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Burnout And Its Correlates Among Medical Residents In A Tertiary Care Teaching Hospital Of Western Uttar Pradesh: A Cross-Sectional Study

Dr. Gopi Raman[1], Dr. Rahul Bansal[2], Dr. Monika Gupta[3],
Dr. Chhavi Kiran Gupta[4], Dr. Vivek Kumar[5]

(Junior Resident, Department Of Community Medicine, Subharti Medical College, Swamy Vivekanand Subharti University, Meerut, Uttar Pradesh, India)
(Professor, Department Of Community Medicine, Subharti Medical College, Swamy Vivekanand Subharti University, Meerut, Uttar Pradesh, India)
(Professor And Head, Department Of Psychiatry, Subharti Medical College, Swamy Vivekanand Subharti University, Meerut, Uttar Pradesh, India)

Abstract
Background - *Burnout among medical residents is increasingly recognised as a major occupational health concern due to prolonged working hours, academic burden, sleep deprivation, and emotional stress. Burnout adversely affects psychological well-being, clinical performance, and quality of patient care. Limited evidence is available regarding burnout among resident doctors in Western Uttar Pradesh. The present study was conducted to assess burnout and its correlates among medical residents in a tertiary care teaching hospital.*
Methods - *A hospital-based cross-sectional study was conducted among 262 resident doctors working in a tertiary care teaching hospital in Meerut, Uttar Pradesh, from November 2024 to November 2025. Participants were selected using purposive sampling. Data were collected using a structured questionnaire consisting of sociodemographic and residency-related variables along with validated scales, including the Copenhagen Burnout Inventory (CBI), Perceived Stress Scale (PSS-4), Brief Emotional Intelligence Scale (BEIS-10), and FACIT Spiritual Well-Being Scale. Data were analysed using SYSTAT version 13.2. Chi-square test and logistic regression analysis were applied. A p-value <0.05 was considered statistically significant.*
Results - *Among the 262 resident doctors, 50.0% had low burnout, 37.0% had moderate burnout, and 13.0% had high burnout. Moderate-to-high personal burnout was observed in 64.9% participants, work-related burnout in 53.1%, and patient-related burnout in 27.5%. Moderate-to-high perceived stress was reported by 83.7% residents. Most residents worked 8–12 hours daily (63.0%), while 31.7% worked more than 12 hours per day. Higher burnout levels were observed among residents with prolonged duty hours and increased stress levels.*
Conclusion - *Burnout was highly prevalent among resident doctors, particularly in the personal and work-related domains. Heavy workload, long working hours, and perceived stress contributed significantly to burnout. Institutional interventions focusing on stress management, wellness programs, duty-hour regulation, and psychological support are recommended to improve resident well-being.*
Key Words: *Burnout, Resident doctors, Occupational stress, Medical residents, Emotional exhaustion, Public health*

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I. Introduction

Burnout is a psychological syndrome resulting from chronic workplace stress that has not been successfully managed. Christina Maslach conceptualised burnout as a multidimensional construct comprising emotional exhaustion, depersonalization, and reduced personal accomplishment. (1) Healthcare professionals, particularly resident doctors, are especially vulnerable to burnout because of prolonged duty hours, heavy clinical workload, academic responsibilities, emotional strain, and sleep deprivation. (2)

Residency training represents one of the most demanding phases of medical education. Resident doctors are expected to simultaneously manage patient care, emergency duties, academic work, examinations, research activities, and thesis responsibilities. (3) Continuous exposure to stressful clinical situations and critically ill patients often results in emotional exhaustion and mental fatigue. (4) Burnout among resident doctors not only affects physician well-being but also compromises patient safety, quality of care, professional satisfaction, and healthcare productivity. (5)

Global literature demonstrates that burnout among resident doctors is highly prevalent, with studies reporting prevalence ranging from 17% to 76% depending on speciality and assessment methods. (6) International

studies have identified excessive workload, long working hours, inadequate sleep, organisational stress, and poor work-life balance as major determinants of burnout. [7] Indian studies have similarly reported a high prevalence of burnout among resident doctors, particularly in clinical and emergency-based specialities. [8]

The COVID-19 pandemic further intensified occupational stress among resident doctors due to increased workload, redeployment to critical care areas, fear of infection, and uncertainty regarding treatment protocols. [9] Burnout has also been associated with depression, suicidal ideation, reduced job satisfaction, and increased medical errors. [10]

Despite growing recognition of physician burnout as a public health issue, limited data are available on burnout and its correlates among resident doctors in tertiary care teaching hospitals in Western Uttar Pradesh. [11] Understanding the burden and determinants of burnout is essential for designing effective institutional interventions and promoting physician well-being. [12]

II. Material And Methods

Study Design and Setting - A hospital-based cross-sectional study was conducted among resident doctors at Subharti Medical College and Hospital, Meerut, Uttar Pradesh, from November 2024 to November 2025.

