Original Article

The Prevalence and Predictors of Burnout Among Resident Doctors in Enugu State, South East Nigeria: A Mixed Method Study

TA Okeke, CW Kassy[1], OH Chime[2], IJ Ogugua[3], EN Shu[4]

Department of Community Medicine, College of Medicine, University of Nigeria, Enugu Campus, [1]Department of Community Medicine, University of Nigeria Teaching Hospital, Ituku/Ozalla, Enugu, [2]Department of Community Medicine, College of Medicine, Enugu State University, [3]Department of Community, Federal Medical Centre, Owerri, [4]Department of Pharmacology and Therapeutics, College of Medicine, University of Nigeria, Enugu Campus, Nigeria

Received: 23-Feb-2024;
Revision: 31-May-2024;
Accepted: 26-Aug-2024;
Published: 30-Sep-2024

ABSTRACT

Background: Burnout in the health care industry is a potential hazard that has reached epidemic proportions mostly among doctors in practice and training. Burnout has enormous consequences on doctors, patients, and health care institutions. **Aim:** This study aimed to determine the prevalence and predictors of burnout among resident doctors in Enugu State, Nigeria. **Methods:** This was a mixed-method study of 420 resident doctors in tertiary hospitals in Enugu State, Nigeria. Data were collected using Oldenburg Burnout Inventory and in-depth interviews of chief resident doctors of selected departments. Data were analyzed using IBM statistical package 23.0 and Nvivo 11. Test of significance was set at 0.05. **Results:** The mean age of participants was 34.11 ± 5.08 years. The prevalence of burnout groups among resident doctors was 84.3% in the burnout group, 4.8% in the disengagement group, 6.9% in the exhaustion group, and 4.0% in the non-burnout group. Gender (OR = 1.861, C.I = 1.079–3.212), duration of training (OR = 1.740, C.I = 1.008–3.005), and working hours (OR = 2.982, C.I = 1.621–5.487) were the predictors of burnout; only working hours (OR = 0.279, C.I = 0.091–0.0862) was the predictor of disengagement; and gender (OR = 0.248, C.I = 0.107–0.579) was the predictor of exhaustion. Heavy workloads, long working hours, migration, poor working environment, job insecurity, poor remuneration, and management style were identified factors of burnout. **Conclusion:** There was high prevalence of burnout among resident doctors, predicted by gender, duration of training, and working hours. Interventions are needed to reduce burnout, prevent the "brain drain", and improve resident doctors' overall well-being.

KEYWORDS: *Burnout, mixed method, Nigeria, Oldenburg burnout inventory, resident doctors*

INTRODUCTION

Burnout was described by Christina Maslach as a triad of emotional exhaustion (EE), depersonalization (DP), and reduced personal accomplishment (PA) due to prolonged exposure to workplace stress.[1] In 2019, the World Health Organization (WHO) classified burnout as an occupational phenomenon and defined it as a syndrome resulting from chronic workplace stress that has not been successfully managed.[2]

Although burnout occurs in all professions, physicians seem to have a higher incidence of burnout,[3] with resident doctors being the most vulnerable.[4] This may be attributed to the long hours spent at work, the large volume of clinical knowledge to acquire, and the challenges of balancing work and home life.[5]

Burnout among both doctors in practice and in training have reached epidemic proportions, with a prevalence of about 50%.[6] In Nigeria, a systematic review showed a prevalence of 23.6% to 51.7% for burnout among physicians in selected regions.[7] A multicenter study,

Access this article online

Quick Response Code:

Website: www.njcponline.com

DOI: 10.4103/njcp.njcp_164_24

Address for correspondence: Prof. TA Okeke, Department of Community Medicine, College of Medicine, University of Nigeria, Enugu Campus, Nigeria. E-mail: thdokeke@yahoo.co.uk

How to cite this article: Okeke TA, Kassy CW, Chime OH, Ogugua IJ, Shu EN. The prevalence and predictors of burnout among resident doctors in Enugu State, South East Nigeria: A mixed method study. Niger J Clin Pract 2024;27:1102-11.

among doctors, showed a high burnout prevalence rate of 75.5%,[8] while a total population study carried out among resident doctors found an overall burnout prevalence of 41.7%.[9]

The healthcare industry has recognized burnout as a potential hazard in the workplace. Burnout can result from various factors, such as physician personality traits and the culture of hospitals.[10] Burnout among healthcare workers is associated with their work environment, interpersonal and professional conflicts, emotional distress, and lack of social support.[11] Also implicated are prolonged working hours, numerous work shifts and sleep deprivation, the need to cope with suffering and death, and the fear of making mistakes.[6]

Burnout has enormous consequences on doctors, patients, and health institutions.[7] Residents who experience burnout are more likely to make medical errors, which will lead to reduced quality of patient safety and care.[12] Evidence shows that doctors are more likely to abuse substances, become offensive or violent at work, and suffer from mental health problems like depression, anxiety, and thoughts of suicide ideation.[10] For the healthcare sector, there is poor performance, low productivity, absenteeism, high employee turnover, and low morale.[13]

Shortage of physicians is already a problem in most countries globally, and if burnout persists, the risk of physicians quitting their jobs will rise.[10] Consequently, healthcare providers who remain have greater responsibility for patient care and are at high risk for burnout.[11]

The healthcare facilities in Nigeria have witnessed a mass exodus of healthcare workers, including resident doctors, due to the economic crisis in the country. Furthermore, there is a dearth of literature on burnout among doctors in residency training, especially those in Enugu, Southeast Nigeria, indicating a need for more research to fill the gap.

