

Original Research Article

BURNOUT, SLEEP QUALITY AND PROFESSIONAL SATISFACTION IN RESIDENT DOCTORS: INSIGHTS FROM A CROSS-SECTIONAL STUDY

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ABSTRACT

Background: Resident doctors face demanding work conditions including long duty hours, night shifts, academic stress, and emotional challenges, which may contribute to burnout, poor sleep quality, and reduced professional satisfaction. Assessing these factors is essential to improve resident well-being and patient care. The aim is to assess the prevalence of burnout, evaluate sleep quality, and determine the level of professional satisfaction among resident doctors. The study also aimed to analyze the association between burnout, sleep quality, and professional satisfaction.

Materials and Methods: A hospital-based cross-sectional study will be conducted over a period of 6 months at Kalinga Institute of Medical Sciences & PBM Hospital and Institute of Medical Sciences & SUM Hospital, Bhubaneswar, Odisha. The study population will include 1010 resident doctors from various clinical and non-clinical departments to assess levels of burnout, sleep quality, and professional satisfaction among medical trainees. Data will be collected and analysed to evaluate differences in occupational well-being across different specialties.

Results: Clinical residents showed significantly higher burnout (40.0% high burnout) and poor sleep quality (78.0%) compared to non-clinical residents ($p < 0.001$). Professional satisfaction was higher among clinical residents (72.0%) and female non-clinical residents showed better work-life balance satisfaction (73.3%, $p = 0.003$). Higher burnout and poor sleep quality were significantly associated with reduced professional satisfaction ($p < 0.001$ and $p = 0.001$).

Conclusion: Burnout and poor sleep quality are common concerns among resident doctors and are closely associated with reduced professional satisfaction. Regular assessment of resident well-being, improvement in duty schedules, adequate rest periods, and institutional support systems are essential to promote healthier work environments and improve the overall quality of healthcare delivery.

Keywords: Burnout, Sleep Quality, Professional Satisfaction, Resident Doctors, Cross-sectional Study, Occupational Stress.

INTRODUCTION

Resident doctors represent a vital component of healthcare systems, providing continuous patient care, emergency services, and clinical responsibilities while simultaneously undergoing postgraduate training. The residency period is often

associated with high workload, prolonged duty hours, irregular schedules, night shifts, academic demands, and emotional challenges related to patient management. Although residency training is essential for developing clinical competence, the intense professional environment may adversely affect the physical and psychological well-being of resident

doctors.^[1] Increasing attention has been directed toward occupational stress among medical professionals, particularly burnout, sleep disturbances, and decreased professional satisfaction. Burnout is a psychological syndrome resulting from chronic workplace stress and is characterized by emotional exhaustion, depersonalization, and a reduced sense of personal accomplishment.^[2] Among healthcare professionals, burnout has become a significant concern due to its association with decreased empathy, impaired clinical performance, increased medical errors, and reduced quality of patient care. Resident doctors are particularly vulnerable because they frequently experience excessive workload, limited autonomy, inadequate recovery time, and high responsibility during their training period.^[3] Studies have reported a considerable prevalence of burnout among resident physicians across different specialties, highlighting the need for early identification and preventive strategies.^[4] Sleep quality is another important factor influencing the health and performance of resident doctors. Due to frequent night duties, extended working hours, and disruption of normal circadian rhythms, residents commonly experience insufficient and poor-quality sleep. Sleep disturbances may lead to fatigue, impaired concentration, reduced decision-making ability, mood disturbances, and compromised patient safety.^[5] Poor sleep quality has also been found to have a bidirectional relationship with burnout, where prolonged occupational stress contributes to sleep problems, and inadequate sleep further increases emotional exhaustion and psychological distress.^[6] Professional satisfaction among resident doctors reflects their overall perception of their work environment, career progress, relationships with colleagues, workload, and sense of achievement. High levels of professional satisfaction are associated with improved motivation, better patient care, and long-term career commitment. However, excessive workload, lack of work-life balance, inadequate institutional support, and burnout may negatively influence professional satisfaction among medical trainees.^[7] Resident doctors experiencing burnout and poor sleep quality are more likely to report dissatisfaction with their profession and reduced engagement with clinical responsibilities. The relationship between burnout, sleep quality, and professional satisfaction is complex and interdependent. A stressful working environment may increase the risk of burnout, which can disturb sleep patterns and decrease professional fulfillment. Conversely, adequate rest, supportive workplace conditions, and positive professional experiences may improve resilience and job satisfaction. Previous studies have emphasized that addressing these factors together rather than individually is essential for improving resident doctors' well-being and maintaining healthcare quality.^[8] In recent years, increasing awareness regarding physician wellness has encouraged healthcare institutions to evaluate the psychological

