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Original research article

THE PREVALENCE OF STRESS LEVEL AND BURNOUT AMONG PRACTICING VASCULAR SURGEONS IN PAKISTAN

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Abstract: *Vascular surgeons in Pakistan confront challenging work conditions that can lead to a high incidence of burnout, a state of physical, emotional, and mental exhaustion caused by prolonged and intense stress. With the specialty still emerging in Pakistan.* ***Objective****: This study sought to quantify the prevalence of stress levels and burnout among these surgeons.* ***Methods:*** *Conducted by the Department of Vascular and Endovascular Surgery, Shaheed Mohtarma Benazir Bhutto Institute of Trauma, Karachi, this cross-sectional electronic survey included all practicing vascular surgeons. Non-probability convenience sampling was employed, and data were collected over two weeks using Google Forms. The Maslach Burnout Inventory—Human Services Survey for Medical Personnel was incorporated to measure burnout.* ***Results:*** *The survey found a significant presence of high-level burnout symptoms among vascular surgeons, particularly in emotional exhaustion and personal achievement domains, with lesser but still notable levels among orthopedic and general surgeons. A substantial number reported low job satisfaction and experienced family conflicts.* ***Conclusion:*** *The study highlights the critical levels of burnout among vascular surgeons in Pakistan, emphasizing the need for interventions to mitigate stress and improve job satisfaction.*

Keywords: Vascular Surgery, Burnout, Stress Levels, Pakistan, Job Satisfaction, Work Environment.

Introduction

The specialty of vascular surgery encompasses a niche community of medical professionals, with their numbers being notably scarce on an international scale and even more so within Pakistan.(1, 2) These specialists are tasked with managing diseases that impose a considerable economic burden and rank among the most frequent causes of death in the United States.(3, 4) Vascular surgeons navigate demanding work environments that challenge them both physically and psychologically due to extended work hours, high-stakes surgeries, and the care of patients with complex medical conditions requiring intensive management. This combination of factors necessitates considerable personal sacrifice and has been linked to a markedly high incidence of burnout among physicians in this specialty, with vascular surgeons reportedly experiencing the second-highest burnout rate and the least satisfaction with their career choice.(5)

Burnout in this context is often a precursor to inefficiencies in clinical practice, associated with an increased risk of medical errors(6), less optimal patient care(7), and a decline in empathy which may contribute to lower levels of patient satisfaction. Furthermore, this issue may precipitate premature retirement among surgeons and a decrease in the overall effort dedicated to professional duties.(8, 9)

In Pakistan, vascular surgery is a burgeoning field, with an increase in dedicated training opportunities only emerging recently. There exists a deficiency of local studies that investigate the prevalence of burnout among active vascular surgeons in the region. It is crucial to establish the true prevalence and to identify contributing factors, which would inform strategies to improve the situation in educational settings and professional practice, ultimately benefiting both the surgeons and their patients.

Given these considerations, it becomes critical to conduct a dedicated study focused on the local demographic of vascular surgeons. Identifying the true extent of burnout is essential, and steps should be taken by the governing bodies and training institutions to address the findings. This may include implementing changes that encourage more physicians to specialize in vascular surgery and support those currently practicing, thereby enhancing the quality of care provided to patients in Pakistan.

Methodology

The study was conducted by the Department of Vascular and Endovascular Surgery at the Shaheed Mohtarma Benazir Bhutto Institute of Trauma, Karachi. Over a period of two weeks following the distribution of survey forms, data was collected.

The design was a cross-sectional electronic survey, and the inclusion criterion was any practicing surgeon who met the definition of surgical consultants as defined above. Surgeons who had been in practice for less than one year or those who did not respond were excluded from the study.

A non-probability convenience sampling technique was employed. The population sampled consisted of the entire cohort of vascular surgeons, with a comparison group comprising a similar number of orthopedic and general surgeons.