Study Population -Junior residents and senior residents from both clinical and non-clinical departments working in the institution.

Inclusion Criteria

- Resident doctors working in the institution for more than three months.
- Residents who provided written informed consent.

Exclusion Criteria

- Residents with major psychiatric illness.
- Residents who declined participation.
- Incompletely filled questionnaires.

Sample Size - The sample size was calculated using the formula:

$n = Z^2pq/d^2$

Based on a previously reported burnout prevalence of 56.66%[13], the minimum sample size calculated was 262.

Sampling Technique - Purposive sampling technique was used.

Study Tools - Data were collected using a self-designed structured questionnaire consisting of two sections.

Section A included sociodemographic and residency-related variables such as age, gender, marital status, family type, branch, year of residency, duty hours, night duties, and substance use.

Section B included validated scales:

- Copenhagen Burnout Inventory (CBI) [14]
- Perceived Stress Scale (PSS-4) [15]
- Brief Emotional Intelligence Scale (BEIS-10) [16]
- FACIT Spiritual Well-Being Scale [17]

Data Collection Procedure - A list of resident doctors was obtained from the administrative office. Data collection was performed department-wise during seminar sessions after obtaining permission from the respective Heads of Departments. Written informed consent was obtained from all participants. Confidentiality and anonymity were maintained.

Statistical Analysis - Data were entered in Microsoft Excel and analysed using SYSTAT version 13.2. Descriptive statistics were expressed as frequencies and percentages. Chi-square test was used to determine the association between categorical variables. Logistic regression analysis was used to identify predictors of burnout. A p-value <0.05 was considered statistically significant.

Ethical Considerations – Ethical approval was obtained from the Institutional Ethics Committee of Subharti Medical College and Hospital, Meerut, before commencement of the study.

III. Results

Table 1. Sociodemographic and Residency-Related Characteristics of Resident Doctors (N = 262)

Variable	Category	Frequency (n)	Percentage (%)
Age (Years)	21–30	204	77.9
	31–40	58	22.1
Gender	Male	150	57.3
	Female	112	42.7
Marital Status	Unmarried	209	79.8
	Married	53	20.2
Year of Residency	First Year	100	38.2
	Second Year	66	25.2
	Third Year	66	25.2
	Senior Resident	30	11.4
Branch Category	Clinical	234	89.3
	Non-clinical	28	10.7
Duty Hours/Day	6–8 hours	14	5.3
	8–12 hours	165	63.0
	>12 hours	83	31.7
Night Duties/Week	None	25	9.5
	1–2 duties	178	67.9
	3–4 duties	44	16.8
	>4 duties	15	5.8

Table 1 shows that the present study included 262 resident doctors, most of whom were in the 21–30 years age group (77.9%). Male residents accounted for slightly more than half of the participants (57.3%), while female residents constituted 42.7%. A large majority of the residents were unmarried (79.8%) and belonged to joint families (76.0%). Most participants were Hindu (76.7%), followed by Muslim and other religious groups.

With regard to residency-related characteristics, first-year residents formed the largest group in the study (38.2%). The majority of participants belonged to clinical specialities (89.3%), which is expected in a tertiary care teaching hospital setting where clinical departments manage a high patient load. A considerable number of residents reported prolonged working hours, with nearly one-third (31.7%) working for more than 12 hours per day. Most residents performed one to two night duties per week, although some reported more frequent night shifts. Overall, these findings suggest that resident doctors were working under demanding conditions with substantial workload and duty commitments, factors that may contribute to increased stress and burnout.

Table 2. Distribution of Burnout Among Resident Doctors According to Copenhagen Burnout Inventory Domains.

