). Simple correlation was used to establish associations and to test the significance of bivariate or multivariate relationships. Student t-test was used to compare mean responses on standardized scales.
Results: A total of 128 residents completed our questionnaire. The mean age of respondents was 31.98 years ± 2.98 and ranged from 20 to 40 years. Males constituted a majority 73(57%), of the population. Our participants were mostly in the monthly income range of 500USD to 1000USD, 37(38.9%). Mean PSS score for our population was 21.7 ± 5.3 and 60.9% of participants reported stress levels in the middle and upper tertiles. Females and residents who preferred not to disclose their gender had significantly higher mean levels of perceived stress than males (22.9 and 24.33 vs 20.82 respectively, P=0.03). Burnout was mainly driven by emotional exhaustion, with 65.7% of residents having mean scores in the middle and upper tertiles of emotional exhaustion. Depersonalization was found in 39.9% of the population. Lowest levels of personal accomplishment were found in 57.8% of residents. Compared to those with higher income, residents with income less than 500USD per month had lower scores for personal accomplishment (39.96±8.56 vs 43.5±2.12, P=0.021). The most prevalent burnout clinical subtype in our population was the frenetic subtype, with mean score of 5.06±0.86. The under-challenged subtype was more prevalent among residents with supplementary years (P=0.03).
Conclusion: Prevalence of stress and burnout was high among our clinical residents and burnout was largely driven by emotional exhaustion. The most prevalent clinical subtype was the frenetic subtype. Management strategies of stress and burnout should be geared towards helping clinical residents find a balance between work, school and their personal lives. Financial support may be beneficial. We recommend larger multicenter studies in our setting which aim at elucidating more determinants of burnout and coping mechanisms employed by clinical residents of the University of Nairobi.

Key words*:* Stress, Burnout, Clinical residents, Nairobi

INTRODUCTION

Generally, stress is the psychological perception of pressure and the body's response to it. Such pressures which may be construed as either threatening or challenging may emanate from events (stressors) within or without, resulting in psychological and physiological strain within the individual[1]. Burnout or professional exhaustion syndrome is a stress-induced problem characterized by a state of mental, physical or emotional exhaustion, reduced sense of personal accomplishment and depersonalization[2]. Residency training and clinical practice is reputed for being challenging and demanding, placing the resident at the risk of burnout. Burnout has been linked to absenteeism, decreased job satisfaction and medical errors[3]. Residents have been shown to have higher levels of stress during their training with higher frequencies of depressive symptoms, decreasing humanism, increasing cynicism and impaired family

life than members of academic staff such as consultants and other faculty members[4]. There is a paucity of data on the prevalence of burnout among postgraduate students in medical training programs in Kenya. In this study, we aimed at describing perceived stress and burnout experienced by postgraduate students at the University of Nairobi clinical residency programs in terms of the prevalence, clinical subtypes and socio-demographic determinants. This study will help in raising awareness on stress and burnout and stimulate interventions to improve the quality of work life of residents. This will improve the quality of residency training locally and internationally.

MATERIALS AND METHODS

This was a cross-sectional descriptive study carried out among clinical residents of all clinical specialties including, surgically oriented and non-surgically oriented residency programs at all levels of residency, at the Kenyatta National Hospital (KNH) and Chiromo campuses of the University of Nairobi (UoN). We excluded residents who were at our study sites for external rotations or were not duly registered under UoN training programs. Study participants were selected by convenience sampling within their various disciplines. Ethical approval was obtained (Protocol number: P234/04/2018) from the UoN/KNH ethics and review committee prior to commencement of the study. Data collection tool was a 72-item questionnaire that captured information on demography, satisfaction with training, characteristics and clinical subtypes of stress experienced by surgical residents using three validated measurement tools. The Perceived Stress Scale (PSS) is a 10-item validated self-report tool for assessing the degree to which a person appraises the situations of their life to be stressful and has been linked to a person's quality of life. The scale can be viewed as a two factor construct measuring both "perceived helplessness" and "perceived self-efficacy" and thus apart from measuring the degree of stress, it also measures the amount of coping a person employs with the stressful situations they get exposed to[5]. Widely accepted as a clinical diagnostic tool for assessing clinical burnout is the Maslach Burnout Inventory (MBI)[2]. It is a self-report tool that assesses the effects of stress on individuals under three subscales namely; emotional exhaustion, depersonalization and personal accomplishment. MBI was originally validated among health care workers in the United States by Christina Maslach in 1996 and has become the most commonly used instrument for assessing burnout in an occupational setting. The 36-item burnout clinical subtype questionnaire (BCSQ-36) is another validated self-report tool for assessment and clinical classification of burnout which also incorporates various stress-coping mechanisms employed by individuals to combat occupational stress. Three clinical subtypes of burnout can be deduced from this scale which are frenetic, under-challenged and the worn-out. It is also vital in designing treatment modalities for occupational stress[6,7]