Considering the adverse effects of burnout on doctors, patients, and the healthcare system, it is imperative to determine the prevalence and predictors of burnout, among resident doctors, with a view to providing vital information that may be beneficial in developing policies and interventions that will help reduce burnout, prevent the "brain drain" of healthcare workers, and improve resident doctors' overall well-being.

Methodology

Study area

The study was conducted at the University of Nigeria, Teaching Hospital (UNTH) Ituku – Ozalla, and Enugu State University Teaching Hospital (ESUTH), Enugu State, South East of Nigeria. They are the only two tertiary health facilities that offer residency training programs in clinical specialties. The hospitals are located in Nkanu West and Enugu North local government areas (LGAs), respectively, among the 17 LGAs in Enugu State.[14]

Study design

This was a mixed-method, cross-sectional analytical study design, incorporating both quantitative and qualitative components.

Study population

The quantitative aspect comprised resident doctors receiving training in different clinical specialties at the time of the study. Those who have stayed for at least 6 months and gave informed consent were included, while those who were too ill to participate and those on outside postings were excluded.

Quantitative sampling and data collection

The minimum sample size was determined using the formula for a single proportion[15] and a prevalence of 41.7% in previous studies.[9] A total of 420 was obtained after correcting for 10% nonresponse rate.

Sample frames of 391 residents at UNTH and 195 at ESUTH, giving a total of 586 residents, were, respectively, obtained from the Association of Resident Doctors (ARD) of the hospitals. A proportionate allocation in a ratio of 2:1 was used to obtain a sample of 280 and 140 resident doctors in UNTH and ESUTH, respectively. Thereafter, a simple random sampling by the balloting method was used to select eight departments (obstetrics and gynecology, surgery, internal medicine, pediatrics, radiology, community medicine, family medicine, and anesthesia) from the 13 departments in the hospitals. Last, using proportionate allocation, the number of resident doctors to be studied was obtained for the departments in each of the hospital.

Data were collected from August to October 2023 using a validated, semistructured, self-administered questionnaire, which was pretested in one of the tertiary hospitals, not used for the study. The observed shortcomings in relevance and scope of questions were corrected before final administration of the questionnaires to the respondents. Data were collected with the aid of five research assistants, three for UNTH and two for ESUTH. They were trained for 2 days on objectives of the study, questionnaire administration, good communication, and follow-up skills for completeness and ethical issues that were involved in the research. The questionnaire comprised two sections: Section A contained information on sociodemographic and work-related characteristics, while Section B was on burnout and designed using the

Oldenburg Burnout Inventory (OLBI).[16] This is a 16-item questionnaire containing eight items each for exhaustion and disengagement domains, arranged in mixed patterns. Within each domain, four questions are positively worded and the other four are negatively worded to ensure psychometric balancing. Items 2, 4, 5, 8, 10, 12, 14, and 16 explore exhaustion dimension, reflecting feelings of emotional and physical exhaustion, while the remaining eight items, 1, 3, 6, 7, 9, 11, 13, and 15, measure the disengagement dimension, capturing cognitive and affective withdrawal from work-related activities. The responses were presented in a four-point Likert scale of strongly agree, agree, disagree, and strongly disagree. The negatively worded questions are designated as E.R or D.R, indicating reverse coding of the responses to that question. Potential scores on each subscale range from 8 to 32 with the total potential OLBI score ranging from 16 to 64. The overall mean score for each domain was calculated by the sum of all responses divided by 8. Higher scores indicate higher levels of burnout. The OLBI further categorized burnouts into four groups: (a) Burnout group: High exhaustion and high disengagement (mean score of ≥2.25 in the exhaustion domain and ≥2.1 in the disengagement domain); (b) Exhausted group: high exhaustion and low disengagement (mean score of ≥2.25 in the exhaustion domain and <2.1 in the disengagement domain); (c) Disengaged group: high disengagement and low exhaustion (mean score of <2.25 in the exhaustion domain and ≥2.1 in the disengagement domain); (d) Nonburnout group: low disengagement and low exhaustion (mean score of <2.25 in the exhaustion domain and <2.1 in the disengagement domain). To ensure internal consistency, the OLDI, was subjected to Cronbach's alpha with a satisfactory internal reliability score of 0.74.

Qualitative sampling and data collection

The sample size was not predetermined because the principle of data saturation to reach a proper sample size was used, that is, when no new information can be collected by conducting further interviews. A key informant interview (KII) was conducted face-to-face at locations convenient for the participants using an interview guide. The KII explored the respondents' perception on burnout and burnout experiences on colleagues. It covered the thematic areas which included the objectives of the study and also probed factors contributing to resident doctors' burnout. A total of 10 chief resident doctors of the clinical departments, selected for the study, were interviewed, and the average duration of an interview was approximately 50 minutes. Two research assistants, an interviewer and a note-taker, conducted the interviews. The interviewer has a master's degree in medical sociology, and the note-taker is a graduate of library science and English. The research assistants were therefore skilled and were trained on the interview guide for a day for 2 hours.