Burnout Domain	Low Burnout n (%)	Moderate Burnout n (%)	High Burnout n (%)
Personal Burnout	92 (35.1)	118 (45.0)	52 (19.9)
Work-Related Burnout	123 (46.9)	102 (38.9)	37 (14.2)
Patient-Related Burnout	176 (67.2)	69 (26.3)	17 (6.5)
Overall Burnout	131 (50.0)	97 (37.0)	34 (13.0)

Table 2 shows the distribution of burnout among resident doctors according to the Copenhagen burnout inventory. Personal burnout was the most commonly affected domain among resident doctors, with nearly two-thirds experiencing moderate-to-high burnout. Work-related burnout was also highly prevalent, whereas patient-related burnout was comparatively lower. Overall, half of the residents experienced moderate-to-high burnout, indicating a substantial burden of occupational stress among postgraduate trainees.

Figure 1. Distribution of residents according to the overall level of burnout CBI

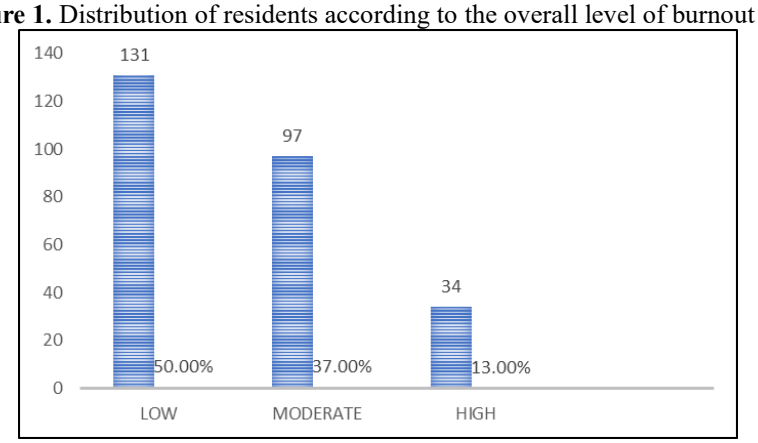

Table 3. Association between Broad Branch and Burnout among Resident Doctors (Clinical/Nonclinical Departments).

Department	Low Burnout n (%)	Moderate Burnout n (%)	High Burnout n (%)	Total	χ^2 (df)	p-value
General Medicine	24 (48.0)	19 (38.0)	7 (14.0)	50	3.77 (14)	0.997
General Surgery	21 (46.7)	17 (37.8)	7 (15.5)	45		
Obstetrics & Gynecology	14 (40.0)	15 (42.9)	6 (17.1)	35		
Pediatrics	16 (53.3)	10 (33.3)	4 (13.4)	30		
Orthopedics	13 (52.0)	9 (36.0)	3 (12.0)	25		
Anesthesiology	15 (60.0)	7 (28.0)	3 (12.0)	25		
Emergency Medicine	10 (41.7)	10 (41.7)	4 (16.6)	24		
Non-clinical Departments	15 (53.6)	10 (35.7)	3 (10.7)	28		
Total	**131 (50.0)**	**97 (37.0)**	**34 (13.0)**	**262**		

Table 3 shows that the association between broad branch and burnout level among resident doctors was analysed using the Chi-square test. The findings showed that the distribution of burnout levels was relatively similar across different departments, with no marked variation in the proportions of low, moderate, or high burnout.