Prior to data collection, approval from the Ethical Review Committee (ERC) was obtained. Google Forms was utilized to create electronic forms that were disseminated either through the platform or via email to participants. Following

the initial distribution, a reminder was sent at the one-week mark. Participation in the study was entirely voluntary. The forms included questions about demographics, personal, family, and social status, current workplace assessment, in addition to incorporating the Emotional Exhaustion and Depersonalization domains of Maslach Burnout Inventory – Human Services Survey (Medical Personnel).

Following were the operational definitions used in our study:

- Practicing Surgeon: Defined as vascular, orthopedic, and general surgeons who had been actively working in their respective fields for at least one year.
- Maslach Burnout Inventory: This term referred to a rigorously validated tool established in 1981 for assessing burnout. It encompassed 22 items across three components: Emotional Exhaustion, Depersonalization, and Personal Accomplishment. For the study, the variant tailored for medical personnel, known as the Maslach Burnout Inventory – Human Services Survey (Medical Personnel), was utilized, focusing specifically on the Emotional Exhaustion and Depersonalization components.
- Job Dissatisfaction: This construct was measured using a set of five questions derived from Brayfield and Rothe's job satisfaction questionnaire.
- Work on Family Conflict (10-12): The assessment of work on family conflict was based on ten questions that had been used in prior research studies on the subject.

Data analysis was conducted using SPSS version 23. Standard descriptive statistics, including means and standard deviations, were calculated for quantitative data. Frequencies and percentages were utilized for qualitative data. The Maslach Burnout Inventory was scored as outlined in the literature. A score of 27 or higher on the Maslach Burnout Inventory Emotional Exhaustion domain, and 10 or more on the Maslach Burnout Inventory Depersonalization domain were considered high, and analyses established the individual scores. Surgeons with higher scores were regarded as having at least one symptom of burnout. Bivariate analyses were initially conducted to identify possible associations with burnout. These factors were then included in multivariate regression models to identify independent risk factors for burnout.

ETHICAL CONSIDERATIONS:

No identifiable information pertaining to the participants was collected for the purpose of the study. All data obtained were maintained with strict confidentiality.

Results

The mean age of surgeons was 39.66 years, with a range from 32 to 63 years. Gender distribution shows 76.5% male and 23.5% female. Comorbidities include 3.1% with diabetes mellitus, 20.4% with hypertension, and 11.2% with other conditions with a BMI greater than 30 kg/m² was observed in 21.4 surgeons. Regarding specialties, 21.4% are in vascular surgery, 36.7% in orthopedics, and 41.8% in general surgery. Work settings show 18.4% in public, 9.2% in private, and 72.4% in both settings. Most participants work more than 10 hours (62.2%), and 33.7% perform 5 - 8 surgeries per week. Work experience varies, with 30.6% having 1 - 3 years, 32.7% with 5 - 10 years, and 25.5% with over 10 years of experience. (TABLE 1).

Emotional exhaustion is particularly among vascular surgeons, with 76.2% high-level burnout, followed by 75.0% among orthopedic surgeons and 61.0% among general surgeons. Depersonalization rates are notably high across all specialties, with 95.2% among vascular surgeons, 80.6% among orthopedic surgeons, and 95.1% among general surgeons experiencing high-level burnout. In terms of personal achievement, vascular surgeons again exhibit higher rates of burnout, with 95.2% experiencing high-level burnout, compared to 63.9% among orthopedic surgeons and 51.2% among general surgeons. Job satisfaction is notably low across all specialties, with the majority disagreeing, particularly among vascular surgeons (76.2%) and general surgeons (73.2%). Family conflicts also present, with a significant portion of surgeons agreeing, particularly among orthopedic surgeons (47.2%) (TABLE 2 & 3)