Data analysis

Data were cleaned, entered, and analyzed using IBM Statistical Packages for the Social Sciences software (SPSS) version 25. Categorical variables were summarized using frequency tables, proportions, and pie charts, while continuous variables were summarized using mean, standard deviation, and medium. Chi square was used to test for association between variables, and logistic regression was used to determine the predictors of the outcome variables of burnout, disengagement, and exhaustion. An acceptable level of statistical significance was determined by a P value of <0.05.

For the qualitative component analysis, interviews were transcribed verbatim ensuring accuracy. Transcribed interviews were imported into NVivo 11 software for analysis, assigning each interview to a separate code using respondents' own words as codes to preserve perspectives. Thematic analysis, identifying main themes and subthemes that emerged from the coded data, was done. The codes were organized to reflect relationships between themes and subthemes, and sociodemographic attributes of the respondents were assigned to the coded data.

Ethical consideration

Ethical approval was obtained from the Health Research Ethics Committee (HREC) of the University of Nigeria Teaching Hospital Ituku/Ozalla, Enugu. This was provided on 28/07/23 with reference number NHREC/05/01/2008B-FWA00002458-1RR00002323. A written informed consent was obtained from the participants.

Results

The mean age of participants was 34.11 ± 5.08 with an age range of 23 to 53 years. More than half, 59%, were males, and 62% were married. Most, 68.1%, were registrars (junior residents), and 22.9%, 16.7%, 15.0%, and 11.4% of the residents were in surgery, obstetrics, internal medicine, and pediatrics specialties, respectively. Over half, 59.8%, have spent more than 4 years in training, while about half, 52.4%, worked 8 hours or less per day; 29% and 23.1% of residents do 2 or 3 calls per week. See Table 1.

The mean overall burnout, disengagement, and exhaustion scores among participants were 2.58 ± 0.34, 2.46 ± 0.34, and 2.70 ± 0.42, respectively. The prevalence of burnout among resident doctors was 84.3% in the burnout group, 4.8% in the disengagement group, 6.9% in the exhaustion group (6.9%), and 4.0% in the nonburnout group (4.0%). See Table 2 and Figure 1.

Table 1: Sociodemographic and work-related characteristics of resident doctors in Enugu State

Variables	Frequency	Percentage
Age (years)		
21–25	8	1.9
26–30	121	28.8
31–35	138	32.9
36–40	115	27.4
41–45	27	6.4
46–50	9	2.1
51–55	2	0.5
Mean±std deviation	34.11±5.08	
Gender		
Male	248	59.0
Female	172	41.0
Marital status		
Single	154	36.7
Married	261	62.1
Divorced/separated	5	1.2
Designation		
Registrar	286	68.1
Senior registrar	134	31.9
Specialty		
Surgery	96	22.9
O&G	70	16.7
Internal medicine	63	15.0
Paediatrics	48	11.4
Community medicine	42	10.0
Anaesthesia	39	9.3
Family medicine	33	7.9
Radiology	29	6.9
Duration of training		
≤4 years	169	40.2
>4 years	251	59.8
Median	5.00	
Average working hours		
≤8 h	220	52.4
>8 h	200	47.6
Mean±std deviation	9.44±3.04	
Call duties per week		
0	16	3.8
1	105	25.0
2	122	29.0
3	97	23.1
≥3	80	19.0
Median	2.00	

Among the sociodemographic and work-related factors, gender (P = 0.009), duration of training (P = 0.010), and working hours (P = <0.001) were significantly associated with overall burnout. Gender was found to be significantly associated with exhaustion (P < 0.0001), while working hours was significantly associated with disengagement (P = 0.012). See Table 3.

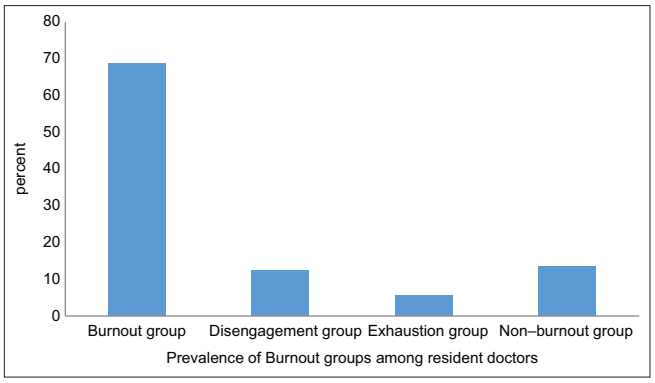

Figure 1: Prevalence of burnout groups among resident doctors

Gender (AOR = 1.861, P = 0.026, C.I = 1.079–3.212), duration of training (AOR = 1.740, P = 0.047, C.I = 1.008–3.005), and working hours (AOR = 2.982, P < 0.0001, C.I = 1.621–5.487) were the determinants of burnout. Working hours (AOR = 0.279, P = 0.026, C.I = 0.091–0.0862) was the only determinant of disengagement, and gender (AOR = 0.248, P = 0.001, C.I = 0.107–0.579) the only determinant of exhaustion. See Table 4.

Qualitative findings

A total of ten resident doctors, four females and six males, were interviewed from the selected departments of Anastasiology, Community medicine, family medicine, Obstetrics and Gynaecology, Radiology, Surgery, Internal medicine, and Paediatrics. The respondents were purposively selected based on their capacities as Chief residents in their various departments. The findings were on the key thematic areas explored for burnout among resident doctors and include three themes: perception of burnout among resident doctors, factors contributing to burnout among resident doctors, and burnout and patient care. Subthemes include recognizing burnout, workload, working hours, doctor - patient ratio, work - environment, work - life balance, job security, remuneration and management style [Table 5 and 6].