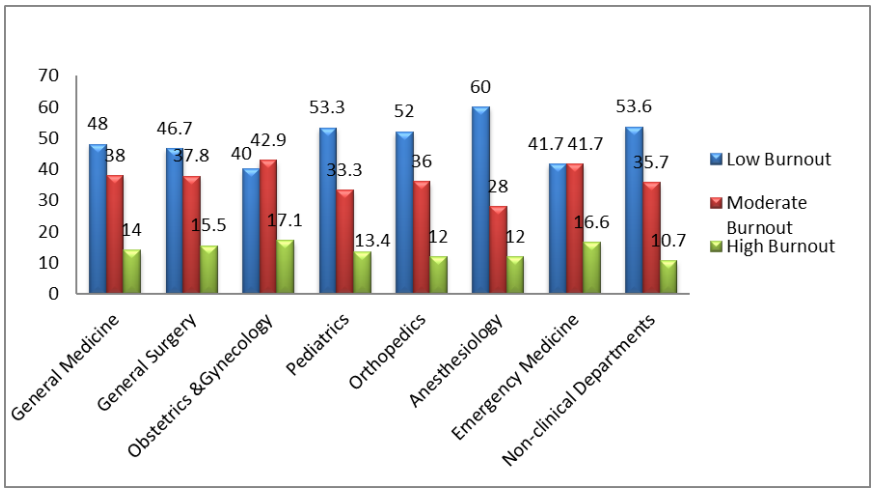

Figure 2. Association between Broad Branch and Burnout among Resident Doctors (Clinical/Nonclinical Departments)

Table 4: Association Between Work Variables and Burnout

Variable	Category	Low Burnout n (%)	Moderate Burnout n (%)	High Burnout n (%)	χ^2 Value	p-value
Duty Hours/Day	6–8 hours	11 (78.6)	3 (21.4)	0 (0.0)	18.42	0.001*
	8–12 hours	92 (55.8)	58 (35.2)	15 (9.0)		
	>12 hours	28 (33.7)	36 (43.4)	19 (22.9)		
Night Duties/Week	None	18 (72.0)	6 (24.0)	1 (4.0)	14.67	0.005*
	1–2 duties	101 (56.7)	61 (34.3)	16 (9.0)		
	3–4 duties	10 (22.7)	24 (54.6)	10 (22.7)		
	>4 duties	2 (13.3)	6 (40.0)	7 (46.7)		
Branch Category	Non-clinical	21 (75.0)	6 (21.4)	1 (3.6)	9.31	0.009*
	Clinical	110 (47.0)	91 (38.9)	33 (14.1)		
Year of Residency	First Year	48 (48.0)	40 (40.0)	12 (12.0)	2.94	0.816
	Second Year	34 (51.5)	23 (34.8)	9 (13.6)		
	Third Year	38 (57.6)	21 (31.8)	7 (10.6)		
	Senior Resident	11 (36.7)	13 (43.3)	6 (20.0)		
Branch as First Choice	Yes	116 (54.2)	75 (35.0)	23 (10.8)	6.12	0.047*
	No	15 (31.2)	22 (45.8)	11 (22.9)		

Table 5 shows that the present study demonstrated a significant association between burnout and work-related variables such as prolonged duty hours, frequent night duties, clinical speciality, and branch preference. Residents working more than 12 hours daily exhibited substantially higher moderate-to-high burnout levels compared to those working fewer hours. Similarly, increasing frequency of night duties was associated with

progressive elevation in burnout severity. Clinical branch residents experienced greater burnout than those from non-clinical departments, likely due to heavier patient load and emergency responsibilities. In addition, residents whose current speciality was not their first choice demonstrated higher burnout levels, suggesting reduced professional satisfaction and motivation. These findings emphasise the important role of occupational workload and workplace-related stressors in the development of burnout among resident doctors.

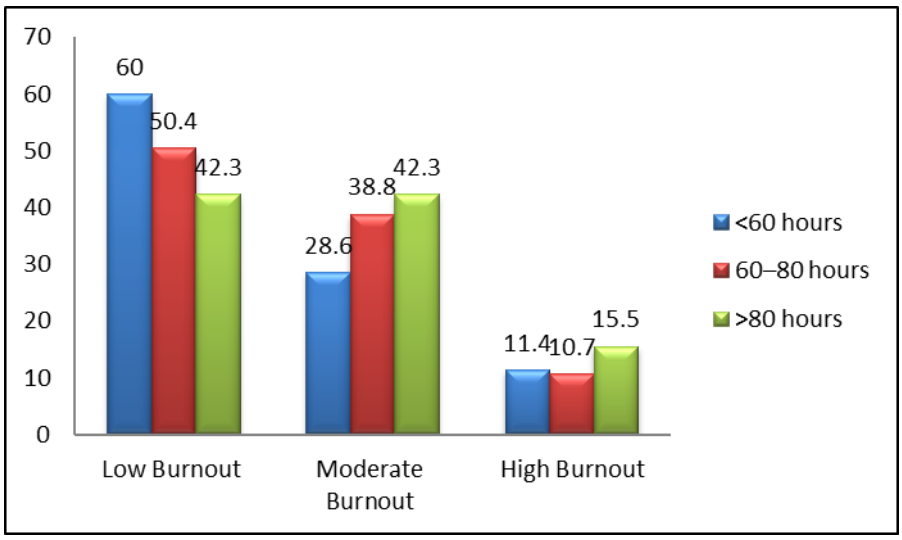

Figure 3: Work-related Burnout by Duty Hours

Table 5: Distribution of Residents According to Perceived Stress, Emotional Intelligence

