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Bridging the policy gap: burnout among resident doctors and the urgent need for structured call hour regulations

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Abstract

Burnout among resident doctors is a critical global concern, yet Nigeria lacks structured call-hour regulations. This study assessed the prevalence of burnout, its association with duty-hour practices, and explored contextual factors influencing residents' well-being. A concurrent mixed-methods study was conducted among 300 residents in Kano tertiary hospitals, which included a self-administered survey on work-hour practices and the Maslach burnout inventory, and was analyzed using descriptive statistics and Chi-square tests using the Statistical Package for Social Sciences (SPSS) version 27; Focus Group Discussions (FGDs) and Key-Informant Interviews (KIIs) explored contextual factors. The mean age of participants was 32.50 (Standard Deviation, SD=4.85). Emotional exhaustion was reported by 89.3% of participants, depersonalisation by 48.3%, and low personal accomplishment by 47.7%. The overall prevalence of burnout was 63.7%. Burnout was directly proportional to call duration ($p<0.001$) and inversely related to post-call rest hours ($p<0.001$). Additional drivers included inadequate amenities, poor mental health support, staff shortages, unfair remuneration, and workplace insecurity. Burnout among Nigerian resident doctors is at epidemic levels, driven by unregulated call hours and systemic factors, requiring urgent reform through structured call-hour policies, mental health services, and improvements in staffing, infrastructure, and safety.

Key words: burnout, professional, internship and residency, health policy.

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Introduction

Medicine is a stressful profession, with its stress linked to mental health issues like depression, functional impairment, perceived medical errors, and burnout.[1,2] Residency training, in particular, is the most stressful aspect of the medical profession and can cause significant burnout, interfering with an individual's ability to establish rapport, sort through diagnostic dilemmas, and make complex treatment decisions.[3]

Herbert Freudenberger coined the term burnout in his article entitled "staff burnout", in which he discussed job dissatisfaction precipitated by work-related stress. The conceptual and operational definition characterised burnout as a triad of emotional exhaustion (emotional overextension and exhaustion), depersonalisation (negative, callous, and detached responses to others), and reduced personal accomplishment (feelings of competence and achievement in one's work).[4] In the World Health Organisation International Classification of Diseases, 10th revision, burnout is defined as a "state of vital exhaustion".[5] The European Union (EU) has regulated working hours since 1998, as have countries such as the United States and China. However, some nations have yet to embrace this change, particularly most African countries. Unfortunately, while some countries instituted work hour regulations, Nigeria has yet to establish any cap on doctors' work hours, even after twenty-four years following work hour restrictions in the West.[1,6]

The doctor-patient ratio in Nigeria, currently 1:9083, is a significant deviation from the WHO-recommended 1:600.[6] It is even worse in Kano State, Nigeria, estimated by the Nigerian Medical Association to be about 1:11500, with only 1300 active doctors attending to Kano's 20 million population. This unacceptable doctor-patient ratio has a broad impact on physician health and the quality of patient care. Additionally, doctors face high workloads and excessive hours, which undermine their well-being.[7-9] In 2023, a doctor collapsed and died after working for a straight 72 hours without rest, yet no reforms have been made in the work design of doctors.[10] Perhaps it is the paucity of local studies that has led to its neglect.[6]

Notably, although studies in other parts of the country report high burnout rates among resident doctors,[11,12] there is a nearly complete lack of published research specifically exploring burnout factors like call-hour regulations and institutional policy gaps in Kano State, Nigeria. Given this regional data gap, this study aims

to investigate how unregulated call hours and systemic factors contribute to burnout and to suggest targeted policy and institutional changes for Nigerian residency training programs.

Materials and Methods

Study setting and participants

The study was conducted among resident doctors in training hospitals across Kano State, North-Western Nigeria, who had completed at least six months of training, ensuring adequate exposure to their respective programmes. A minimum sample size of 300 was determined using the formula for a single proportion, with a prevalence of 21.6%,[13] and a 15% non-response rate. Hospitals and departments were selected using a two-stage cluster random sampling technique; all eligible residents were subsequently invited via the residents' platform, and those who completed the form were sampled by convenience. For the qualitative component, Focused Group Discussions (FGDs) were conducted with residents, and Key Informant Interviews (KIIs) were conducted with chief residents and administrators. Ethical approval was obtained from the Kano State Ministry of Health Research Ethics Committee.