health of resident doctors. Strategies such as structured duty schedules, adequate rest periods, mentorship programs, psychological support, and workload management may help reduce burnout and improve professional satisfaction.^[9] However, variations in healthcare systems, training environments, and institutional practices highlight the importance of assessing these factors in specific clinical settings. Therefore, the present cross-sectional study was undertaken to evaluate burnout, sleep quality, and professional satisfaction among resident doctors. Understanding the prevalence and relationship between these factors may help identify areas requiring intervention and support the development of effective strategies to promote resident doctors' health, professional efficiency, and quality of patient care.^[10] To assess the prevalence of burnout, evaluate sleep quality, and determine the level of professional satisfaction among resident doctors. The study also aimed to analyze the association between burnout, sleep quality, and professional satisfaction.

MATERIALS AND METHODS

Study design: Hospital-based Cross-Sectional Study.

Study Place: The study will be conducted at two institutes located in Bhubaneswar, Odisha, namely Kalinga Institute of Medical Sciences & PBM Hospital and Institute of Medical Sciences & SUM Hospital.

Study Population: The study will be conducted at two institutes located in Bhubaneswar, Odisha, namely Kalinga Institute of Medical Sciences & PBM Hospital and Institute of Medical Sciences & SUM Hospital. The study will include resident doctors from various speciality departments, covering both clinical and non-clinical departments, to assess burnout, sleep quality, and professional satisfaction across different areas of medical training.

Duration of the Study: 6 Months

Sample Size: 1010 patients

Inclusion Criteria:

- Resident doctors working in clinical and non-clinical departments of the selected institutes.
- Resident doctors who have completed at least 6 months of residency training.
- Resident doctors willing to participate in the study and provide informed consent.
- Resident doctors available during the study period.
- Residents from all postgraduate specialties, including medical, surgical, and allied departments.

Exclusion Criteria:

- Resident doctors who are unwilling to participate in the study.
- Residents on long-term leave or unavailable during the data collection period.

- Resident doctors with less than 6 months of residency experience.
- Doctors who have completed residency training or are not currently involved in postgraduate training.
- Participants who submit incomplete questionnaires or provide insufficient data.

Study Variable:

- Gender
- Burnout Level
- Sleep Quality
- Professional Satisfaction
- Specialty Branch (Clinical/Non-clinical)
- Personal–Professional Life Balance

Operational Definitions:

1. Burnout:

Burnout was defined as a state of emotional, physical, and mental exhaustion resulting from prolonged occupational stress among resident doctors. Burnout was assessed using a validated burnout assessment tool (as applicable). Based on the obtained scores, participants were categorized into:

- **Low Burnout:** Residents with burnout scores below the predefined lower cut-off value, indicating minimal emotional exhaustion, depersonalization, and preserved professional efficacy.
- **Moderate Burnout:** Residents with intermediate burnout scores, indicating the presence of significant occupational stress symptoms but not reaching the severity of high burnout.
- **High Burnout:** Residents with scores above the predefined cut-off, indicating marked emotional exhaustion, reduced professional accomplishment, detachment, and significant impairment in work-related well-being.

2. Sleep Quality:

Sleep quality was defined as the subjective assessment of sleep satisfaction, sleep duration, sleep efficiency, sleep disturbances, and daytime functioning among resident doctors. Sleep quality was assessed using a standardized sleep quality assessment scale.