Perception of burnout among resident doctors

The participants reported feeling tired, frustrated, or exhausted most days due to their work responsibilities and poor working environment.

> *"I get burned out every day, almost on a daily basis. Just like yesterday for instance, we had to do rounds then I had to come back to attend to the files (people going on leave, House officers' problem) and as of 5:00 pm yesterday we were having our own departmental seminar and by then I knew I was tired as I was literally sleeping throughout. By the time I got home, I couldn't even play with my children. I just*

Table 2: Assessment of burnout among resident doctors

S/no	Burnout variables	Strongly agree	Agree	Disagree	Strongly disagree	Mean±std dev.
	Disengagement Domain					
1	I always find new and interesting aspects in my work	76 (18.1)	278 (66.2)	53 (12.6)	13 (3.1)	2.01±0.66
3	It happens more and more often that I talk about my work in a negative way (D.R)	46 (11.0)	187 (44.5)	142 (33.8)	45 (10.7)	2.44±0.83
6	Lately, I tend to think less at work and do my job almost mechanically (D.R)	23 (5.5)	163 (38.8)	193 (46.0)	41 (9.8)	2.60±0.74
7	Find my work to be a positive challenge	54 (12.9)	268 (63.8)	87 (20.7)	11 (2.6)	2.13±0.65
9	Over time, one can become disconnected from this type of work (D.R)	22 (5.2)	136 (32.4)	206 (49.0)	56 (13.3)	2.70±0.76
11	Sometimes I feel sickened by my work tasks (D.R)	25 (6.0)	142 (33.8)	205 (48.8)	48 (11.4)	2.66±0.76
13	This is the only type of work that I can imagine myself doing	35 (8.3)	104 (24.8)	185 (44.0)	96 (22.9)	2.81±0.88
15	I feel more and more engaged in my work	45 (10.7)	227 (54.0)	119 (28.3)	29 (6.9)	2.31±0.75
	Exhaustion Domain					
2	There are days when I feel tired before I arrive at work (E.R)	15 (3.6)	51 (12.1)	240 (57.1)	114 (27.1)	3.08±0.73
4	After work, I tend to need more time than in the past in order to relax and feel better (E.R)	16 (3.8)	82 (19.5)	228 (54.3)	94 (22.4)	2.95±0.76
5	I can tolerate the pressure of my work very well	37 (8.8)	243 (57.9)	121 (28.8)	19 (4.5)	2.29±0.47
8	During my work, I often feel emotionally drained (E.R)	28 (6.7)	163 (38.8)	172 (41.0)	57 (13.6)	2.61±0.80
10	After working, I have enough energy for my leisure activities	22 (5.2)	114 (27.1)	211 (50.2)	73 (17.4)	2.80±0.78
12	After my work, I usually feel worn out and weary (E.R)	22 (5.2)	129 (30.7)	196 (46.7)	73 (17.4)	2.76±0.80
14	Usually, I can manage the amount of my work well	35 (8.3)	233 (55.5)	119 (28.3)	33 (7.9)	2.36±0.75
16	When I work, I usually feel energized	23 (5.5)	119 (28.3)	203 (48.3)	75 (17.9)	2.79±0.80

had to go straight to bed. I had to wake up around 2-3 am to have my dinner." [internal Medicine_female]

Factors that contribute to burnout among resident doctors

According to a resident, the workload exceeds the recommended weekly workforce hours.

"Most of the time, I feel tired because the job is demanding, it's risky. You are required to put in long working hours with few hands. In this institution, residents' work more than they should, more than the recommended number of hours they should put in per week…attending to more than the recommended number of patients that they should see in a day." [Surgery_Male]

Furthermore, they reported being burned out almost daily while combining their responsibilities at work, which involves putting in long and irregular hours (extension of regular work hours) with preparing for their professional examinations:

"For me, burnout occurs when you are preparing for examination, and at the same time, you also have to put in more than the recommended work hours. While combining both, you have to work late into the night, especially on your theatre days or during calls, and read for some hours before going to bed. So, most residents have burnouts during those periods." [Obstetrics and gynaecology_Male]

The respondents reported that when resident doctors migrate to other countries, which are now daily occurrences, they are not readily replaced, which leads to a doctor-to-patient ratio higher than the recommended ratio of 1:600.

"One of factors is the current brain drain. Daily people exit the system, without their being replaced, the work load gets more than the number of people that are meant to do the work..." [Paediatrics_Male]
"Everybody is "japa-ing" (leaving the country). The workload is now heavy for the very few on the ground. So it gives them much stress and burns them out." [Obstetrics and gynaecology_Male]

Additional concern over poor work environment was raised:

"… Now it is not just about the work, the environment also - poorly maintained environment, poorly furnished office, no fan, air conditioner in this hot environment. By the end of work, you are just exhausted." [Family Medicine_Male]
"… Even after seeing patients at the clinics, there

Table 3: Association between sociodemographic/work-related factors and burnout among resident doctors

