

“Burnout syndrome” in anesthesiologists and remedial measures- A narrative review

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Abstract

Anesthesiology, as an occupation, has its own unique sets of challenges, problems, issues, and circumstances, all leading to “occupational stress,” which by now should be unequivocally accepted as a well-established fact. It is futile to continue pursuing research questions like, if there “really” is stress existing among practicing anesthesiologists/trainees, by conducting questionnaire-based surveys and doing meta-analyses. A significantly high incidence of existence of occupational stress in anesthesiologists is an undisputable and practical reality, which, when longstanding, gets culminated into “burnout syndrome” with its disastrous outcomes. Rather than pursuing the often-trodden path of finding the incidence, sources, and other superficial issues, an in-depth study of available literary evidence in relation to burnout has been carried out. Objectifying it as a “syndrome,” its etiopathogenesis, pathophysiology inclusive of the prevalent theories of its causality, typology, and progression into various stages of/continuum of the process as an evolving clinical entity have been described. The preventive measures and “coping strategies” have been discussed at length in the end. It is the fervent hope and the desire of the authors that this discourse will sensitize all anesthesiologists, especially the younger and upcoming future generation, and help them avoid becoming a prey to this dreadful entity!

Keywords: Anesthesiologists, burnout, occupational stress

Introduction

All human beings have to earn their livelihood. Performing the required tasks, work, or businesses to earn the livelihood can be described as an “occupation.”^[1] Performing these tasks on a daily basis under various circumstances and in correlation with different individuals/professionals leads to various interactions, some of which are positive, while many can be negative too. The resulting feeling of emotional/psychological, physical, as well as social tension is called as “stress.”^[2] This stress related to one’s occupation is considered as “occupational stress.” The occupational stress is generally an underrated

and commonly ignored malady, often relegated to the realm of subconsciousness as an unwanted but an unavoidable evil. With increasing complexities of occupational demands and working environment, it is assuming serious and alarming proportions, which cannot be ignored.

With the advent of newer and modern anesthetic agents, better and sophisticated monitoring devices, latest technological tools at hand, and more organized, evidence- and protocol-based regimens, the practice of anesthesia has become comparatively safer than in past. The epidemiological data from the western countries confirms this fact by quoting that the anesthetic mortality has significantly dropped to 2.1–6/100,000

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anesthesia procedures^[3-5] or 8.2 deaths per million hospital surgical discharges.^[6] However, with increasing challenges like haphazard working hours, night duties, excessive and sustained pressure of performing to the best of their abilities, recurrent fear of medico-legal issues, financial instability, and minimal or total lack of control over the working situation leading to conflict and personality clashes, increasing number of anesthesiologists are falling prey to the occupation-related challenges, which manifests as chronic stress.^[7]

The review of the available literature in this area underlines the existence of this condition beyond doubt.^[7-15] Many of the reports are based on personal experiences,^[8,9] surveys,^[10-13] and a few reviews.^[14,15] They undoubtedly establish the occupational stress being inherent to various jobs, more so common among anesthesiologists, transcending the geographic boundaries/countries/cultures/creeds/ethnicities and such diverse circumstances, from the USA^[7,12] to South Africa,^[9] Belgium,^[14] Brazil,^[15] Portugal,^[16] and India.^[10,11,13] Among those working in many occupations/professions, anesthesiologists have been found to be affected significantly by this problem.

It is by now confirmed and well accepted that occupational stress for anesthesiologists, what is colloquially termed as "burnout syndrome," is a real entity and generally accepted as a part of day-to-day professional challenge. Most of the literature is found to be looking at only the superficial issues^[7,10-15] like the following:

- a. trying to find out if in actuality, there is the real occurrence of occupation-related stress, in anesthesiology, in particular;
- b. if it does, then how does it fare or compare in relation to the rest of the professions/occupations? and^[14]
- c. what are the sources of stress among professionals?

So, in short, the main focus of the whole issue is somewhat skewed in trying to find out and prove what has been an irrefutably well-established, but not so well-accepted fact.

This is a narrative review on the topic, which tries to put all the available evidence in proper circumspection.