Participants were categorized as:

- **Good Sleep Quality:** Residents with scores indicating satisfactory sleep patterns, adequate sleep duration, minimal sleep disturbances, and good daytime functioning.

- **Poor Sleep Quality:** Residents with scores indicating disturbed sleep patterns, inadequate sleep, frequent sleep interruptions, difficulty initiating or maintaining sleep, and impaired daytime functioning.

3. Professional Satisfaction:

Professional satisfaction was defined as the overall sense of fulfillment, happiness, motivation, and contentment experienced by resident doctors in relation to their professional duties, workplace environment, career growth, and patient care responsibilities.

Professional satisfaction included:

- Satisfaction with clinical responsibilities and learning opportunities.
- Feeling of achievement and professional growth.
- Positive emotional response after successfully diagnosing and treating patients.
- The happiness, gratitude, and sense of purpose experienced when a patient improves, recovers, or gets cured as a result of the doctor's care.
- Feeling valued and respected by patients, colleagues, and the healthcare system.

Based on the assessment score, residents were classified as:

- **Satisfied:** Residents reporting a high level of professional fulfillment, motivation, and positive feelings derived from patient care and professional responsibilities.
- **Not Satisfied:** Residents reporting low professional fulfillment, reduced motivation, dissatisfaction with work conditions, or limited emotional reward from their professional role.

Statistical Analysis: For statistical analysis data were entered into a Microsoft Excel spreadsheet and then analyzed by SPSS (version 27.0; SPSS Inc., Chicago, IL, USA) and Graph Pad Prism version 5. Data had been summarized as mean and standard deviation for numerical variables and count and percentages for categorical variables. Z-test (Standard Normal Deviate) was used to test the significant difference of proportions. Once a t value is determined, a p-value can be found using a table of values from Student's t-distribution. If the calculated p-value is below the threshold chosen for statistical significance (usually the 0.10, the 0.05, or 0.01 level), then the null hypothesis is rejected in favor of the alternative hypothesis. P-value ≤ 0.05 was considered for statistically significant.

RESULTS

Table 1: Baseline Characteristics of Residents at KIMS According to Department and Gender (n = 505) IMS=560

Department	Male n=244, n (%)	Female n=261, n (%)	Total Residents (n=505), n (%)	P value
General Medicine	42 (17.2)	38 (14.6)	80 (15.8)	<0.0001
General Surgery	36 (14.8)	34 (13.0)	70 (13.9)	
Orthopaedics	38 (15.6)	12 (4.6)	50 (9.9)	
Obstetrics & Gynaecology	8 (3.3)	42 (16.1)	50 (9.9)	
Paediatrics	20 (8.2)	30 (11.5)	50 (9.9)	
Anaesthesia	22 (9.0)	28 (10.7)	50 (9.9)	
ENT	14 (5.7)	16 (6.1)	30 (5.9)	
Ophthalmology	13 (5.3)	17 (6.5)	30 (5.9)	

Dermatology	10 (4.1)	10 (3.8)	20 (4.0)	
Psychiatry	8 (3.3)	12 (4.6)	20 (4.0)	
Radiodiagnosis	11 (4.5)	9 (3.4)	20 (4.0)	
Emergency Medicine	12 (4.9)	8 (3.1)	20 (4.0)	
Pulmonary Medicine	10 (4.1)	10 (3.8)	20 (4.0)	
Total Residents	244 (100.0)	261 (100.0)	505 (100.0)	

Non Clinical
Clinical better

Table 2: Baseline Characteristics of Residents at IMS According to Department and Gender (n = 505)

