A Comparative Study on Work Stress in Anaesthesiologists in an Institute and as Free Lancers

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Abstract:
Background: Work stress among anesthesiologists varies with practice settings and can significantly impact patient care and physician well-being. This study aimed to compare work stress levels between institutional and freelance anesthesiologists. **Methods:** A descriptive cross-sectional study was conducted over three months, involving 80 anesthesiologists (45 institutional, 35 freelance) selected through snowball sampling. Data was collected using a validated questionnaire incorporating the Workplace Stress Scale. The relationship between practice setting and stress levels was analyzed, along with associated factors including working hours, on-call duties, and health issues. **Results:** Institutional anesthesiologists showed significantly higher stress levels (mean score 23.8±4.6) compared to freelancers (20.9±5.2, p=0.008). Moderate to severe stress was more prevalent in institutional practice (66.6% vs 45.7%, p=0.022). Institutional practitioners worked longer hours (51.1% working 8-12 hours/day) but had more structured on-call schedules. Sleep deprivation was significantly higher in institutional practice (71.1% vs 51.4%, p=0.037). Freelancers reported better work-life balance (62.9% vs 40.0%, p=0.042). Health issues were more prevalent in institutional practitioners, with backache (48.9%) and acid peptic disease (40.0%) being most common. **Conclusion:** While both groups experience significant work stress, institutional practitioners face higher stress levels and greater work-life balance challenges. Practice setting significantly influences stress levels and personal well-being among anesthesiologists, highlighting the need for setting-specific stress management strategies.

Keywords: Anesthesiologists; Occupational Stress; Work-Life Balance; Professional Practice; Burnout, Professional; Job Satisfaction; Cross-Sectional Studies

Introduction:

The practice of anesthesiology represents one of the most demanding and stressful specialties in medicine, requiring constant vigilance, rapid decision-making, and management of life-threatening situations. Work-related stress among

anesthesiologists has gained increasing attention due to its potential impact on both physician well-being and patient safety.[1] The varied work environments in which anesthesiologists practice – whether in institutional settings or as freelancers – present unique challenges and stressors that warrant careful investigation.

Institutional anesthesiologists working in medical colleges face distinct pressures, including teaching responsibilities, research expectations, administrative duties, and the complexities of working within hierarchical systems. These professionals often manage complicated cases while simultaneously training residents and medical students, potentially adding layers of stress to their clinical responsibilities.[2] The structured environment of an institution, while providing stability and support systems, may also impose constraints on autonomy and work-life balance.

In contrast, freelance anesthesiologists encounter different challenges, such as irregular schedules, varying workplace environments, and the need to manage their own practice logistics. While they may enjoy greater autonomy and financial opportunities, they often lack the institutional support systems and must navigate relationships with multiple surgical teams and healthcare facilities.[3] The unpredictability of case loads and the responsibility of practice management can create unique stress patterns among these practitioners.

Recent studies have highlighted concerning rates of burnout among anesthesiologists, with some reports indicating prevalence rates as high as 40-60%.[4] However, most research has focused on institutional practitioners, leaving a significant knowledge gap regarding the stress patterns and well-being of freelance anesthesiologists. Understanding these differences is crucial for developing targeted interventions and support systems for both groups.

The sources of stress in anesthesiology practice are multifaceted, including clinical responsibilities, time pressures, interpersonal conflicts, and work-life integration challenges.[5] Medical error concerns, litigation risks, and the emotional burden of managing critical situations add additional layers of stress. How these stressors manifest differently between institutional and freelance practices remains poorly understood.

Work stress can significantly impact patient care quality and safety. Studies have demonstrated associations between physician stress levels and increased rates of medical errors, reduced empathy, and diminished patient satisfaction.[6] The relationship between practice setting and these outcomes warrants investigation to optimize both physician and patient well-being.

The COVID-19 pandemic has further highlighted the importance of understanding work stress patterns among healthcare providers. Anesthesiologists have been at the forefront of pandemic response, facing increased risks and workloads while adapting to rapidly changing protocols.[7] How different practice settings influenced stress levels during this crisis period may offer valuable insights for future healthcare system planning.