Table 1: Demographic Characteristics of Study Participants

Variables	Mean±SD/Frequency (%)	95% C. I
Age in years (Range)	39.66 ± 7.25 (32-63)	38.21----41.12
Gender		
Male	75 (76.5)	
Female	23 (23.5)	
Comorbidities		
Diabetes Mellitus	3 (3.1)	
Hypertension	20 (20.4)	
Others	11 (11.2)	
None	64 (65.3)	
Body Mass Index		
15 - 19.9 kg/m^2	13 (13.3)	
20 - 24.5 kg/m^2	23 (23.5)	
25 - 30 kg/m^2	41 (41.8)	
>30 kg/m^2	21 (21.4)	
Specialty		
Vascular Surgery	21 (21.4)	
Orthopedics	36 (36.7)	
General Surgery	41 (41.8)	
Workplace		

Public	18 (18.4)
Private	9 (9.2)
Both	71 (72.4)
Working Hours	
< 6 hours	4 (4.1)
6 – 8 hours	6 (6.1)
8 – 10 hours	27 (27.6)
> 10 hours	61 (62.2)
Surgeries performed per week	
< 5	20 (20.4)
5 – 8	33 (33.7)
8 – 10	14 (14.3)
10 – 15	13 (13.3)
> 15	18 (18.4)
Work Experience	
1 – 3 years	30 (30.6)
3 – 5 years	11 (11.2)
5 – 10 years	32 (32.7)
> 10 years	25 (25.5)

Table 2: Comparison of Maslach Burnout Inventory (MBI) among Vascular, Orthopedic and General Surgeon

Maslach Burnout Inventory	Vascular Surgeon (n=21)	Orthopedic Surgeon (n=36)	General Surgeon (n=41)
Emotional Exhaustion			
Low-Level Burnout	0 (0.0)	27 (75.0)	25 (61.0)
Moderate Burnout	5 (23.8)	5 (13.9)	9 (22.0)
High-Level Burnout	16 (76.2)	4 (11.1)	7 (17.1)
Depersonalization			
Low-Level Burnout	0 (0.0)	3 (8.3)	0 (0.0)
Moderate Burnout	1 (4.8)	4 (11.1)	2 (4.9)
High-Level Burnout	20 (95.2)	29 (80.6)	39 (95.1)
Personal Achievement			
Low-Level Burnout	0 (0.0)	4 (11.1)	11 (26.8)
Moderate Burnout	1 (4.8)	9 (25.0)	9 (22.0)
High-Level Burnout	20 (95.2)	23 (63.9)	21 (51.2)

A significant P-value for emotional exhaustion & personal achievement (P=0.000) & (P=0.006) while non-significant for depersonalization (P=0.138).

Table 3: Comparison of Specialty with Demographic, Job Satisfaction & Family Conflicts

Variable		Vascular Surgeon (n=21)	Orthopedic Surgeon (n=36)	General Surgeon (n=41)
Age	<50 years	21 (100.0%)	33 (91.7%)	37 (90.2%)
	>50 years	0 (0.0%)	3 (8.3%)	4 (9.8%)
Gender	Male	21 (100.0%)	32 (88.9%)	22 (53.7%)
	Female	0 (0.0%)	4 (11.1%)	19 (46.3%)
Comorbid	Diabetes Mellitus	0 (0.0%)	2 (5.6%)	1 (2.4%)
	Hypertension	1 (4.8%)	8 (22.2%)	11 (26.8%)
	Others	8 (38.1%)	3 (8.3%)	0 (0.0%)
BMI	15 - 19.9 kg/m^2	1 (4.8%)	4 (11.1%)	8 (19.5%)
	20 - 24.5 kg/m^2	5 (23.8%)	11 (30.6%)	7 (17.1%)

	25 - 30 kg/m^2	14 (66.7%)	13 (36.1%)	14 (34.1%)
	>30 kg/m^2	1 (4.8%)	8 (22.2%)	12 (29.3%)
Job Satisfaction	Agree	5 (23.8%)	17 (47.2%)	11 (26.8%)
	Disagree	16 (76.2%)	19 (52.8%)	30 (73.2%)
Family Conflicts	Agree	8 (38.1%)	17 (47.2%)	12 (29.3%)
	Disagree	13 (61.9%)	19 (52.8%)	29 (70.7%)