Department	Male n=239, n (%)	Female n=266, n (%)	Total Residents (n=505), n (%)	P value
General Medicine	40 (16.7)	40 (15.0)	80 (15.8)	<0.0001
General Surgery	35 (14.6)	35 (13.2)	70 (13.9)	
Orthopaedics	36 (15.1)	14 (5.3)	50 (9.9)	
Obstetrics & Gynaecology	7 (2.9)	43 (16.2)	50 (9.9)	
Paediatrics	21 (8.8)	29 (10.9)	50 (9.9)	
Anaesthesia	24 (10.0)	26 (9.8)	50 (9.9)	
ENT	13 (5.4)	17 (6.4)	30 (5.9)	
Ophthalmology	12 (5.0)	(6.8)	30 (5.9)	
Dermatology	9 (3.8)	11 (4.1)	20 (4.0)	
Psychiatry	9 (3.8)	11 (4.1)	20 (4.0)	
Radio diagnosis	10 (4.2)	10 (3.8)	20 (4.0)	
Emergency Medicine	13 (5.4)	7 (2.6)	20 (4.0)	
Pulmonary Medicine	10 (4.2)	10 (3.8)	20 (4.0)	
Total Residents	239 (100.0)	266 (100.0)	505 (100.0)	

Table 3: Gender Distribution of Surgical Residents in KIMS and IMS Groups (N = 1,010)

Gender (Surgical Residents)	KIMS n (%) (n = 505)	IMS n (%) (n = 505)
Male Surgical Residents	296 (58.6%)	283 (56.0%)
Female Surgical Residents	209 (41.4%)	222 (44.0%)
Total Surgical Residents	505 (100.0%)	505 (100.0%)

Table 4: Comparison of Burnout and Professional Toxicity Between Surgical and Non-surgical Clinical Branches (N = 1010)

Specialty Category	Total Residents n (%)	High Burnout Present n (%)	Low/Moderate Burnout n (%)	Professional Toxicity Present n (%)	Professional Toxicity Absent n (%)	P value
Surgical Branches	380 (37.6)	270 (71.1)	110 (28.9)	235 (61.8)	145 (38.2)	<0.0001
Non-surgical Clinical Branches	430 (42.6)	215 (50.0)	215 (50.0)	160 (37.2)	270 (62.8)	
Non-clinical Branches	200 (19.8)	65 (32.5)	135 (67.5)	55 (27.5)	145 (72.5)	
Total Residents	1010 (100.0)	550 (54.5)	460 (45.5)	450 (44.6)	560 (55.4)	

Table 5: Association Between Gender and Professional Satisfaction Among Non-clinical Branch Residents (n = 505)

Gender (Non-Clinical)	Satisfied	Not Satisfied	p-value
Female (n = 278)	205 (73.7%)	73 (26.3%)	0.003
Male (n = 227)	68 (30.0%)	159 (70.0%)	
Total (n = 505)	273 (54.1%)	232 (45.9%)	

Table 6: Association Between Gender and Professional Satisfaction Among Clinical Branch Residents (n = 505)

Gender (Clinical)	Satisfied	Not Satisfied	p-value
Female (n = 240)	168 (70.0%)	72 (30.0%)	0.001
Male (n = 265)	134 (50.6%)	131 (49.4%)	
Total (n = 505)	302 (59.8%)	203 (40.2%)	

Table 7: Association Between Gender and Personal–Professional Life Balance Among Resident Doctors (N = 1010)

Gender	Good Personal–Professional Life Balance n (%)	Poor Personal–Professional Life Balance n (%)	p-value
Female (n=527)	360 (68.3%)	167 (31.7%)	0.002
Male (n=483)	270 (55.9%)	213 (44.1%)	
Total (N=1010)	630 (62.4%)	380 (37.6%)	

Table 8: Comparison of Sleep Quality Between Clinical and Non-Clinical Resident Doctors (N = 1,010)