Variables	Burnout		Disengagement		Exhaustion	
	No	Yes	No	Yes	No	Yes
Age						
≤30	14 (32.2)	115 (32.5)	124 (31.0)	5 (25.0)	122 (31.2)	7 (24.1)
>30	177 (67.8)	239 (71.3)	276 (69.0)	15 (75.0)	269 (68.8)	22 (75.9)
	χ=3.322, *P*=0.081		χ=0.322, *P*=0.631		χ=0.633, *P*=0.534	
Gender						
Male	29 (43.9)	219 (61.9)	236 (59.0)	12 (60.0)	240 (61.4)	8 (27.6)
Female	37 (56.1)	135 (38.1)	164 (41.0)	8 (40.0)	151 (38.6)	21 (72.4)
	χ=7.392, *P*=0.009*		χ=0.008, *P*=1.000		χ=12.751, *P*<0.0001*	
Marital status						
Single	20 (30.3)	134 (37.9)	147 (36.8)	7 (35.0)	146 (37.3)	8 (27.6)
Married	46 (69.7)	220 (62.1)	253 (63.2)	13 (85.0)	245 (62.7)	21 (72.4)
	χ=1.366, *P*=0.0268*		χ=0.025, *P*=1.000		χ=1.106, *P*=0.325	
Designation						
Registrar	47 (71.2)	239 (67.5)	269 (67.2)	17 (85.0)	266 (68.0)	20 (69.0)
Senior registrar	19 (28.8)	115 (32.5)	131 (32.8)	3 (15.0)	125 (32.0)	9 (31.0)
	χ=0.350, *P*=0.570		*P*=0.139		χ=0.011, *P*=1.000	
Specialty						
O&G	6 (8.6)	64 (91.4)	68 (97.1)	2 (2.9)	67 (95.7)	3 (4.3)
Surgery	11 (11.5)	85 (88.5)	94 (97.9)	2 (2.1)	88 (91.7)	8 (8.3)
Internal medicine	12 (19.0)	51 (81.0)	57 (90.5)	6 (9.5)	61 (96.8)	2 (3.2)
Paediatrics	7 (14.6)	41 (85.4)	46 (95.8)	2 (4.2)	44 (91.7)	4 (8.3)
Radiology	8 (27.6)	21 (72.4)	25 (86.2)	4 (13.8)	26 (89.7)	3 (10.3)
Community medicine	10 (23.8)	32 (76.2)	39 (92.9)	3 (7.1)	39 (92.9)	3 (7.1)
Family medicine	6 (18.2)	27 (81.8)	32 (97.0)	1 (3.0)	31 (93.9)	2 (6.1)
Anaesthesia	6 (15.4)	33 (84.6)	39 (100.0)	0 (0.0)	35 (89.7)	4 (10.3)
	χ=9.903, *P*=0.193		*P*=0.068		*P*=0.745	
Duration of training						
≤4 years	36 (54.5)	133 (37.6)	157 (39.2)	12 (60.0)	153 (39.1)	16 (55.2)
>4 years	30 (45.5)	221 (62.4)	243 (60.8)	8 (40.0)	238 (60.9)	13 (44.8)
	χ=6.666, *P*=0.010*		χ=3.410, *P*=0.100		χ=2.889, *P*=0.116	
Working hours per day						
≤8	50 (75.8)	170 (48.0)	204 (51.0)	16 (80.0)	202 (51.7)	18 (62.1)
>8	16 (24.2)	184 (52.0)	196 (49.0)	4 (60.0)	189 (48.3)	11 (37.9)
	χ=17.155, *P*<0.0001*		χ=6.422, *P*=0.012*		χ=1.172, *P*=0.337	
Call duty per week						
≤2	42 (63.6)	201 (56.8)	230 (57.5)	13 (65.0)	227 (58.1)	16 (55.2)
>2	24 (36.4)	153 (43.2)	170 (42.5)	7 (35.0)	164 (41.9)	13 (44.8)
	χ=1.073, *P*=0.343		χ=0.439, *P*=0.644		χ=0.092, *P*=0.846	

*Significant

no water available to wash your hands. Absence of these amenities can even burn you out, yet you don't have them readily available." [Radiology_Male]

"The issue here that is most prominent is the inability of the system to provide the basic things you need to work, which is a significant factor.….it sort of frustrates and makes you not to carry out your duty efficiently." [Internal Medicine_Female]

Work – life balance was also stated by some resident doctors, as contributing to burnout.

"Most of us don't have a life outside here. In some instances, you don't get involved in some family issues or social events, and things that you are expected to meet up like the social demands, and you can't meet up…" [Obstetrics and gynaecology_male]

Job insecurity was also mentioned as a factor that contributes to burnout.

"Those of us that have actually concluded our residency training and passed the final examinations have not been absorbed by the system as hospital

Table 4: Predictors of burnout, disengagement, and exhaustion among resident's doctors

Variables	Burnout Odds ratio (Exp *B*)	Lower C.I	Upper C.I	Significance
Gender				
Male	1.861	1.079	3.212	0.026*
Female	1			
Marital status				
Single	1			
Married	0.714	0.405	1.259	0.244
Duration of training				
≤4 years	1			
>4 years	1.740	1.008	3.005	0.047*
Working hrs/day				
≤8 hours	1			
>8 hours	2.982	1.621	5.487	*P*<0.001*
	Disengagement			
Gender				
Male	1.219	0.480	3.092	0.677
Female	1			
Duration of training				
≤4 years	1			
>4 years	0.496	0.091	1.256	0.139
Working hrs/day				
≤8 hours	1			
>8 hours	0.279	0.091	0.862	0.026*
	Exhaustion			
Gender				
Male	0.248	0.107	0.579	0.001*
Female	1			
Duration of training				
≤4 years	1			
>4 years	0.554	0.254	1.207	0.554
Working hrs/day				
≤8 hours	1			
>8 hours	0.822	0.369	1.830	0.631