Material and Methods

The evidence presented in this narrative review has been compiled from search engines like google[®], google scholar[®], and PubMed[®]. The search terms employed were "occupational stress" and "burnout syndrome." In the initial search literally, 2,27,000+ results were available. Then, the search was further refined using specific terms like "anaesthesiologists," "stress and anaesthesiology," "theories of burnout," and "coping strategies," and the number dwindled to 3300+.

Expert opinions, survey-based studies, and reviews were included. Unpublished reports, abstracts, and general topics were excluded. The attention was focused specifically on the articles dealing with the etiology, pathogenesis, clinical features, diagnostic tools, and natural progression-related topics. The material was included irrespective of the factors like language, geographic regions, racial, religious, or any social biases. The references of the shortlisted articles were cross-checked for relevant citations. Ultimately, 41 publications were found to be relevant. All have been included and cited in the reference section and compiled in Table 1 and Table 1a.

The following material was found to be useful for elaboration of the basic concepts.

We hypothesized that "the burnout syndrome among the professionals of Anesthesiology, with its extensions as critical care, pain management, emergency medicine, is a matter of serious concern and consideration" and attention needs to be on pinpointing its etiopathogenesis; understanding its pathophysiology; identifying the clinical features/warning signs in the early stage to prevent it from evolving or to control it once it is diagnosed; and prophylactically and therapeutically taking the steps of interventional modalities called as "coping strategies."

Etiopathogenesis and pathophysiology

The burnout syndrome can be described as "a spectrum of disorders of emotional as well as physical origins, where primarily, the occupation-related stress can be blamed as the commonest reason." It is commonly seen in professions where the individual professionals face a high level of constant requirement and intervention with people with physical and emotional needs.^[4,9,10] Anesthesiology, by the virtue of its all-encompassing existence in the medical field and being the specialty where, ranging from the patient/patient's relatives, paramedical staff to multiple surgical specialists/superspecialists, a whole range of variety of individuals have to be catered to, has the propensity of being a high-stress profession and thus has increased chances of burnout.^[8]

Burnout is an ongoing process characterized by specific features like "emotional exhaustion, depersonalization, and decreased sense of personal/professional achievement" (triad of burnout).^[10]

Theories of burnout

Certain causative theories have been suggested as follows.

Lazarus and Folkman's transactional theory of work-related stress

According to this theory, stress is the direct outcome of a transaction taking place between an individual and their