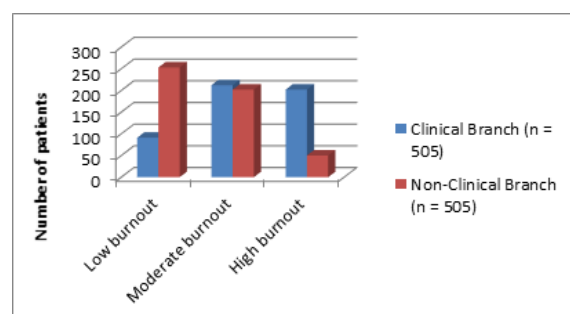
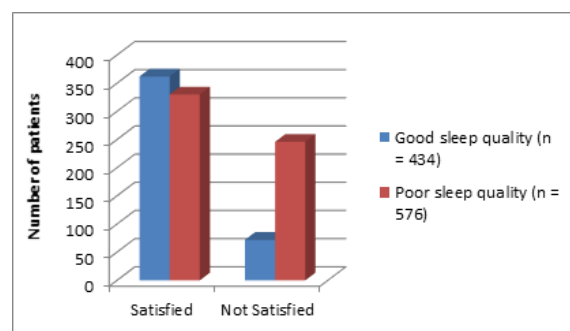
Sleep Quality	Clinical Branch (n = 505)	Non-Clinical Branch (n = 505)	p-value
Good sleep quality	111 (22.0%)	323 (64.0%)	<0.001
Poor sleep quality	394 (78.0%)	182 (36.0%)	
Total	505 (100.0%)	505 (100.0%)	

Table9: Comparison of Professional Satisfaction Between Clinical and Non-Clinical Resident Doctors (N = 1,010)

Professional Satisfaction	Clinical Branch (n = 505)	Non-Clinical Branch (n = 505)	p-value
Satisfied	364 (72.1%)	283 (56.0%)	0.062
Not satisfied	141 (27.9%)	222 (44.0%)	
Total	505 (100.0%)	505 (100.0%)	

Table10: Association Between Burnout and Professional Satisfaction Among Resident Doctors (N = 1,010)

Burnout Level	Satisfied	Not Satisfied	p-value
Low burnout (n = 434)	384 (88.5%)	50 (11.5%)	<0.001
Moderate burnout (n = 313)	227 (72.5%)	86 (27.5%)	
High burnout (n = 263)	99 (37.6%)	164 (62.4%)	
Total (N = 1,010)	710 (70.3%)	300 (29.7%)	

**Figure 1: Comparison of Burnout Level Between Clinical and Non-Clinical Resident Doctors****Figure 2: Association Between Sleep Quality and Professional Satisfaction Among Resident Doctors**

Among General Medicine, there were 42 male residents (17.2%) and 38 female residents (14.6%). In General Surgery, 36 male residents (14.8%) and 34 female residents (13.0%) were observed. Orthopaedics included 38 male residents (15.6%) and 12 female residents (4.6%). In Obstetrics & Gynaecology, 8 male residents (3.3%) and 42 female residents (16.1%) were present. Paediatrics had 20 male residents (8.2%) and 30 female residents (11.5%), whereas Anaesthesia included 22 male residents (9.0%) and 28 female residents (10.7%). For other departments, ENT consisted of 14 male residents (5.7%) and 16 female residents (6.1%), Ophthalmology had 13 male residents (5.3%) and 17 female residents (6.5%), Dermatology had 10 male residents (4.1%) and 10 female residents (3.8%), and Psychiatry included 8 male residents (3.3%) and 12 female residents (4.6%). Radiodiagnosis had 11 male

residents (4.5%) and 9 female residents (3.4%), Emergency Medicine had 12 male residents (4.9%) and 8 female residents (3.1%), while Pulmonary Medicine included 10 male residents (4.1%) and 10 female residents (3.8%). The observed difference in gender distribution among various departments was statistically significant ($p < 0.0001$).