Data management and analysis

Categorical data was presented as frequencies and percentages while continuous data was presented as mean and standard deviation. Simple correlations were used to establish associations and to test the significance of bivariate or multivariate relationships. Student t-test was used to compare mean responses on standardized scales. A P-value of <0.05 was considered as statistically significant. Results from our measurement scales were categorized into three tertiles based on previous studies[2,8,9].

RESULTS

Demographic characteristics: A total of 128 completed filled questionnaires were received by the end of our data collection period. The mean age of respondents was 31.98 years ±2.98 and ranged from 20 to 40 years. A majority, 82(64.1%) were in the 30-35 years age group (Figure 1).

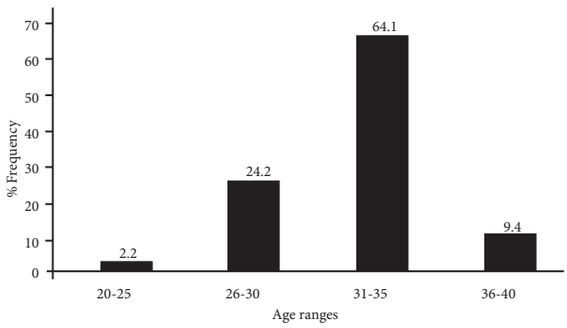


Figure 1: Age distribution of study population

Males constituted a majority 73(57%), of the population. Three residents (2.3%), however, preferred not to disclose their gender. There were more residents in surgically oriented specialties, 71(55.5%) than non-surgical specialties, 57(44.5%). The distribution of residents with respect to their levels of training is as shown in Figure 2.

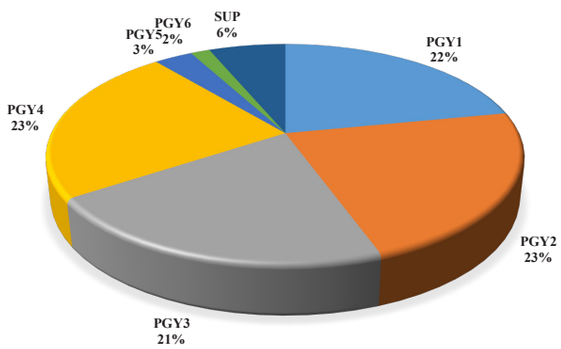


Figure 2: Distribution of participants according to level of training

Our participants were mostly in the monthly income range of 500USD to 1000USD, 37(38.9). Only 2(1.6%) were on a monthly income of more than 2000USD. The demographic characteristics of respondents in association with the various stress and burnout measures used is shown in Table1.

Table 1: Demographic characteristics of respondents in association with the various stress and burnout measures