Table 1: Evidence presented in the narrative review

Authors	Title of the article	Type of the article	Particulars of the article
Kain <i>et al.</i> ^[7]	Anesthesiologists and acute perioperative stress: A cohort study. <i>Anesthesia & Analgesia</i> 2002;95: 177-183	Original research	Hemodynamics, anxiety levels, and salivary cortisol of 38 anesthesiologists were studied while anesthetizing 203 patients. Conclusion was that the anesthesiology practice is associated with characteristics of acute physiologic stress
Lande-Marghade ^[8]	Tackling stress in anaesthesia practice-personal experience and insights. <i>Journal of Anaesthesia and Critical Care Case Reports</i> . 2017; 3 (1): 1-2	Editorial	Anesthesiologists are at a high risk for developing burnout. The coping strategies need to be followed
Walt ^[9]	When there is no more fuel for the fire. <i>S Afr J Anaesth Analg</i> . 2013;19: 135-6	Editorial	Burnout is a major problem not only at the individual anesthesiologist level, but also it can harm the society
Bakshi <i>et al.</i> ^[10]	Work related stress: A survey of Indian anaesthesiologists. <i>Journal of Anaesthesiology Clinical Pharmacology</i> . 2017;33: 86-91	Original research	A survey-based study in which 1178 responders from various backgrounds (medical faculty, residents, and freelancers) were studied; 91% rated their stress levels as moderate–extreme
Shidhaye <i>et al.</i> ^[11]	Evaluation of stressors and coping strategies for stress in anaesthesiologists. <i>Indian Journal of Anaesthesia</i> . 2011; 55; 193-98.	Original research	In this questionnaire-based study with 192 anesthesiologists, stressors like time constraints (34%), medicolegal constraints (24%), interference with personal (home life (22%), clinical problems (20%), and communication problems (9%) were identified
Oliveira <i>et al.</i> ^[12]	The prevalence of burnout and depression and their association with absence of safety and practice standards: A survey of United States. <i>Anesth Analg</i> 2013;117:182-93	Original research	Out of 2773 residents, 1508 responded in this survey; the risks were high burnout (23%) and depression (22%). Suicidal ideation, excessive alcohol intake, and heavy smoking were the additional outcomes
Khetarpal <i>et al.</i> ^[13]	Occupational stress in anaesthesiologists and coping strategies: A review. <i>Int J Sci Stud</i> . 2015;3 (6): 188-192	Non-systematic review	There is a high prevalence of burnout in anesthesiologists. Coping strategies have been suggested
Nyssen <i>et al.</i> ^[14]	Occupational stress and burnout in anaesthesia. <i>BJA</i> 2003; 90 (3): 333-7. DOI: 10.1093/bja/aeg058	Original research	A tool-based (PSSM-A and WOCCQ) study concluded that 40.4% anesthesiologists were suffering from high emotional exhaustion (burnout), with the maximum rate being in young trainees under 30 years of age
Volquind <i>et al.</i> ^[15]	Occupational hazards and diseases related to practice of anesthesiology. <i>Rev Bras Anesthesiol</i> . 2013; 63: 227-32	Review	Anesthesiologist needs to follow good practice and needs to be careful to avoid the risks at the workplace they are exposed to
Sousa and Mourao ^[16]	Burnout in anesthesiology. <i>Rev Bras Anesthesiol</i> . 2018;68 (5): 507-517.	Systematic review	Anesthesiologists have a high propensity to develop burnout with its complications such as suicidal tendencies and medicolegal errors. Coping strategies need to be devised to prevent it
Lazarus and Folkman ^[17]	Transactional theory and research on emotions and coping. <i>European Journal of Personality</i> 1987;1 (3): 141-169	Original research	The authors propound their transactional theory of stress
Prem <i>et al.</i> ^[18]	Thriving on challenge stressors? Exploring time pressure and learning demands as antecedents of thriving at work. <i>Journal of Organizational Behavior</i> . 2017; 38 (1): 108-123	Original research	124 workers were exposed to two different stressors, viz., time pressure and learning demands, influenced by multiple factors like personality, situational demands, coping skills, previous experiences, time lapse
Harris <i>et al.</i> ^[19]	How do work stress and coping work? Toward a fundamental theoretical reappraisal. <i>British Journal of Guidance & Counselling</i> . 2004;32 (2):223-234	Original research	Main focus is on making fundamental reappraisal on how the stress at workplace is and how the coping strategies work
Lazarus and Launier ^[20]	Stress-related transactions between person and environment. In <i>Perspectives in Interactional Psychology</i> . ed. by Anon: Springer, 1978; 287-327	Original research	The ideas of various transactions that take place between a person stressed by his work and their environment have been expounded
Siegrist ^[21]	Adverse health effects of high-effort/low-reward conditions. <i>Journal of Occupational Health Psychology</i> 1996;1 (1): 27	Original research	It takes into consideration the adverse effects due to imbalance which happens in a high effort–low reward scenario

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Table 1: Contd...