In General Medicine, there were 40 male residents (16.7%) and 40 female residents (15.0%). General Surgery included 35 male residents (14.6%) and 35 female residents (13.2%), whereas Orthopaedics had 36 male residents (15.1%) and 14 female residents (5.3%). In Obstetrics & Gynaecology, 7 male residents (2.9%) and 43 female residents (16.2%) were present. Paediatrics consisted of 21 male residents (8.8%) and 29 female residents (10.9%), while Anaesthesia included 24 male residents (10.0%) and 26 female residents (9.8%). Among other departments, ENT had 13 male residents (5.4%) and 17 female residents (6.4%), Ophthalmology had 12 male residents (5.0%) and 18 female residents (6.8%), Dermatology included 9 male residents (3.8%) and 11 female residents (4.1%), and Psychiatry had 9 male residents (3.8%) and 11 female residents (4.1%). Radiodiagnosis comprised 10 male residents (4.2%) and 10 female residents (3.8%), Emergency Medicine had 13 male residents (5.4%) and 7 female residents (2.6%), whereas Pulmonary Medicine included 10 male residents (4.2%) and 10 female residents (3.8%). The difference in gender distribution across departments was statistically significant ($p < 0.0001$).

A total of 1,010 surgical residents were included in the study, with 505 residents each in the KIMS and IMS groups. In the KIMS group, 296 (58.6%) were male and 209 (41.4%) were female. Similarly, in the IMS group, 283 (56.0%) were male and 222 (44.0%) were female.

The distribution of burnout and professional toxicity according to specialty category showed a statistically significant difference ($p < 0.0001$). Among surgical branch residents, 380 residents (37.6%) were included, of whom 270 (71.1%) had high burnout and 110 (28.9%) had low/moderate burnout, while 235

residents (61.8%) experienced professional toxicity. Among non-surgical clinical branch residents, 430 residents (42.6%) were evaluated. High burnout was present in 215 residents (50.0%), whereas 215 residents (50.0%) had low/moderate burnout, and 160 residents (37.2%) reported professional toxicity. Among non-clinical branch residents, 200 residents (19.8%) were included, with 65 residents (32.5%) showing high burnout and 135 residents (67.5%) having low/moderate burnout. Professional toxicity was observed in 55 residents (27.5%).

Among the 505 non-clinical branch resident doctors, 278 were females and 227 were males. Of the 278 female residents, 205 (73.7%) were professionally satisfied, while 73 (26.3%) were not satisfied. In contrast, among the 227 male residents, only 68 (30.0%) were professionally satisfied, whereas 159 (70.0%) were not satisfied. Overall, 273 (54.1%) non-clinical resident doctors were professionally satisfied and 232 (45.9%) were not satisfied. This association between gender and professional satisfaction among non-clinical branch residents was statistically significant ($p = 0.003$).

Among the 505 clinical branch resident doctors, 240 were females and 265 were males. Of the 240 female residents, 168 (70.0%) were professionally satisfied, while 72 (30.0%) were not satisfied. Among the 265 male residents, 134 (50.6%) were professionally satisfied, whereas 131 (49.4%) were not satisfied. Overall, 302 (59.8%) clinical branch resident doctors were professionally satisfied and 203 (40.2%) were not satisfied. Female residents reported significantly higher professional satisfaction than male residents. This association between gender and professional satisfaction among clinical branch residents was statistically significant ($p = 0.001$).

The association between gender and personal-professional life balance among resident doctors showed a statistically significant difference ($p = 0.002$). Among female residents ($n=527$), 360 residents (68.3%) reported good personal-professional life balance, whereas 167 residents (31.7%) reported poor balance. Among male residents ($n=483$), 270 residents (55.9%) had good personal-professional life balance, while 213 residents (44.1%) experienced poor balance.

A total of 1,010 resident doctors were included in the study, with 505 belonging to the clinical branch and 505 to the non-clinical branch. Among the 505 clinical branch resident doctors, 111 (22.0%) had good sleep quality, while 394 (78.0%) had poor sleep quality. Among the 505 non-clinical branch resident doctors, 323 (64.0%) had good sleep quality, whereas 182 (36.0%) had poor sleep quality. Overall, 434 resident doctors had good sleep quality and 576 resident doctors had poor sleep quality. This difference was found to be statistically highly significant ($p < 0.001$).