*Significant

Table 5: Sociodemographic characteristics of KII participants

Variable	Frequency (*n*=10)	Percentage
Gender		
Male	6	60
Female	4	40
Duration of stay (years)		
Minimum	3	
Maximum	10	
Mean±SD	6.8±0.24	
Departments		
Anasthesiology	1	10
Community Medicine	1	10
Internal Medicine	1	10
Family medicine	1	10
Obstetrics and Gynaecology	2	20
Radiology	1	10
General Surgery	2	20
Paediatrics	1	10

consultants and you are not sure if that will happen. It makes you feel sad doing the job as a Senior Registrar. You just do the job because you don't have an option. While coming to work, that eagerness and joy is not there…" [Obstetrics and gynaecology_Male]

Furthermore, poor remuneration, was stated as a contributing factor to burnout.

"Considering how bad the economy is, the purchasing power is low. Definitely, responsibilities are more. Because you'll not be able to meet up with family demands, so that puts an emotional demand on you and before you know it, it begins to affect your work, it begins to affect your output. And it contributes to your fatigue. So the person tends to have burnout faster." [Surgery_Male]

Finally, management style was reported as a critical factor contributing to burnout.

Table 6: Themes and subthemes of qualitative interview guidelines

Themes	Sub – themes
Perception of burnout among resident doctors	Recognizing burnout
Factors contributing to burnout among resident doctors	workload
	working hours
	Doctor - patient ratio
	work environment
	work - life balance
	Job security
	Remuneration
	Management style
Burnout and patient care	Quality of patient care

"The kind of policies management makes, delays and embargos on employment to replace doctors, also contribute to burnout." [Obstetrics and gynaecology_ Male]

Burnout and patient care

The quality of care provided by resident doctors is poor when they have burnout and in some instances, the patients are not attended to properly.

"When you see residents with burnout, you see them acting in ways alien to them; they lash out a bit more, even to patients and make mistakes while treating patients and doing their documentation. There are errors and those sometimes affect the outcome." [Surgery_Male]

"You attend to your patients very fast; we do not give the patients the time they need; we cannot attend to them properly as we need to move ahead to do other things." [Obstetrics and Gynaecology_Male]

Discussion

The overall prevalence of burnout among the resident doctors in this study is alarming, with 84.3% reporting symptoms of burnout. This rate is higher than the 12.5% and 58.2% reported among Canadian resident doctors in two studies.[17,18] The difference observed may be attributed to the methodology used in the determining those with burnout, whereby all three dimensions of the Maslach burnout inventory were used, which is different from the Oldenburg tool used in the current study using two dimensions, which has the probability of increasing false positives.[18] However, this burnout rate of 84.3% is similar to 81% reported among resident physicians in Saudi Arabia but much higher than 51.0% reported in a meta-analysis of 22,778 residents from North and South America, Europe, Asia, Australia, and Africa.[12,19] In Nigeria, burnout has been reported in 2.3% and 41.7% of resident doctors in Ilorin and Benin.[9,20] In a systematic review among Nigerian doctors, the prevalence of burnout was between 23.6% and 51.7% with resident doctors having a higher burden.[7]

The present study further outlined the characteristics of burnout that are more common among resident doctors; 4.8% reported disengagement, and 6.9% were classified into the exhaustion group. These findings highlight the multifaceted nature of burnout and its differential impact on resident doctors within the healthcare workforce. In another study among Nigerian physicians across multiple centers using the Oldenburg burnout inventory, 5% were reportedly disengaged and 13.1% in the exhausted group.[8] The 6.4% prevalence of nonburnout reported by Nwosu *et al*.[21] is similar to the 4.0% in the present study. However, the slight difference here could be attributed to the study population which comprised all caders of physicians, not only resident physicians.

The implications of burnout extend beyond physician well-being to encompass patient care outcomes and their effect on the physician–patient dynamic and the quality of healthcare provided.[22,23] Research suggests that burned-out physicians are more prone to medical errors, reduced empathy toward patients, and diminished professionalism.[22,23] Findings from the qualitative data corroborate these adverse effects as the resident doctors attend to patients very quickly without giving them the necessary time. Sometimes, they reschedule the patients after they had spent long hours waiting to be seen because they are too tired to continue with the consultations.

Being male, having been in training for more years and working longer hours predicted burnout in this study. Generally, males due to societal expectations or personal views about expressing emotions internalize their stress, unlike the females who are known to seek support and express their emotions. This act tends to exacerbate burnout in the males. This finding is contrary to the Medscape National Physician Report and other studies, with male physicians reporting lower burnout rates than female physicians.[21,24] They attributed this to additional pressure on female doctors as they try to balance family and domestic duties with their work obligations unlike their male counterparts, who face fewer societal expectations to balance work and family roles, allowing them more time to rest and recover from work-related stress.[25] While some studies corroborated this finding, others suggest that gender has no effect on burnout.[17,18,20,26]

The accumulation of stress and exhaustion over a protracted period might raise the risk of burnout among

physicians in more extended training programs. The longer training periods expose doctors to prolonged stressors, such as long work hours, resilient training environments, and heavy patient loads.[27] Similar studies have corroborated this finding.[20,26] This qualitative finding substantiates this finding by pointing out that working in an unconducive environment and putting in years of training without being sure of job security can lead to burnout. In such cases, the doctor does his duty feeling compelled without eagerness and fulfilment.