Variable	Category	Frequency (n)	Percentage (%)
Perceived Stress	Low Stress (0–5)	43	16.3
	Moderate Stress (6–10)	133	50.6
	High Stress (11–16)	86	33.1
Emotional Intelligence	Low / Below Average (0–30%)	62	23.7
	Moderate / Average (31–70%)	137	52.3
	High / Above Average (71–100%)	63	24.0

Table 5 shows that most resident doctors experienced moderate perceived stress (50.6%). Similarly, moderate emotional intelligence was observed among 52.3% of participants. Regarding spiritual well-being, 45.4% of residents demonstrated moderate spiritual well-being, while 40.1% reported high spiritual well-being.

Table 6: Association of Perceived Stress and Emotional Intelligence with Burnout

Variable	Category	Low Burnout n (%)	Moderate Burnout n (%)	High Burnout n (%)	Total	χ^2	p-value
Perceived Stress	Low Stress	32 (75.0)	8 (18.7)	3 (6.3)	43	22.64	<0.001
	Moderate Stress	78 (58.2)	45 (33.6)	11 (8.2)	133		
	High Stress	23 (27.1)	44 (51.8)	18 (21.1)	86		
Emotional Intelligence	Low EI	20 (32.2)	27 (43.5)	15 (24.2)	62	18.75	<0.001
	Moderate EI	73 (53.3)	47 (34.3)	17 (12.4)	137		
	High EI	40 (63.5)	23 (36.5)	0 (0.0)	63		

Table 6 shows that a statistically significant association was observed between perceived stress and burnout among resident doctors ($\chi^2 = 22.64$, $p < 0.001$). High burnout was more prevalent among residents with high stress levels (21.1%) compared to those with moderate and low stress levels.

Similarly, emotional intelligence showed a significant association with burnout ($\chi^2 = 18.75$, $p < 0.001$). High burnout was most common among residents with low emotional intelligence (24.2%), whereas none of the residents with high emotional intelligence experienced high burnout. These findings suggest that elevated stress increases burnout risk, while higher emotional intelligence may serve as a protective factor against burnout among resident doctors.

Figure 4: Association between Stress Level and Burnout

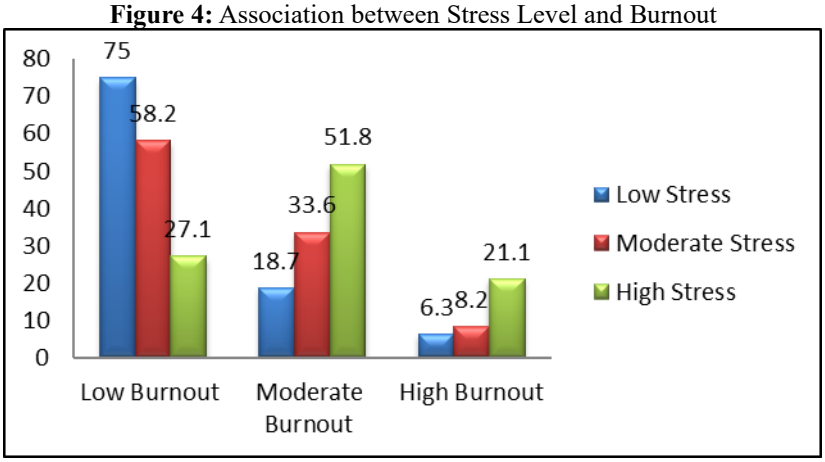

Figure 5. Association between Emotional Intelligence and Burnout

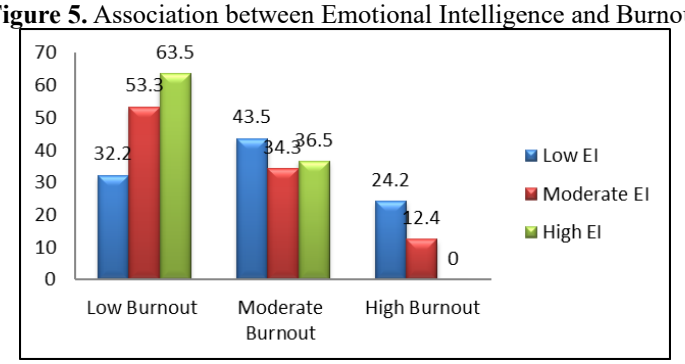

Table 7: Logistic Regression Analysis of Socio-demographic Predictors of Burnout among Resident Doctors