Variable	Frequency (%)	Perceived stress scale	The Maslach burnout inventory			Burnout clinical subtypes questionnaire		
			Emotional exhaustion	Depersonalization	Personal accomplishment	Frenetic	Under-challenged	Worn-out
Age (years)								
20-25	3(2.3)	24.67	29.67	7.00	30.00	4.61	3.03	4.25
26-30	31(24.2)	22.55	25.94	6.38	32.55	4.98	2.38	3.88
31-35	82(64.1)	21.61	23.43	6.62	32.65	5.09	2.72	4.03
36-40	12(9.4)	20.08	23.42	6.92	37.83	5.18	2.64	4.17
P-value		0.41	0.68	0.99	0.46	0.70	0.62	0.84
Gender								
Male	73(57)	20.82	25.33	7.12	32.81	5.05	2.75	4.09
Female	52(40.7)	22.94	23.15	5.67	33.29	5.08	2.49	3.96
Prefer not to say	3(2.3)		29.33	9.67	34.67	5.11	2.25	3.33
P-value		**0.03**	0.49	0.27	0.94	0.98	0.48	0.42
Belief system								
Catholic	40(31.3)	21.36	23.03	6.08	34.45	5.19	2.41	3.88
Protestant	61(47.7)	22.95	25.74	7.43	30.87	5.95	2.82	4.14
Muslim	17(13.2)	20.00	23.65	4.65	36.88	5.21	2.46	3.95
Others	10(7.8)	19.1	20.20	7.00	34.20	4.99	2.67	3.86
P-value		**0.05**	0.51	0.35	0.16	0.50	0.45	0.64
Sponsorship								
Government	75(58.6)	21.92	25.04	7.09	32.36	5.20	2.72	4.05
Private	10(7.8)	20.4	23.9	7.20	31.5	4.66	2.33	4.30
Self	43(33.6)	21.81	22.74	5.60	34.6	4.93	2.33	3.47
P-value		0.69	0.63	0.41	0.51	0.07	0.06	0.42
Clinical discipline								
Non-surgical	71(55.5)	22.12	23.99	7.45	33.51	5.01	2.90	4.00
Surgical	57(44.5)	21.48	24.42	5.54	32.67	5.12	2.42	4.02
P-value		0.49	0.85	0.07	0.67	0.48	0.04	0.94
Marital status								
Single	71(55.5)	21.31	23.7	6.79	32.9	5.03	2.75	4.03
Married	53(41.4)	22.28	24.96	6.30	33.25	5.10	2.48	3.98
Divorced	3(2.3)	22.67	22.00	7.33	37.33	5.39	2.19	3.53
Widow/widower	1(0.8)	24.00	23.00	7.00	20.00	4.25	4.58	6.00
P-value		0.73	0.94	0.97	0.60	0.68	0.28	0.28
Level of study								
PGY1	28(21.9)	22.12	22.32	4.75	34.32	5.05	2.19	3.70
PGY2	29(22.7)	21.69	28.75	6.90	33.83	5.19	3.13	4.13
PGY3	27(21.1)	21.74	24.44	6.04	33.37	5.10	2.23	3.99
PGY4	30(23.4)	21.80	23.00	8.27	34.23	4.99	2.81	3.96
PGY5	4(3.1)	16.75	19.00	10.00	29.00	5.02	2.44	4.39
PGY6	2(1.6)	25.00	22.50	6.00	33.00	5.50	2.08	4.62
SUPP	8(6.3)	22.5	20.63	6.13	22.25	4.74	3.33	4.55
P-value		0.59	0.41	0.36	0.17	0.87	0.04	0.46
Monthly income (USD)								
0-500	23(18.0)	23.13	26.17	4.91	35.96	4.97	2.45	3.70
500-1000	37(28.9)	21.08	21.78	5.84	33.12	5.09	2.80	4.21
1000-1500	31(24.2)	22.48	25.03	8.29	31.87	5.08	2.80	4.42
1500-2000	35(27.3)	21.17	25.26	7.26	31.51	5.09	2.43	4.64
>2000	2(1.6)	18.00	13.50	2.50	43.50	4.96	2.83	3.80
P-value		0.38	0.43	0.18	0.36	0.98	0.67	0.02

Stress and burnout characteristics

The perceived stress scale (PSS): Mean PSS score for our population was 21.7 ± 5.3 and 60.9% of participants reported stress levels in the middle and upper tertiles. Females had significantly higher mean levels of perceived stress than males (22.9 vs 20.82 respectively, P=0.03). Perceived stress was higher among residents in the age group 20-25 years, but this was not statistically significant (P=0.41). Residents from Protestant religious background had higher perceived stress than those of other religions (P=0.05). Similar levels were reported across clinical specialties, marital statuses, sponsorship groups, and income levels.

The Maslach Burnout Inventory (MBI): Burnout was mainly driven by emotional exhaustion, with 65.7% of residents having mean scores in the middle and upper tertiles of emotional exhaustion. Depersonalization was found in 39.9% of the population, with highest scores recorded among PGY5 residents (P=0.36). Lowest levels of personal accomplishment were found in 57.8% of residents. Emotional exhaustion was highest among PGY2 residents and those with monthly income of less than 500USD. However, these relationships were not significant statistically. General surgery, otorhinolaryngology and anaesthesia had the highest numbers of residents with emotional exhaustion, p=0.025. Compared to those with higher income, residents with income less than 500USD per month had lower scores for personal accomplishment (39.96±8.56 vs 43.5±2.12, P=0.021). Similar levels of self-accomplishment were recorded among other demographic classes.

Burnout clinical subtypes questionnaire: The most prevalent burnout clinical subtype in our population was the frenetic subtype, with mean score of 5.06±0.86 (Table 2). The under-challenged subtype was the least prevalent with mean score of 2.64±1.31. However, non-surgical residents were more likely to be under-challenged (AOR=0.751 p=0.04). Residents with supplementary years were more likely to be under-challenged P=0.03. High monthly income was correlated with high worn out subtype in our population (P=0.02).