This study's findings reveal that residents who worked more hours were less likely to feel disengaged than their counterparts who put in fewer hours. This could be attributed to the fact that these physicians have additional possibilities for skill development and mastery, having spent longer hours on the job. This is similar to findings from comparative research among internal medicine residents, where no reduction in job burnout was demonstrated after limited work-hours restriction was enforced.[28] The longer clinical experience duration will enable residents to hone their skills in diagnosis and treatment, gain confidence, and establish a sense of proficiency.[29] Consequently, they become more adept at providing patient care, gain control over their work schedules, and will likely become more engaged. Additionally, working longer hours caring for patients may give them a better sense of purpose and involvement. The Job Demands-Resources model states that people are less prone to experience burnout and disengagement when they believe their work is essential and consistent with their professional identity.[30] Contrary findings were made in Canada and USA, where resident physicians who worked more than 80 hours per week were more likely to experience exhaustion and disengagement than those who worked fewer hours.[6,17,24] They opined that if excessive work hours are not matched with sufficient rest and personal care, they might lead to burnout and a decline in health. Similarly, Salihu *et al*.[20] reported that resident physicians who worked for more than 50 hours per week were at the center of the burnout epidemic, having about three times the chance of reporting burnout than those with fewer hours.

Furthermore, although being married was a significant factor in burnout at the bivariate level, it was not a predictor of burnout. Married doctors tend to have little time for personal and social activities, which are important for reducing burnout.[31] Findings from some studies corroborate this positive association between burnout and being a married physician.[31] Finding a balance between family responsibilities and professional obligations may prove difficult for resident physicians, who are already burdened with rigid work hours.[18] In contrast, others found no association between marital status and burnout.[20,26] However, being single increased the odds of burnout in other studies as social support, such as spousal support, has been shown to mitigate the effects of unfavorable life circumstances.[19,26]

Based on qualitative findings, heavy patient workload due to the emigration of doctors has been a significant factor in this study's burnout. The negative impact this has on the mental health of health professionals has been reported in Nigeria and other parts of the world.[26,32] Another contributory factor raised is the limited access to equipment and technology to aid diagnosis and treatment. The deficiency of resources leading to an inability to fulfil professional standards has been reported as a possible factor undermining residents' self-esteem and triggering burnout.[31]

Working in an unconducive environment lacking basic amenities was reported as affecting the concentration and productivity of residents, resulting in emotions of weariness and burnout. According to Bakker *et al*.,[33] job burnout develops when specific job demands and resources are unmet, irrespective of the type of job. This reflects systemic issues that can impede the delivery of quality patient care.

Limitations

The cross-sectional design of the study may have limited its predictive power. Also, being a cross-sectional study, recall bias is anticipated. The research relied on resident physicians' self-reported data, where some participants might have responded in socially desirable ways, leading to possible underreporting or over-reporting of burnout.

Conclusion

The findings of the study showed a high prevalence of burnout among resident doctors in Enugu. Gender, training duration, and working hours were the predictors of burnout. However, working hours were the predictor of disengagement, and gender predictor of exhaustion. The high burnout rate among resident doctors highlights the critical need for all-encompassing interventions at personal and systemic dimensions, which must adopt a multifaceted approach, promoting gender equality and improving the well-being of all healthcare professionals. Burnout is a public health crisis with catastrophic consequences, which must be prevented in the workplace.

Institution and ethics approval and informed consent

Ethical clearance was obtained from the the Health Research and Ethics Committee of University of Nigeria

Teaching Hospital (UNTH), Enugu. A written informed consent was obtained from the participants.

Acknowledgement

The authors acknowledge the resident doctors who agreed to participate in this research.

Financial support and sponsorship

Nil.

Conflicts of interest

There are no conflicts of interest.