A total of 1,010 resident doctors were included in the study, comprising 505 clinical branch and 505 non-clinical branch residents. Among the 505 clinical branch resident doctors, 364 (72.1%) were

professionally satisfied, while 141 (27.9%) were not satisfied. Among the 505 non-clinical branch resident doctors, 283 (56.0%) were professionally satisfied, whereas 222 (44.0%) were not satisfied. The difference between the two groups was not statistically significant ($p = 0.062$).

Among the 1,010 resident doctors included in the study, 434 had low burnout, 313 had moderate burnout, and 263 had high burnout. Of the 434 resident doctors with low burnout, 384 (88.5%) were professionally satisfied, while 50 (11.5%) were not satisfied. Among the 313 resident doctors with moderate burnout, 227 (72.5%) were professionally satisfied and 86 (27.5%) were not satisfied. In contrast, among the 263 resident doctors with high burnout, only 99 (37.6%) were professionally satisfied, whereas 164 (62.4%) were not satisfied. This association between burnout level and professional satisfaction was statistically highly significant ($p < 0.001$).

A total of 1,010 resident doctors were included in the study, with 505 from the clinical branch and 505 from the non-clinical branch. Among the 505 clinical branch resident doctors, 91 (18.0%) had low burnout, 212 (42.0%) had moderate burnout, and 202 (40.0%) had high burnout. In comparison, among the 505 non-clinical branch resident doctors, 253 (50.1%) had low burnout, 202 (40.0%) had moderate burnout, and 50 (9.9%) had high burnout. This difference in burnout levels between the two groups was statistically highly significant ($p < 0.001$).

Among the 1,010 resident doctors included in the study, 434 had good sleep quality and 576 had poor sleep quality. Of the 434 resident doctors with good sleep quality, 362 (83.4%) were professionally satisfied, while 72 (16.6%) were not satisfied. In contrast, among the 576 resident doctors with poor sleep quality, 330 (57.3%) were professionally satisfied and 246 (42.7%) were not satisfied. This association between sleep quality and professional satisfaction was statistically significant ($p = 0.001$).

DISCUSSION

In the present study, the demographic distribution of resident doctors showed a significant variation across different departments and gender categories. The distribution of residents between clinical and non-clinical specialties was statistically significant, with the majority of residents belonging to clinical branches. Similar findings were reported by Cavallaro A et al.^[11] who observed that residency training involves considerable variation in workload, clinical responsibilities, and occupational stress depending on specialty choice. They reported that specialty-related factors significantly influence physician well-being and burnout outcomes among trainees.

In our study, surgical branches demonstrated a significantly higher prevalence of burnout and professional toxicity compared with non-surgical

clinical and non-clinical branches. High burnout was observed among 71.1% of surgical residents, compared with 50.0% of non-surgical clinical residents and 32.5% of non-clinical residents ($p < 0.0001$). This finding is consistent with the observations of Otukoya EZ et al.^[12] who reported that surgeons experience a substantial burden of burnout due to long working hours, increased responsibility, emotional exhaustion, and demanding clinical environments. They emphasized that surgical specialties are particularly vulnerable to burnout because of prolonged duty hours and high patient-care expectations.

The higher burnout among surgical residents in our study may be explained by multiple factors, including emergency responsibilities, frequent night duties, prolonged operative hours, physical exhaustion, and increased medico-legal pressure. Similar conclusions were reported by Bhandari U et al.^[13] who found that surgical residents had a high prevalence of burnout and that emotional exhaustion and depersonalization were strongly associated with surgical training demands.

Professional toxicity was also significantly higher among surgical branch residents in our study (61.8%) compared with non-surgical clinical branches (37.2%) and non-clinical branches (27.5%). This finding agrees with the study by Surawattanasakul V et al.^[14] who demonstrated that workplace stressors, reduced professional support, and excessive workload contribute significantly to reduced professional satisfaction and negative occupational experiences among physicians. The authors highlighted that organizational factors play an important role in physician well-being in addition to individual resilience.