Data collection

Quantitative data were collected using a semi-structured, self-administered questionnaire that was distributed electronically via Google Forms. The instrument included socio-demographic data (age, gender, marital status, training institution, length of residency, training level, and speciality), burnout assessment (using 22 items from the validated Maslach burnout inventory capturing emotional exhaustion, depersonalisation, and personal accomplishment; with participants rating each statement on a seven-point frequency scale ("7 as everyday" to "0 as never"), and work-hour practices (weekly call duration, post-call rest intervals, and the presence or absence of institutional regulations). Variables were coded and scored according to the Maslach Burnout Inventory (MBI) guidelines. A high degree of burnout was defined by scores of emotional exhaustion (>27), depersonalisation (>13), and low personal accomplishment (<33). Below this cut-off, it was characterized as low burnout. The overall prevalence of burnout was determined by the presence of burnout in at least two dimensions among residents.[14]

Qualitative data were collected using FGDs and KIIs. FGDs were conducted with groups of 6-8 residents across specialities and institutions, until thematic saturation was achieved after 6 group interviews. Discussions focused on perceptions of workload, institutional support, safety, remuneration, and recommendations for reducing burnout. KIIs were conducted to capture system-level perspectives on the challenges and proposed policy interventions. Trained facilitators conducted the sessions. Interviews were audio-recorded (with consent) and transcribed verbatim into English for analysis.

Data analysis

Data from Google Forms were exported into the Statistical Package for Social Sciences (SPSS) version 27 for analysis. Descriptive statistics (frequencies, percentages) summarised participant characteristics and burnout prevalence. Associations between socio-demographic/work factors and burnout domains were tested using Pearson's Chi-square and Fisher's exact tests (significance at $p<0.05$). A Logistic Regression (LR) analysis was conducted on the prevalence of burnout. Both forward and backward LR selection methods were applied during multiple logistic regression to derive the Adjusted Odds Ratios (AOR). The final model was then executed using the enter method to present the final set of predictors. Transcripts from FGDs and KIIs were analysed thematically using NVivo. An inductive coding process was applied. Two analysts will code independently and reconcile discrepancies to enhance reliability, followed by grouping of codes into themes aligned with the three burnout domains: emotional exhaustion, depersonalisation, and reduced personal accomplishment. Quantitative and qualitative results were integrated at the interpretation stage using joint displays and narrative triangulation. Quantitative patterns were compared with qualitative explanations to yield comprehensive insights and actionable recommendations.

Results

Social demographics

Table 1 displays the general characteristics of the study respondents. The study consisted of 300 participants, with females comprising 39.7% and males comprising 60.3%. The 20-35-year-olds account for the majority of the study participants (63.7%), with a higher proportion of respondents from National Orthopaedics Hospital Dala (NOHD) (42.3%). Over half of the participants (54.3%) have spent between 1 and 3 years in training. Junior residents accounted for 61.0%, Obstetrics and Gynaecology (25.7%) and Pathology (11.0%), among others.

Figure 1 illustrates that the overall prevalence of burnout is 63.7%, with high levels of emotional exhaustion (89.3%), depersonalization (48.3%), and low personal accomplishment (47.7%).

Association between burnout and sociodemographic and work characteristics

Table 2 presents the association between demographic and work-related factors and the three dimensions of burnout: emotional exhaustion, depersonalization, and personal accomplishment

Table 1. Sociodemographic characteristics of the participants (n=300).

Variable	F	PF(%)
Gender		
Female	119	39.7
Male	181	60.3
Age (years)		
20-35	191	63.7
36-45	109	36.3
Marital status		
Single	34	11.3
Married	261	87.0
Separated/Divorced	5	1.7
Training institution		
AKTH	110	36.7
NOHD	127	42.3
MMSH	30	10.0
MAWTH	33	11.0
Duration in residency		
1-3 years	163	54.3
>3 years	137	45.7

F, Frequency; PF, Percentage Frequency; AKTH, Amino-Kano Teaching Hospital; NOHD, National Orthopaedics Hospital Dala; MMSH, Murtala Muhammad Specialist Hospital; MAWTH, Muhammed Abdullahi Wase Teaching Hospital.

among residents. For age, younger residents (20-35 years) showed significantly lower emotional exhaustion and higher accomplishment than older groups ($p<0.05$). For gender, males reported significantly higher levels of emotional exhaustion and depersonalization than females ($p<0.001$), although no significant gender difference was found for accomplishment. For marital status, no significant association was found with emotional exhaustion or depersonalization, but single residents showed significantly higher accomplishment ($p=0.026$). For training institutions, emotional exhaustion and accomplishment varied significantly across institutions ($p<0.001$), with residents from NOHD showing higher exhaustion levels. Regarding duration of residency, residents with more than 3 years of training had higher levels of emotional exhaustion and depersonalization ($p<0.05$). For the level of training, no significant differences were observed between junior and senior residents across the three burnout dimensions. For specialization: burnout levels varied significantly across specialties