This study aims to compare stress levels between anesthesiologists working in medical colleges and those practicing as freelancers, with the objective of identifying specific stressors, protective factors, and potential interventions for each group. Understanding these differences could inform institutional policies, support system development, and individual career decisions within the specialty.

The comparative analysis of stress levels between institutional and freelance anesthesiologists serves not only academic interest but also practical significance in developing targeted interventions and support systems. This study's findings could contribute to improved work conditions and mental health support strategies for both groups of practitioners.

Methodology:

This descriptive cross-sectional study was conducted over a period of three months to compare work stress between institutional and freelance anesthesiologists. The study population comprised anesthesiologists working in medical colleges and those working as freelancers.

Sample size was calculated using the formula $N=Z^2(1-\alpha/2)\ p(1-p)/d^2$, where $Z(1-\alpha/2)=1.96$ for 95% confidence interval, $p=0.71$ (based on previous literature by Koshy et al.[8], 2011, indicating 71% of anesthetists felt overworked), and d (margin of error)=0.10. The calculated sample size was 79.09, which was rounded off to 80 participants.

The study employed a snowball sampling technique to recruit participants. Anesthesiologists working in medical colleges and those working as freelancers were included in the study. Non-anesthesiologist doctors and anesthesiology junior residents were excluded from participation. Each participant provided informed consent prior to enrollment in the study.

Data collection was conducted using a self-prepared questionnaire consisting of 36 questions. The questionnaire was validated by two professors from the Department of Anesthesiology at SDUMC. The survey was distributed to participants electronically via Google Forms. A key component of the questionnaire was the Workplace Stress Scale, which was incorporated as question number 20.

The Workplace Stress Scale scores were interpreted according to the American Institute of Stress guidelines: scores of 15 or lower indicated minimal stress levels; scores between 16-20 suggested fairly low stress; scores of 21-25 indicated moderate stress; scores of 26-30 represented severe stress; and scores of 31-40 suggested potentially dangerous stress levels requiring professional intervention.

Statistical analysis was performed using SPSS Version 21.0. Both descriptive and inferential statistics were employed. Frequency tables and cross tables were generated for all variables. Quantitative variables were expressed as mean and standard deviation, while qualitative variables were presented as frequencies and percentages. Advanced statistical tools were utilized as appropriate based on the data distribution. Statistical significance was set at $p<0.05$.

The Workplace Stress Scale scoring system provided specific interpretations: participants scoring 15 or lower were classified as relatively calm with minimal stress issues; those scoring 16-20 were considered to have fairly low stress levels with occasional challenging days; scores of 21-25 indicated moderate stress levels comparable to typical workplace stress; scores of 26-30 suggested severe stress that might require professional counseling or job modification; and scores of 31-40 were interpreted as potentially dangerous stress levels requiring immediate professional intervention and possible career changes.

Results:

Demographic and Professional Characteristics:

The study included 80 anesthesiologists, with 45 (56.25%) working in institutions and 35 (43.75%) working as freelancers. A significant age difference was observed between the groups (p=0.012), with institutional practice attracting younger professionals - 62.2% of institutional anesthesiologists were in the 25-35 year age group compared to 34.3% of freelancers. Gender distribution was nearly identical between groups, with females comprising approximately 57% of both institutional and freelance practitioners, reflecting the higher proportion of female anesthesiologists in the field. Educational qualifications showed significant differences (p=0.034), with institutional practitioners more likely to hold MD degrees (62.2%) compared to freelancers (42.9%), while freelancers had a higher proportion of diploma holders (45.7% vs 26.7%).