Age (P=0.347), Gender (P=0.000), Comorbid (P=0.001), Body Mass Index (P=0.066), Job Satisfaction (P=0.094), Family Conflicts (P=0.268)

Discussion

The study's results revealed a substantial level of burnout among vascular surgeons in Pakistan, with high rates of emotional exhaustion and depersonalization affecting 76.2% and 95.2% of participants in these domains, respectively. Orthopedic and general surgeons also reported high burnout rates, with emotional exhaustion impacting 75% and 61% respectively, and high levels of depersonalization affecting more than 80% in both groups. These challenges were coupled with low job satisfaction, especially among vascular and general surgeons, and a notable percentage of surgeons reported conflicts between work and family life, particularly orthopedic surgeons.

The current study's findings are concerning, revealing high levels of burnout among vascular surgeons in Pakistan. When compared to Ghazanfar et al., who investigated cardiac physicians (13), our study mirrors the alarming rates of burnout and the potential implications for patient care and physicians' well-being. Similarly, Davila et al. identified a correlation between physical discomfort during surgical procedures and burnout among vascular surgeons, which complements our findings related to the physical demands of the profession (14). In a Danish context, Møller et al. reported a significant prevalence of burnout among vascular surgeons and trainees, which resonates with the substantial burnout symptoms identified in our cohort (15).

Moreover, the study by Destrieux et al. explored the perceptions of vascular surgeons regarding outpatient versus inpatient surgery work environments (16), which aligns with our identification of workplace settings as a factor influencing burnout levels. Janko and Smeds highlighted burnout, depression, and stress among vascular surgery trainees (17), suggesting that these issues begin early in surgical careers and may continue throughout professional life, as evidenced in our research. Lozano-Franco et al. addressed burnout interventions (18), which could be valuable in informing potential strategies to mitigate the issues identified in our study. Lastly, Møller et al.'s national survey in Denmark provided insights into the consequences of burnout, emphasizing the significant impact on job satisfaction and work-life balance (19), findings that strongly parallel the experiences of surgeons in our study.

This study's primary strength lies in its focused examination of burnout among vascular surgeons in Pakistan, a demographic that has not been extensively studied before. It employed a comprehensive and validated tool, the Maslach Burnout Inventory – Human Services Survey, ensuring the reliability of the assessment of burnout's emotional exhaustion and depersonalization aspects. Moreover, the study's methodological rigor, with its cross-sectional design and the inclusion of a broad demographic within the surgical profession, contributes to the robustness of its findings.

However, the study is not without limitations. The use of non-probability convenience sampling may introduce sampling bias, limiting the generalizability of the results to all vascular surgeons in Pakistan. Furthermore, the reliance on self-reported measures for assessing burnout, though practical, may be subject to response bias, where participants might underreport or overreport their levels of stress and burnout. Despite these limitations, the study offers valuable insights into the burnout levels within a critical surgical specialty and sets the stage for longitudinal research and interventional studies aimed at reducing burnout.

Conclusion

The study conclusively reveals a high prevalence of burnout among vascular surgeons in Pakistan, underscoring the urgent need for interventions at both the individual and organizational levels. The emotional exhaustion and depersonalization experienced by the surgeons suggest a work environment in urgent need of improvement to ensure the well-being of healthcare providers and the quality of patient care. While the research presents robust evidence due to its methodological approach, it also indicates a need for continued investigation into the causative factors and potential remedial strategies that can be implemented. The findings call for healthcare policymakers to prioritize the mental health of surgeons and to promote a sustainable work-life balance. This study serves as a call to action for the implementation of support systems and organizational changes to mitigate the risks associated with surgeon burnout.

Declarations

Data Availability statement

All data generated or analyzed during the study are included in the manuscript.

Ethics approval and consent to participate.

Approved by the department concerned. (IRB.MBBH/KHR-043/22)

Consent for publication

Approved

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Conflict of interest

The authors declared an absence of conflict of interest.

Authors Contribution

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Concept & Design of Study

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