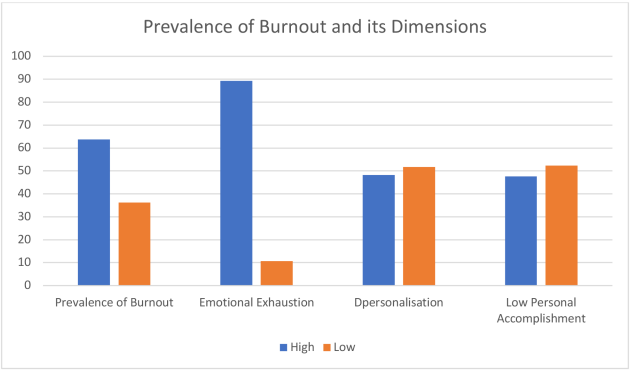

Figure 1. The prevalence of burnout and its dimensions among the study participants.

Table 2. The association between participant characteristics and emotional exhaustion burnout (n=300).

Variable	Low burnout frequency (%)	High burnout frequency (%)	Chi-square (DF)	p
Age (years)				
20-35	5 (2.6)	186 (97.4)	35.74 (1)	<0.001
36-45	27 (24.8)	82 (75.2)		
Gender				
Female	0 (0)	119 (100)	23.55 (1)	<0.001
Male	32 (17.7)	149 (82.3)		
Marital status				
Single	5 (14.7)	29 (85.3)	1.21 (2)	0.547
Married	27 (10.3)	234 (89.7)		
Separated	0 (0)	5 (100)		
Training institution				
AKTH	6 (5.5)	104 (94.5)	23.47 (3)	<0.001
NOHD	26 (20.5)	101 (79.5)		
MMSH	0 (0)	30 (100)		
MAWTH	0 (0)	33 (100)		
Duration in residency				
1-3 years	11 (6.7)	152 (93.3)	5.75 91)	0.016
>3 years	21 (15.3)	116 (84.7)		
Level of training				
Junior resident	16 (8.7)	167 (91.3)	1.82 (1)	0.177
Senior resident	16 (13.7)	101 986.3)		
Specialization				
Medicine	0 (0)	56 (100)	40.34 (4)	<0.001
O & G	0 (0)	77 (100)		
Surgery	5 (8.8)	52 (91.2)		
Orthopaedics	21(27.3)	56 (72.7)		
Pathology	6 (18.2)	27 (81.8)		
Call duration per week				
<24 hours	6 (33.3)	12 (66.7)	25.69 (4)	<0.001
24-72 hours	26 (13.1)	173 (86.9)		
73-168 hours	0 (0)	83 (100)		
Official post-call rest hours				
None	0 (0)	60 (100)	69.33 (3)	<0.001
1-2 hours	0 (0)	26 (100)		
4-6 hours	25 (12.1)	182 (87.9)		
24 hours	7 (100)	0 (0)		
Hours of work post-call				
1-3 hours	0 (0)	22 (100)	5.20 (2)	0.074
4-6 hours	0 (0)	16 (100)		
Full day	32 (12.2)	230 (87.8)		

DF, Degree of Freedom; AKTH, Aminu-Kano Teaching Hospital; NOHD, National Orthopaedics Hospital Dala; MMSH, Murtala Muhammad Specialist Hospital; MAWTH, Muhammed Abdullahi Wasiu Teaching Hospital.