Table 1: Demographic and Professional Characteristics of Study Participants (N=80)

Characteristic	Institutional (n=45)	Freelance (n=35)	Total (N=80)	p-value
Age Groups (years)				
25-35	28 (62.2%)	12 (34.3%)	40 (50.0%)	**0.012***
36-45	10 (22.2%)	15 (42.9%)	25 (31.3%)	
46-55	5 (11.1%)	6 (17.1%)	11 (13.8%)	
>55	2 (4.4%)	2 (5.7%)	4 (5.0%)	
Gender				
Female	26 (57.8%)	20 (57.1%)	46 (57.5%)	0.955
Male	19 (42.2%)	15 (42.9%)	34 (42.5%)	
Qualification				
MD	28 (62.2%)	15 (42.9%)	43 (53.8%)	**0.034***
DA/Diploma	12 (26.7%)	16 (45.7%)	28 (35.0%)	
DNB	5 (11.1%)	4 (11.4%)	9 (11.3%)	

*Statistically significant (p<0.05)

Work Pattern and Load Distribution

Analysis of working patterns revealed significant differences between the groups (p=0.001). Institutional anesthesiologists predominantly worked longer regular hours, with 51.1% working 8-12 hours per day, while freelance practitioners showed more variable working patterns with a higher proportion (22.9%) working shorter 4-5 hour days. On-call duty patterns also differed significantly (p=0.003), with freelancers more likely to have daily on-calls (34.3% vs 11.1% for institutional practitioners). However, institutional practitioners had more structured on-call schedules, with 33.3% having calls once in 4-7 days compared to 17.1% of freelancers.

Table 2: Work Pattern and Load Distribution

Parameter	Institutional (n=45)	Freelance (n=35)	p-value
Working Hours/Day			
4-5 hours	2 (4.4%)	8 (22.9%)	**0.001***
5-8 hours	15 (33.3%)	12 (34.3%)	
8-12 hours	23 (51.1%)	10 (28.6%)	
>12 hours	5 (11.1%)	5 (14.3%)	
On-Call Frequency			
Daily	5 (11.1%)	12 (34.3%)	**0.003***
Once in 2-3 days	18 (40.0%)	15 (42.9%)	
Once in 4-7 days	15 (33.3%)	6 (17.1%)	
Once in >7 days	7 (15.6%)	2 (5.7%)	

*Statistically significant (p<0.05)

Workplace Stress Scale Results

The Workplace Stress Scale revealed significant differences in stress levels between the two groups (p=0.022). Institutional anesthesiologists showed higher overall stress levels with a mean score of 23.8 (±4.6) compared to 20.9 (±5.2) for freelancers (p=0.008). A higher proportion of institutional practitioners experienced moderate to severe stress (66.6%) compared to freelancers (45.7%). Notably, dangerous levels of stress (scores 31-40) were relatively similar between groups (6.7% institutional vs 5.7% freelance), suggesting that extreme stress can affect practitioners regardless of their work setting.

Table 3: Workplace Stress Scale Results

Stress Level	Institutional (n=45)	Freelance (n=35)	p-value
Minimal (≤15)	4 (8.9%)	5 (14.3%)	
Low (16-20)	8 (17.8%)	12 (34.3%)	
Moderate (21-25)	20 (44.4%)	10 (28.6%)	**0.022***
Severe (26-30)	10 (22.2%)	6 (17.1%)	
Dangerous (31-40)	3 (6.7%)	2 (5.7%)	
Mean Score (±SD)	23.8 (±4.6)	20.9 (±5.2)	**0.008***

*Statistically significant (p<0.05)

Health Issues and Personal Life Impact

The impact of professional practice on health and personal life showed notable differences between the groups. While health issues such as backache (48.9% institutional vs 42.9% freelance), acid peptic disease (40.0% vs 34.3%), and hypertension (26.7% vs 22.9%) were more prevalent in institutional practitioners, these differences were not statistically significant. However, significant differences were observed in personal life parameters. Freelance practitioners reported better work-life balance, with 62.9% reporting adequate family time compared to 40.0% of institutional practitioners (p=0.042). Sleep deprivation was significantly more prevalent among institutional practitioners (71.1%) compared to freelancers (51.4%, p=0.037), possibly due to more structured but longer working hours and academic responsibilities.