Authors	Title of the article	Type of the article	Particulars of the article
Caplan ^[22]	Person–environment fit theory and organizations: Commensurate dimensions, time perspectives, and mechanisms. <i>Journal of Vocational Behavior</i> 1987; 31 (3), 248-267	Original research	This article tries to study the effect of work-related demands and person's capabilities/skills to cope with the stress
Karasek ^[23]	Job demands, job decision latitude, and mental strain: Implications for job redesign. <i>Administrative Science Quarterly</i> , 1979;24 (2):285-308	Original research	Based upon the survey data-based studies, a model has been proposed with the basic idea that the interaction between job-demand and lack of job decision-making authority can lead to mental stress
Johnson and Hall ^[24]	Job strain, work place social support, and cardiovascular disease: A cross-sectional study of a random sample of the Swedish working population. <i>American Journal of Public Health</i> 1988;78 (10):1336-1342	Original research	Cross sectional study involving 13,779 subject tests relationship (prevalence) between psychosocial work environment, social support, and cardiovascular diseases
Van der Doef and Maes ^[25]	The job demand–control (-support) model and psychological well-being: A review of 20 years of empirical research. <i>Work & Stress</i> 1999;13 (2):87-114	Review	This detailed narrative review focuses on the JDC (S) model in relation to psychological well-being. It covers research from 63 samples published in the period 1979–1997
Palmer et al. ^[26]	Revised model of organisational stress for use within stress prevention/management and wellbeing programmes—Brief update. <i>International Journal of Health Promotion and Education</i> 2003;41 (2): 57-58	Original research	The pictorial representation of the Palmer–Cooper theory
Hobfoll ^[27]	Social and psychological resources and adaptation. <i>Review of General Psychology</i> 2002;6 (4): 307	Original research	The interaction between the resources, their conservation, and various models of well-being
Halbesleben et al. ^[28]	Getting to the "COR" understanding the role of resources in conservation of resources theory. <i>Journal of Management</i> 2014;40 (5):1334-1364	Review	The "COR" theory is reviewed in detail, especially with the view of resources
Farber ^[29]	Burnout in psychotherapist: Incidence, types, and trends. <i>Psychotherapy in Private Practice</i> 1990, 8:35-44.	Original research	The incidence of burnout is 2%–6% among psychotherapists, and it is more common in institute-based and immature professionals
Montero-Marín et al. ^[30]	A new definition of burnout syndrome based on Farber's proposal. <i>J Occup Med Toxicol.</i> 2009; 4:31. https://doi.org/10.1186/1745-6673-4-31	Original research	Documents dealing with preliminary typology were scrutinized and Farber's proposal was confirmed
Gil-Monte ^[31]	<i>El síndrome de quemarse por el trabajo (burnout). Una enfermedad laboral en la sociedad del bienestar</i> Madrid: Pirámide psicología; 2005.	Review	About the burnout syndrome and its impact on society
Farber ^[32]	Understanding and treating burnout in a changing culture. <i>JCLP/In Session. Psychotherapy in Practice</i> 2000, 56:589-594.	Original research	Farber has done extensive research in the area of "burnout" and is a highly cited author
Farber ^[33]	Treatment strategies for different types of teacher burnout. <i>Psychotherapy in Practice</i> 2000, 56:675-689	Case reports	Various diagnostic/typological criteria, preventive and therapeutic modalities, and coping strategies have been discussed in various formats by him
Farber ^[34]	Subtypes of burnout: Theory, research and practice. Paper presented at the Annual Conference, American Psychological Association. San Francisco; 2001	Conference proceedings: Paper presented in the annual conference	
Kakiashvili et al. ^[35]	The medical perspective on burnout. <i>Int J Occup Med Environ Health</i> 2013 Jun; 26 (3):401-12. doi: 10.2478/s13382-013-0093-3. Epub 2013 Sep 10	Systematic review	Evidence from PubMed/Medline was accessed for medical findings, diagnostic criteria, treatment modalities. Authors have given recommendation of performing the HPA axis tests for early diagnosis of "burnout syndrome"
Lemyre et al. ^[36]	Mesure de stress psychologique (MSP): Manuel d'Utilisation. S.1.Laval, Canada: Université de Laval 1990.	Original research	On the basis of a questionnaire-based study, 696 Canadian subjects were studied and a preexisting tool, PSSM, was modified to PSSM-A
Lindfors et al. ^[37]	Suicidality among Finnish anaesthesiologists. <i>Acta Anaesthesiol Scand</i> 2009; 53:1027-35	Original research	A cross-sectional questionnaire-based study was carried out in 550 Finnish anesthesiologists regarding suicidal ideation. One in four (25%) reported to have thought about committing suicide some time or the other due to occupational stress. Other contributory factors were poor health, low social support, and family problems