(p<0.001); residents in surgery and orthopaedics reported the highest emotional exhaustion, while those in medicine showed lower depersonalization and higher accomplishment. For call duration per week: emotional exhaustion significantly increased with longer call durations (p<0.001), although depersonalization differences were not statistically significant. For post-call rest hours: lack of post-call rest was strongly associated with higher emotional exhaustion and depersonalization and lower accomplishment (all p<0.001). For hours of work post-call, residents who worked a full day showed higher depersonalization and lower accomplishment than those who worked fewer hours (p<0.05). Overall, burnout dimensions were significantly associated with age, gender, duration of residency, training institution, specialty, call duration, and rest hours, highlighting workload and recovery time as critical determinants of residents' mental well-being. Table 3 shows the factors significantly associated with burnout among residents. Younger ages (20-35 years) were 48% less likely to experience burnout compared to those aged 36-45 years (AOR=0.52, 95% CI: 0.29-0.92, p=0.025). Male residents were 65% less likely to experience burnout than females (AOR=0.35, 95% CI: 0.19-0.64, p<0.001). Residents with more than three years of residency were 94% less likely to report burnout compared to those with 1-3 years of experience (AOR=0.06, 95% CI: 0.02-0.19, p<0.001). Conversely, longer call durations were strongly associated with higher odds of burnout - those on 24-72-hour and 73-168-hour calls had 8.86 and 7.98 increased risks, respectively (AOR=8.86 and 7.98, respectively; p<0.001 for both). Overall, burnout was more prevalent among younger, female residents with shorter residency duration and longer call hours.

Contextual factors shaping burnout

Participants for the FGDs and KIIs were selected from the designated hospitals and departments, with a focus on ensuring demographic representation, specialty, and level of training. Insights revealed deeper systemic and institutional factors contributing to burnout among resident doctors, which were categorised into three major themes aligned with the core burnout domains: emotional exhaustion, depersonalisation, and reduced personal accomplishment (Table 4).

The findings indicate that resident doctors experience high levels of burnout across three core domains. Emotional exhaustion is strongly associated with prolonged call hours, inadequate rest, and chronic staff shortages. Residents report that the absence of structured work-hour policies forces them into extended shifts with little recovery time, often requiring them to cover multiple roles. Depersonalisation arises from long, irregular shifts compounded by insufficient institutional support and safety concerns, particularly during night duties, leading residents to feel detached, cynical, and neglected, while expressing a need for confidential mental health support and safe spaces. Reduced personal accomplishment is linked to inadequate remuneration, limited recognition, and lack of post-call rest, resulting in diminished motivation and professional fulfilment, despite residents' substantial effort and sacrifices. Collectively, these findings highlight that these systemic, institutional, and occupational factors interact to exacerbate burnout among resident doctors.

Discussion

In our study, nearly nine out of ten residents reported high emotional exhaustion, about half reported high depersonalization, and low personal accomplishment. These findings surpass findings from other Nigerian studies,[6,15] significantly exceeding studies from other African countries,[16] and from European and American studies.[17-19] Like prior studies, our respondents were predominantly young males,[7] but contrary to some studies.[16,20] Western studies similarly note a youthful trainee population but more balanced gender ratios.[2] Participants were predominantly married, similar to some cohorts,[7] but lower than others.[16]

Emotional exhaustion showed significant associations with older age, male gender, surgical specialty, longer call duration, and absence of post-call rest. Residents working more than 72 hours per week without guaranteed rest were exhausted in all three burnout domains (p<0.001). Qualitative insights further explained these patterns, as residents attributed exhaustion not only to unregulated calls but also to staff shortages and a lack of basic welfare supports, such as nap breaks and sleep-in rooms. These results mirror but exceed prior Nigerian findings,[6,7,15,21] Sudan and Yemen data,[16,22] and American evidence.[23,24] Prior studies linked high-intensity specialities,[25] like emergency medicine[26,27] to greater burnout, but lower burnout in family medicine.[15,28]

Depersonalisation was significantly higher in the male gender, above three years in residency, surgical speciality, and absence of rest post-call. While the survey showed statistically significant associations, qualitative findings revealed the human cost: participants described a lack of institutional mental health services, stigma around seeking help, and insecurity during night shifts. These stressors foster detachment and cynicism, weakening the doctor-patient relationship and increasing the risk of errors.[29] In this sense, depersonalisation is not only a psychological outcome but also a symptom of structural neglect in training institutions.

Higher levels of reduced personal accomplishment were noticed in married residents, medical specialty, and longer call duration. The qualitative strand provided explanatory depth, as residents linked their diminished sense of fulfilment to poor remuneration and inadequate recognition of their sacrifices. Many expressed frustration that their workload and risks were not matched by fair pay or institutional incentives. It is possible that due to poor remuneration, residents who are parents may find it difficult to meet family demands, leading to decreased accomplishment. Addressing this domain, therefore, requires not only workload reforms but also measures that affirm residents' contributions, such as improved compensation, recognition schemes, and opportunities for professional growth.[26] Together, these findings demon-

Table 3. Factors associated with burnout.