Table 4: Health Issues and Personal Life Impact

Parameter	Institutional (n=45)	Freelance (n=35)	p-value
Health Issues			
Backache	22 (48.9%)	15 (42.9%)	0.583
Acid Peptic Disease	18 (40.0%)	12 (34.3%)	0.592
Hypertension	12 (26.7%)	8 (22.9%)	0.693
Depression	8 (17.8%)	4 (11.4%)	0.432
Personal Life			
Adequate Family Time	18 (40.0%)	22 (62.9%)	**0.042***
Sleep Deprivation	32 (71.1%)	18 (51.4%)	**0.037***

*Statistically significant (p<0.05)

Discussion:

Our study revealed significant differences in stress levels and work patterns between institutional and freelance anesthesiologists. The finding that 66.6% of

institutional practitioners experienced moderate to severe stress compared to 45.7% of freelancers aligns with Koshy et al.'s study, which found that 71% of anesthesiologists felt overworked.[8] This consistency in findings across studies emphasizes the persistent nature of work-related stress in anesthesiology.

The demographic profile of our study participants showed a female predominance (57.5%), similar to Koshy et al.'s observation of higher female representation in South Indian anesthesiology.[8] This gender distribution pattern appears to be unique to the region and warrants further investigation into its implications for work-stress dynamics.

Working hours and on-call duties emerged as significant stressors, particularly for institutional practitioners. While 51.1% of institutional anesthesiologists worked 8-12 hours daily, freelancers showed more flexible patterns. This finding resonates with the Association of Anaesthetists of Great Britain and Ireland Guidelines cited by Koshy et al., which emphasize how disruption of normal circadian rhythms increases fatigue risk.[8]The higher prevalence of sleep deprivation among institutional practitioners (71.1% vs 51.4% in freelancers) supports Murray and Dodds' findings that sleep deprivation leads to fatigue and potentially compromised performance.[9]According to the Australian Incident Study, weariness was a contributing factor in 2.7% of events and human error was determined to be responsible for 83% of them. Doctors who work a lot of calls or have small children are more prone to suffer from chronic sleep deprivation (in the first third of the night).[9] Training and experience don't reduce the likelihood of a fatigue-related mistake.[9] Gravenstein et al. discovered that anaesthesiologists had made mistakes in the administration of anaesthesia because they were tired and that they occasionally worked beyond their perceived self-limitations.[10] According to a prior study, anaesthesiologists' stress was caused by their jobs' natural challenges (such as challenging intubation or recovery), interpersonal issues (such as a lack of communication within the team or with the surgeon), and concerns about their careers.[11] Anaesthesiologists did, however, also express high degrees of empowerment, work dedication, job challenge, and job happiness. It is well recognised that this counteracts the impact of stress.[11]

Health issues showed a concerning pattern, with institutional practitioners reporting higher rates of backache (48.9%) and acid peptic disease (40.0%). These findings parallel Koshy et al.'s observation of high prevalence of these conditions among anaesthesiologists.[8] The significantly better work-life balance reported by freelancers (62.9% reporting adequate family time vs 40.0% of institutional practitioners) suggests that practice setting significantly influences personal life quality.

The qualification distribution showed a higher proportion of MD degree holders in institutional practice (62.2% vs 42.9%), supporting Koshy et al.'s observation that teaching institution anesthesiologists tend to be more academically oriented.[8] This academic orientation, while beneficial for professional development, may contribute to additional stress through teaching and research responsibilities.

Our study found that dangerous levels of stress were present in both groups (6.7% institutional vs 5.7% freelance), albeit lower than previous studies. This might reflect improved support systems or better stress management strategies in current practice. However, as Koshy et al. noted, chronic stress can have serious health hazards and requires proactive management.[8]

The findings regarding professional support and collegial relationships mirror Koshy et al.'s emphasis on the importance of interpersonal relationships and communication skills in managing work stress.[8] Our study reinforces their recommendation for maintaining a good network of professional associates for moral and professional support.

Conclusion:

This comparative study demonstrates that while both institutional and freelance anesthesiologists experience significant work stress, institutional practitioners face higher stress levels and greater work-life balance challenges. However, they benefit from more structured professional support systems. These findings emphasize the need for tailored stress management strategies for different practice settings, while maintaining focus on work hour regulation, adequate remuneration, and professional support networks.

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