Gender-wise analysis showed that female residents had higher professional satisfaction compared with male residents in both clinical and non-clinical branches. Among clinical residents, satisfaction was observed in 70.1% of females compared with 50.6% of males ($p = 0.001$). Similarly, among non-clinical residents, 73.6% of females were satisfied compared with 30.0% of males ($p = 0.003$). Similar gender-related differences in professional satisfaction were reported by Bilotta F et al.^[15] who found that female physicians often demonstrate strong patient-centred values and derive considerable professional fulfilment from patient interactions and successful clinical outcomes.

The emotional reward obtained from patient recovery and successful treatment may contribute significantly to professional satisfaction among residents. Lee H et al.^[16] reported that physicians who experience meaningful patient relationships and a sense of purpose in clinical practice have better professional satisfaction and lower burnout risk. In the present study, satisfaction among residents was considered not only by workplace factors but also by the happiness and fulfilment experienced after improvement or recovery of patients, which

represents an important component of medical professionalism.

The observed gender distribution across specialties in our study showed female predominance in Obstetrics & Gynaecology and Paediatrics, whereas male predominance was observed in surgical specialties such as Orthopaedics and General Surgery. Similar specialty-based gender patterns were described by Carbone D et al.^[17] who reported increasing female representation in traditionally female-dominated specialties and continued male predominance in several surgical disciplines.

Overall, the findings of our study indicate that surgical branch residents represent a particularly vulnerable group with respect to burnout and professional toxicity. Strategies including workload regulation, structured mentorship, psychological support systems, improved duty scheduling, and promotion of a healthy learning environment may help reduce burnout and improve professional satisfaction among resident doctors. Similar recommendations were emphasized by Obeagu EI et al.^[18] who highlighted the need for institutional-level interventions to address burnout among medical trainees and healthcare professionals.

Similar findings were reported by Johnson HM et al.^[19] who evaluated work-life balance among physicians and found that gender and professional demands significantly influenced satisfaction with work-life integration. They observed that maintaining balance between personal life and medical responsibilities is an important determinant of physician well-being and burnout prevention.

In another study, Molwitz I et al.^[20] demonstrated that poor work-life balance was strongly associated with physician burnout and reduced career satisfaction. They emphasized that supportive workplace policies, flexible scheduling, and improved professional environments are essential for maintaining personal well-being among doctors. The better balance observed among female residents in our study may reflect differences in specialty distribution, personal coping strategies, and expectations related to professional roles.

Poor sleep quality was significantly more common among clinical residents (78.0% vs 36.0%, $p < 0.001$). Poissonnet CM et al.^[21] also reported that increased occupational stress and irregular work schedules among healthcare professionals were associated with impaired sleep quality and burnout. Professional satisfaction was not significantly different between clinical and non-clinical branches (72.0% vs 56.0%, $p = 0.062$). However, higher burnout was strongly associated with reduced professional satisfaction, with only 37.8% of high-burnout residents reporting satisfaction compared with 88.4% among low-burnout residents ($p < 0.001$). Similar observations were reported by West et al.^[3] who highlighted burnout as a major determinant of reduced career satisfaction among physicians.

Additionally, good sleep quality was associated with higher professional satisfaction (83.3% vs 57.3%, $p =$

0.001), supporting findings by Dyrbye et al.^[1] that physician well-being factors significantly influence professional satisfaction and career outcomes.

CONCLUSION

The present study concluded that residents from clinical branches, particularly those involved in high-intensity clinical work, experience greater burnout and poorer sleep quality compared with residents from non-clinical branches due to increased workload, patient-care responsibilities, emergency duties, and occupational stress. However, despite these challenges, clinical branch residents demonstrated higher professional satisfaction, which may be attributed to the emotional fulfilment gained from patient recovery, successful treatment outcomes, meaningful clinical interactions, and positive expectations regarding future career growth. The study also revealed that female residents, especially those from non-clinical branches, reported better personal–professional life balance and greater satisfaction with their ability to manage professional and personal responsibilities. These findings highlight the importance of developing specialty-specific strategies to reduce burnout, improve sleep quality, and maintain the sense of purpose and satisfaction associated with medical practice.

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