References

1. Maslach C, Jackson SE, Leiter MP. Malasch burnout inventory. In: Evaluating Stress: A Book of Resources. 3rd ed. Vol. 1. Scarecrow Education; 1997. p. 191–218.
2. World Health Organization (WHO). Burn-out an "occupational phenomenon": International Classification of Diseases. Available from: https://www.who.int/news/item/28-05-2019-burn-out-an-occupational-phenomenon-international-classification-of-diseases. [Last accessed on 2023 Jun 24].
3. De Hert S. Burnout in healthcare workers : Prevalence, impact and preventative strategies. Local Reg Anesth 2020;13:171-83.
4. Shanafelt TD, Bradley KA, Wipf JE, Back AL. Burnout and self-reported patient care in an internal medicine residency program. Ann Intern Med 2002;136:358–67.
5. Thomas NK. Resident burnout. JAMA 2004;292:2880-9.
6. Shanafelt TD, Boone S, Tan L, Dyrbye LN, Sotile W, Satele D, *et al*. Burnout and satisfaction with work-life balance among US physicians relative to the general US population. Arch Intern Med 2012;172:1377–85.
7. Ogunsuji OO, Adebayo O, Olaopa O, Efuntoye O, Agbogidi JM, Kanmodi K, *et al*. Burnout among Nigerian doctors: A systematic review. Niger Med Pract 2019;76:24–9.
8. Nwosu ADG, Ossai EN, Mba UC, Anikwe I, Ewah R, Obande BO, *et al*. Physician burnout in Nigeria: A multicentre, cross-sectional study. BMC Health Serv Res 2020;20:863.
9. Ogboghodo E, Edema O. Assessment of burnout amongst resident doctors in Benin City, Edo State, Nigeria. Niger Postgrad Med J 2020;27:215-23.
10. Azam K, Khan A, Alam MT. Causes and adverse impact of physician burnout: A systematic review. J Coll Physicians Surg Pakistan 2017;27:495–501.
11. Dubale BW, Friedman LE, Chemali Z, Denninger JW, Mehta DH, Alem A, *et al*. Systematic review of burnout among healthcare providers in sub-Saharan Africa. BMC Public Health 2019;19:1247.
12. Low ZX, Yeo KA, Sharma VK, Leung GK, McIntyre RS, Guerrero A, *et al*. Prevalence of burnout in medical and surgical residents: A meta-analysis. Int J Environ Res Public Health 2019;16:1479.
13. Lo D, Wu F, Chan M, Chu R, Li D. A systematic review of burnout among doctors in China: A cultural perspective. Asia Pac Fam Med 2018;17:1–13.
14. Enugu State Ministry of Information. About Enugu State—Enugu State Government Available from: https://www.enugustate.gov.ng/index.php/elements-devices/. [Last accessed on 2024 Jan 23].
15. Kirkwood BR, Sterne JAC, editors. Calculation of required sampling size. In: Essential Medical Statistics. 2nd ed. Malden, MA: Blackwell; 2003. p. 413-28.
16. Demerouti E, Bakker A. The Oldenburg burnout inventory: A good alternative to measure burnout and engagement. In J. Halbesleben (Ed), Stress and burnout in health care. Hauppauge, NY: Nova Science Publishers; 2008. p. 65-78.
17. Shalaby R, Oluwasina F, Eboreime E, El Gindi H, Agyapong B, Hrabok M, *et al*. Burnout among residents: Prevalence and predictors of depersonalization, emotional exhaustion and professional unfulfillment among resident doctors in Canada. Int J Environ Res Public Health 2023;20:3677.
18. Legassie J, Zibrowski E, Goldszmidt M. Measuring resident well-being: Impostorism and burnout syndrome in residency. J Gen Intern Med 2008;23:1090-4.
19. Hameed TK, Masuadi E, Al Asmary NA, Al-Anzi FG, Al Dubayee MS. A study of resident duty hours and burnout in a sample of Saudi residents. BMC Med Educ 2018;18:180.
20. Salihu MO, Makanjuola AB, Abiodun OA, Kuranga AT. Predictors of burnout among resident doctors in a Nigerian teaching hospital. S Afr J Psychiatr 2023;29:2017.
21. Nwosu ADG, Ossai E, Onwuasoigwe O, Ezeigweneme M, Okpamen J. Burnout and presenteeism among healthcare workers in Nigeria: Implications for patient care, occupational health and workforce productivity. J Public Health Res 2021;10:1900.
22. Panagioti M, Geraghty K, Johnson J, Zhou A, Panagopoulou E, Chew-Graham C, *et al*. Association between physician burnout and patient safety, professionalism, and patient satisfaction: A systematic review and meta-analysis. JAMA Intern Med 2018;178:1317-31.
23. Romani M, Ashkar K. Burnout among physicians. Libyan J Med 2014;9:23556.
24. Shanafelt TD. Enhancing meaning in work: A prescription for preventing physician burnout and promoting patient-centered care. JAMA 2009;302:1338-40.
25. Boulis AK, Jacobs JA. The Changing Face of Medicine: Women Doctors and the Evolution of Health Care in America. 1st ed. Cornell University ILR Press; 2018.
26. Ogundipe OA, Olagunju AT, Lasebikan VO, Coker AO. Burnout among doctors in residency training in a tertiary hospital. Asian J Psychiatr 2014;10:27-32.
27. West CP, Dyrbye LN, Shanafelt TD. Physician burnout: Contributors, consequences and solutions. J Intern Med 2018;283:516-29.
28. Ripp JA, Bellini L, Fallar R, Bazari H, Katz JT, Korenstein D. The impact of duty hours restrictions on job burnout in internal medicine residents: A three-institution comparison study. Acad Med 2015;90:494-9.
29. Shanafelt TD, Hasan O, Dyrbye LN, Sinsky C, Satele D, Sloan J, *et al*. Changes in burnout and satisfaction with work-life balance in physicians and the general US working population between 2011 and 2014. Mayo Clin Proc 2015;90:1600-13. Erratum in: Mayo Clin Proc 2016;91:276.
30. Maslach C, Leiter MP. The truth about burnout: How organizations cause personal stress and what to do about it. 1st ed. San Francisco, CA: Jossey-Bass; 1997.
31. Dyrbye LN, West CP, Satele D, Sloan JA, Shanafelt TD. Work/Home conflict and burnout among academic internal medicine physicians. Arch Intern Med 2011;171:1207-9.
32. Dyrbye LN, West CP, Sinsky CA, Goeders LE, Satele DV, Shanafelt TD. Medical licensure questions and physician reluctance to seek care for mental health conditions. Mayo Clin Proc 2017;92:1486-93.
33. Bakker AB, Demerouti E, Euwema MC. Job resources buffer the impact of job demands on burnout. J Occup Health Psychol 2005;10:170-80.