Table 2: The 36-item burnout clinical subtype questionnaire

BSQ-36	Mean	SD	Median	Q1	Q3
Frenetic	5.06	0.86	5.08	4.67	5.83
Involvement	4.87	0.91	4.75	4.5	5.25
Ambition	5.62	1.01	5.75	5.25	6.25
Overload	4.68	1.34	4.87	4.00	5.5
Under-challenged	2.64	1.31	2.41	1.58	3.46
Indifference	2.37	1.22	2.00	1.5	2.94
Boredom	2.86	1.47	2.50	1.56	6.75
Lack of development	2.68	1.50	2.25	1.25	3.75
Wornout	4.01	1.1	4.00	3.30	4.67
Lack of control	4.50	1.28	4.75	3.75	5.50
Lack of acknowledgement	4.54	1.26	4.50	3.75	5.50
Neglect	2.99	1.45	2.75	2.00	4.00

DISCUSSION

Stress is generally an individual's response in the face of experiences that may be construed as threatening or challenging. Burnout is a work-related cluster of symptoms presenting as emotional exhaustion, depersonalization and decreased sense of personal accomplishment[2]. Stress is commonplace among medical students, residents and practicing health care professionals[10]. In this study, we sought to describe perceived stress and burnout experienced by postgraduate students in the University of Nairobi clinical residency programs in terms of the prevalence, clinical subtypes and socio-demographic determinants.

Perceived stress was higher in this study than what has been recorded for the general population, but comparable to other medical training institutions across Africa and the world[8,11-13]. This may be expected as residents battle with finding a balance between work, school and their personal lives. Long working hours including weekends may mean sleep deprivation which could be a contributing factor to high stress levels. Apart from gender, there were no other significant associations between perceived stress and other demographic variables. Various studies have consistently showed women reporting higher levels of stress than men[8,14]. This may be due to the differential roles and burdens with everyday living relating to social status borne by women relative to men.

Our study shows that more than half of the clinical residents are emotionally exhausted by their school and work. This may be related to circumstances surrounding their work such as, work environment as have been shown in other studies in the same setting[15]. University of Nairobi being one of the top universities in Africa might mean the learning and work environment is very competitive and residents exert extra efforts to the point of burnout, to maintain the standards. Contrary to other settings where depersonalization was a major driver of burnout[16,17], this parameter was the least reported in our setting. This may be due to relatively rare instances of reported conflicts between residents, consultants, senior colleagues, members of staff and administrative staffs, which are main sources of depersonalization in other settings[17]. Workload related burnout and too frequent night shifts are frequently reported as causes of depersonalization. Residents in this setting may have developed good coping strategies, though this was not addressed in this study. As found in our study, low monthly income was associated with a decreased sense of personal achievement. This has also been found in other studies[18]. This is true in situations where residents must incur heavy debts to sponsor their residency programs. Though many more residents were sponsored by the Government of Kenya in our setting, residents still needed financial support to meet family and social responsibilities in addition to increasing cost of living in the country.

The frenetic subtype of burnout was most prevalent in this study. This subtype encompass ambition which is the main driver of burnout. These individuals become so ambitious that they get so involved with achieving their goals to the point of neglecting their personal lives. This is true of our population as the job market is competitive and residents must exert themselves to be the best to guarantee better job placement on completion of their studies. Similar findings have been reported in other settings[6,19]. Surgical residents had lower levels of the under-challenged subtype. Surgery is generally engaging, and this might be the reason for low levels. This finding that residents with supplementary years had a high prevalence of the under-challenged subtype which may indicate that these individuals, after exerting so much efforts to succeed to no avail, rolled over to neglect, lack of development and boredom. This becomes dangerous as it increases the risk of failing again after failing once. This is a special group of residents in which strategies must be put in place to assist them reach their life goals.

CONCLUSION

Prevalence of stress and burnout was high among our clinical residents and burnout was largely driven by emotional exhaustion. The most prevalent clinical subtype was the frenetic subtype. Management strategies of stress and burnout should be geared towards helping clinical residents find a balance between work, school and their personal lives. Financial support may be beneficial. We recommend larger multicenter studies in our setting which aim at elucidating more determinants of burnout and coping mechanisms employed by clinical residents of the University of Nairobi.

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Conflict of interest: The authors declare that there is no conflict of interest.

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