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Authors	Title of the article	Type of the article	Particulars of the article
Wischmeyer <i>et al.</i> ^[38]	A survey of propofol abuse in academic anesthesia programs. <i>Anesth Analg</i> 2007; 105:1066-71	Original research	A survey-based study where the incidence/prevalence of propofol abuse in the 126 anesthesia training programs in the USA were studied. There was 10-fold increase in the number of abusing residents with 28% death due to propofol abuse. There is no monitoring mechanism for the abuse of propofol as in opioids
Fry ^[39]	Substance abuse by anaesthetists in Australia and New Zealand. <i>Anaesth Intensive Care</i> 2005; 33:248-55.	Original research	A survey-based study where the incidence/prevalence of substance abuse in 128 anesthesia training programs in Australia and New Zealand was studied. There was a male preponderance with the age group being 25–35 years, with opioid being mainly abused. Significant number of deaths ($n=44$) were reported
Garland <i>et al.</i> ^[40]	Nitrous oxide inhalation among adolescents: Prevalence, correlates, and co-occurrence with volatile solvent inhalation. <i>J Psychoactive Drugs</i> 2009; 41:337-47.	Original research	In this study, 723 subjects exposed to nitrous oxide and other volatile substances were studied and found to have more psychiatric disorders, polydrug abuse, and temperamental fearlessness
Wilson <i>et al.</i> ^[41]	A survey of inhalational anaesthetic abuse in anaesthesia training programmes. <i>Anaesthesia</i> 2008;63: 616-20.	Original re search	106 out of 126 anesthesia training programs in the USA responded to questionnaire. 22% programs had at least one incident of inhalational abuse. Majority of the departments had no monitoring program against inhalational abuse
Ishmail <i>et al.</i> ^[42]	Occupational stress and burnout among frontline Egyptian anaesthesiologists during COVID-19 outbreak in Egypt. <i>Egyptian Journal of Anaesthesia</i> 2021; 37 (1); 91-99. https://doi.org/10.1080/11101849.2021.1891704	Original research	150 subjects responded to this questionnaire-based study. Anesthesiologists working nonstop for more than 2 weeks, with younger age and low social support had higher burnout scores
Bates and Blackhurst ^[43]	Leadership qualities of obstetrics and gynecology departments chairmen of United states medical schools. <i>Am J Obster Gynecol.</i> 1992; 166: 1102-11.	Original research	Chairmen and acting chairmen of obstetrics/gynecology residency programs in 122 US schools were surveyed for preparation of leadership
Cohen and Wills ^[44]	Stress, social support and the buffering hypothesis. <i>Psychol Bull</i> 1985; 98: 310±57	Review	The authors have emphasized the importance of social support to minimize or "buffer" the work-related stress
Jackson ^[45]	The role of stress in anaesthetists' health and wellbeing. <i>Acta Anesthesiol Scand</i> 1999; 43:583-602. Doi: 10.103/j. 1399-6576.1999.430601.x	Review	The author has identified the stressors and factors detrimental to the health of anesthesiologists and proposed a nine-point regimen as a coping strategy
Bajwa and Kaur ^[46]	Risk and safety concerns in anesthesiology practice: The present perspective. <i>Anesth Essays Res.</i> 2012 Jan-Jun; 6 (1):14-20. doi: 10.4103/0259-1162.103365. PMID: 25885495; PMID: PMC4173431 Job burnout. <i>Annu Rev Psychol.</i> 2001; 52:397-42.	Review	The authors have tried to enumerate multiple risks and stressors in anesthesia practice and have suggested a seven-point coping strategy to overcome them
Maslach <i>et al.</i> ^[47]	Job burnout. <i>Annu Rev Psychol.</i> 2001; 52:397-422	Review	A review of last 25 years of research in the burnout has been done, with coping strategies suggested

COR=conservation of resources, HPA=hypothalamo-pituitary-adrenocortical axis, JDC=job demand-control, PSSM=psychological state of stress measure, WOCCQ=working condition and control questionnaire

environment, which may tax their resources and thus threaten their well-being.^[17] This can be further influenced by the individual's reaction to the demands of their occupation and their capabilities, which can be further influenced by a number of factors, including personality, situational demands, coping skills, previous experiences, time lapse, and any current stress state.^[18] According to one study, once the worker, say a junior resident, appraises the expectations of his seniors to be exceeding his capabilities, own resources, and endurance, that leads to stress.^[16]

The main drawback of this theory is that it is considered to be too simplistic and does not take into consideration the factors like an individual's history, future, goals, and identities.^[19]

1. Interactional theories of occupational stress

There are "three main theories" which suggest the causation of stress as a result of the interaction between the initial environmental stimulus and the reaction of an individual to that.^[20]

Table 1a: The following material was found to be useful for elaboration of the basic concepts