Variable	Category (Reference)	Odds Ratio (OR)	95% Confidence Interval	p-value
Age	≥31 years (Ref: 21–30 years)	1.06	(0.42 –2.67)	0.90
Gender	Female (Ref: Male)	0.78	(0.36 –1.68)	0.53
Marital Status	Married (Ref: Unmarried)	0.91	(0.39–2.11)	0.83
Type of Family	Nuclear (Ref: Joint)	1.81	(0.79–4.15)	0.16

Outcome variable: High burnout (Yes/No)-

Table 7 shows logistic regression analysis was conducted to assess the association between socio-demographic variables and high burnout among resident doctors. The analysis revealed that none of the variables, including age, gender, marital status, and type of family, were significantly associated with high burnout.

Although residents belonging to nuclear families demonstrated relatively higher odds of burnout compared to those from joint families, this association did not reach statistical significance. Overall, these findings indicate that socio-demographic characteristics were not significant predictors of burnout in the present study.

IV. Discussion

The present study demonstrated a substantial burden of burnout among resident doctors in a tertiary care teaching hospital. Nearly half of the participants experienced moderate-to-high burnout, indicating that burnout remains a significant occupational health concern among resident doctors.

The prevalence observed in the present study is consistent with findings from previous Indian and international studies reporting burnout prevalence ranging from 35% to 60% among resident doctors.[18] Similar findings have been reported by Langade et al., Grover et al., and Khasne et al., who observed high levels of emotional exhaustion and occupational stress among healthcare professionals.[8,11,9]

Personal burnout emerged as the most affected domain in the present study. This finding reflects the cumulative impact of prolonged workload, inadequate rest, sleep deprivation, and emotional exhaustion associated with residency training. Similar observations have been reported in studies by Ratnakaran et al. and Chand et al., where emotional exhaustion was the predominant burnout dimension.[13,19]

Work-related burnout was also highly prevalent among residents. Long duty hours, frequent night shifts, high patient load, and academic responsibilities likely contributed to occupational exhaustion. Residents working more than 12 hours per day demonstrated comparatively higher burnout levels, highlighting the adverse effects of excessive workload.[20]

Patient-related burnout was comparatively lower than personal and work-related burnout. This finding may suggest that direct patient interaction continues to provide professional fulfilment and intrinsic motivation among resident doctors despite occupational stress. (21)

The study also demonstrated a high prevalence of perceived stress, with more than four-fifths of residents reporting moderate-to-high stress levels. Perceived stress is recognised as a major contributor to burnout and psychological distress among healthcare workers. (22)

Emotional intelligence and spiritual well-being appeared to have potential protective roles against burnout. Residents with better emotional regulation and stronger spiritual well-being may possess improved coping mechanisms and psychological resilience. (23,24)

Burnout among resident doctors has important implications for healthcare systems. Persistent burnout may lead to depression, reduced productivity, impaired clinical performance, increased medical errors, and reduced quality of patient care. (25) Therefore, institutional measures addressing physician well-being are urgently required.

V. Limitations

The study was cross-sectional in nature; therefore, causal relationships could not be established. Purposive sampling may limit the generalisability of findings.

VI. Conclusion

Burnout was highly prevalent among resident doctors, particularly in the personal and work-related domains. Heavy workload, prolonged duty hours, frequent night duties, and high perceived stress were major contributors to burnout.

The findings highlight the urgent need for institutional interventions, including stress management programs, wellness initiatives, psychological counselling services, mentorship systems, and duty-hour regulation to improve mental well-being among resident doctors. Early identification and prevention of burnout are essential to maintain physician health, enhance job satisfaction, and improve the quality of patient care.

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Conflict of Interest - None declared.

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