Variable	AOR (95 CI)	p
Age		
20-35	1	
36-45	0.52 (0.29, 0.92)	0.025
Gender		
Female	1	
Male	0.35 (0.19, 0.64)	<0.001
Duration of residency		
1-3 years	1	
>3 years	0.06 (0.02, 0.19)	<0.001
Call duration		
< 24 hours	1	
24-72 hours	8.86 (2.72, 28.79)	<0.001
73-168 hours	7.98 (2.38, 26.77)	<0.001

AOR, Adjusted Odds Ratio; CI, Confidence Interval.

strate that burnout among Nigerian residents is not simply the result of long hours but a multifaceted problem shaped by inadequate policies, poor institutional support, unsafe environments, and a lack of recognition. Policy responses must therefore go beyond call-hour regulations. A comprehensive strategy should include actionable insights drawn from the qualitative interviews:

Implement and enforce structured call-hour policies

Establish maximum duty periods, scheduled post-call rest or nap breaks (*e.g.*, sleep-in rooms), and ensure adequate recovery time to reduce emotional exhaustion.

Strengthen staffing and manpower distribution

Increase resident and staff numbers or redistribute workload so residents don't cover multiple roles, thereby reducing excessive burden and fatigue.

Develop formal institutional support systems

Provide hospital-sponsored mental health services, confidential counselling spaces, and peer-support programmes to mitigate depersonalisation.

Improve safety and security during night duties

Ensure a safe working environment, proper supervision, and emergency call protocols to reduce residents' feelings of neglect and detachment.

Enhance recognition, remuneration, and professional fulfilment

Introduce structured incentives, fair compensation, bonus systems, and clear pathways for professional recognition and advancement to address reduced personal accomplishment.

Integrate feedback and trainee voice into policy design

Engage residents in policymaking, hold focus groups regularly, and monitor implementation of workload, rest, and support policies to ensure real-world impact. Adopting such reforms within a Quadruple Aim framework, which prioritises provider wellbeing alongside patient care, population health, and cost efficiency, would promote both physician resilience and patient safety.[30]

Strengths and limitations

A key strength of this study lies in its concurrent mixed-methods design, which combined the breadth of a validated burnout inventory with qualitative depth. This allowed for triangulation of findings and provided a more nuanced understanding of the burnout phenomenon. However, it was a single-state study, which may limit generalizability to all Nigerian residents. Future research should expand to multiple regions, adopt longitudinal approaches, and evaluate the impact of implementing structured call-hour and support policies.

Conclusions

Burnout among resident doctors in Kano is alarmingly high, driven by unregulated duty hours and inadequate rest periods after call. Qualitative insights revealed deeper systemic contributors, including staff shortages, lack of institutional support, poor mental health services, unsafe work environments, and inadequate remuneration. Addressing burnout, therefore, requires a holistic approach that combines structured call-hour regulations with strengthened institutional support systems. Such reforms are critical not only to protect residents' well-being but also to ensure patient safety and sustain a resilient healthcare workforce in Nigeria.

Table 4. Contextual factors shaping burnout.

Quantitative finding	Qualitative theme	FGDs/KIIs quotes	Interpretation
There exists a significant association between long call hours (≥24 hrs) and no post-call rest, and high emotional exhaustion ($p<0.001$)	Emotional exhaustion: excessive call hours, inadequate rest, and manpower shortage	"Without a defined call-hour policy, we are just working until we drop" (FGD, Junior Resident) "If more residents were employed, they wouldn't have to cover endless shifts" (KII, Hospital Administrator)	The absence of structured call-hour regulations and inadequate staffing explain the high level of emotional exhaustion observed quantitatively; prolonged work hours directly contribute to fatigue and burnout
Residents with more than 72 call hours per week and no post-call rest had higher depersonalisation scores	Depersonalisation: prolonged call hours, lack of institutional support, and safety concerns	"We need safe spaces to talk about stress and burnout without fear of stigma" (FGD, Resident). ''Many of us fear for our safety" (FGD, Female Resident)	Long, unregulated calls without institutional support can lead to increased detachment and cynicism
Residents with higher call hours and no post-call rest reported lower personal accomplishment ($p<0.05$)	Reduced personal accomplishment: inadequate remuneration, rest, and motivation	"Sometimes the stress is worsened by the feeling that the pay does not match the sacrifice" (FGD, Male Resident) ''Hard work is hardly recognised or rewarded" (KII, Chief Resident)	The lack of rest and recognition diminishes motivation and perceived professional value, explaining why those with extended calls and low post-call rest felt less accomplished and more burnt out

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