Author	Title	Type of publication	Particulars of the publication
Pezaro ^[48]	Theories of work-related-stress [Internet]. Wordpress.com 2018 [cited 10 th July 2022], Available from https://sallypezero.wordpress.com/2018/03/22/theories-of-work-related-stress/ [last accessed 22 July 2022]	Blog	Introduction to various "theories of work-related stress"
Farber ^[49]	Symptoms and Types: Worn-Out, Frenetic, and Underchallenged Teachers. In <i>Crisis in Education. Stress and Burnout in the American Teacher</i> Edited by: Farber BA. San Francisco: Jossey-Bass Publishers; 1991:72-97.	Book chapter	The subtypes of "burnout" have been specified and discussed in detail
Farber ^[50]	Idealism and Disillusionment: Who Teaches, Who Leaves, and Why. In <i>Crisis in Education. Stress and Burnout in the American Teacher</i> Edited by: Farber BA. San Francisco: Jossey-Bass Publishers; 1991:98-125.	Book chapter	Dealing with causality of the burnout
Farber ^[51]	Inconsequentiality – The key to understanding teacher burnout. In <i>Understanding and preventing teacher burnout</i> Edited by: Vandenberghe R, Huberman M. NY: Cambridge University Press; 1999:159-165.	Book chapter	Discussion about the etiology of burnout and preventive measures suggested
Maslach <i>et al.</i> ^[52]	Maslach Burnout Inventory, 3 rd Edn. Palo Alto, CA: Consulting Psychologists Press, 1996	Book chapter	Most widely accepted and used tool MBI for diagnosis has been described

MBI=Maslach Burnout Inventory

- a. Effort–reward imbalance (ERI) theory: This theory proposes that in any employment, the amount of work/effort put in by an individual, as a part of psychological contract, is directly proportional to the social reciprocation in the form of remuneration/rewards, appreciation, and opportunities. Any imbalance resulting in nonfulfillment of these in contract will lead to stress.^[21]
- b. The person–environment fit theory: This theory proposes that the root cause of occupational stress is imbalance between work-related demands involved in the occupation and the person’s capabilities, skill levels, and resources provided to them.^[22] If the employee’s abilities are not able to fit in with the social environment of his/her employment, then conflict is bound to happen, leading to stress.
- c. Job demand–control (JDC) theory: In this theory, it is proposed that an individual’s stress is directly proportional to the employment demands, physical and psychological, interpersonal altercations, management decisions controlling the job, and skill levels of an employee.^[23] The specialty of anesthesiology can well fit in this model where the anesthesiologists face constant conflict happening between the very high demands of the job and the minimal or total lack of control in their hands.
- d. Demand control support (DCS) theory: This is more or less a modification of JDC, where it was proposed that in the disequilibrium of demand and control, if social support is introduced, then it can act as a buffer to reduce the job-related stress.^[24] By corollary, it can be also understood that if the employee is in a high-demand and low-control job and, in addition, is also subjected to poor social support, he/she is in the maximum risk of developing psychological distress.^[25]

2. Allostatic load model

Allostasis is defined as a process of adjustment to cope with real or imagined or anticipated challenges/stress by an

individual’s bodily systems. A constant hyperstimulation leads to complete disturbance of regulation and negative outcomes of an individual’s physical and mental health.

3. Palmer, Cooper, and Thomas model/theory for work-related stress^[26]

This theory explains the pathogenesis of the spectrum, in addition to the etiology.

In Figure 1, on the extreme left are the potential stressors, which an anesthesiologist, like any other employee, is likely to face. The persons facing different culture than their own are at a higher risk to be distressed than the ones working in their own culture. Many anesthesiologists migrate/relocate to various areas away from their own homes. In addition, culture would also include, the “work culture” of the organization/institute. In majority of such places, the work culture is “surgeon centric,” “superspecialist centric,” and generally, NOT anesthesiologist centric because these branches are considered to be revenue generators.

As already has been amply reiterated and pointed out, anesthesia and its associate subspecialties are very high-demand professions in terms of investment of time (long hours), efforts (relentless), skill of high standard, intricacy of knowledge, and an absolute accuracy/perfection, with practically no or minimal chance of trial and error. Logically, all these factors add up over a period of time.

Due to the nature of the work of the specialty, there is minimal or practically no control over the situations/circumstances which may arise during the daily practice of anesthesia.

As would be expected, where one individual has to have relationships of more or less intimate level professionally with multiple partners, the quantum of stress would be automatically

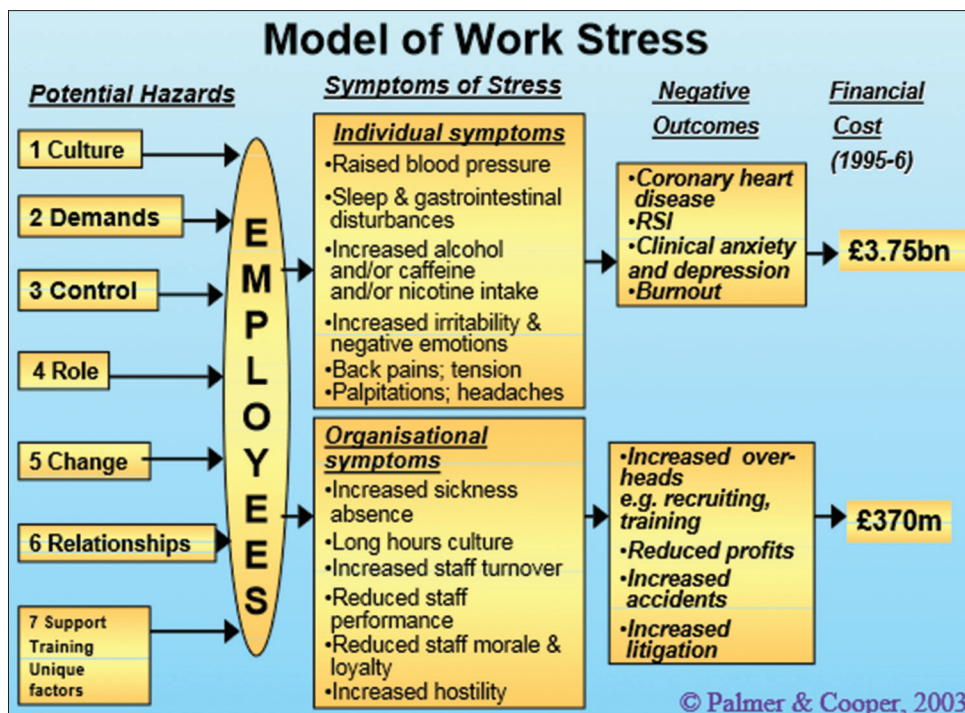


Figure 1: Palmer & Cooper's Model of work stress (with the permission of Prof. Palmer)

multiplied several folds. This situation is an undisputed reality in case of anesthesiology/anesthesiologists.^[4,9,10]

Generally, anesthesiologists have to play their role as a solo, so the support system may not be there to protect/cover them in the hour of need, especially those working in the periphery or as freelancers/individual private practitioners.

In Figure 1, as we go toward the right, the symptoms of stress, negative outcomes, and financial burden become evident. Again, this model fits well in case of anesthesiologists in these aspects too.

4. The conservation of resources (COR) theory

All the models/theories which we have discussed actually only deal with the stressors or challenges at the workplace. They do not take into consideration the stress related to the life/living. The COR theory integrates all these stressors present at workplace and related to life and family together and proposes that an individual is mainly concerned with the resources or material things/conditions/objects/self-esteem/relationships/home/emotional attachments/time or anything which they value, physical, financial, or psychological. Any threat or actual loss of these resources causes stress. This model helps in designing the coping strategies. It is to be understood that resource loss is more important than resource gain. An individual with less resources feels more from loss of resources and vice versa.^[27,28]

The psychological resources which an individual values the most are as follows:^[28]

- A. related to job/employment: job surety/security, contingencies/alternatives available, incentives/rewards, both financial as well as appreciation of job
- B. administrative aspects-: work autonomy, the responsibility supported by the decision making autonomy, growth opportunities, overall control on the day-to-day work, work policies/culture individual as well as family friendly
- C. support system
 - a. organizational: superiors, co-workers/colleagues
 - b. family: partner/spouse, children
- D. self-image: self-esteem, self-confidence, skill control, emotional and psychological stability.

Clinical Features and Diagnosis

As mentioned earlier, this can be considered as a spectrum of disorders and an ongoing process with a chain of events or cyclical occurrences.

According to Farber's proposal,^[29,49] which has been further modified and elaborated by Montero-Marín *et al.*,^[30] there are three subtypes of the syndrome:

- a. frenetic,
- b. underchallenged, and
- c. worn out.

Table 2 explains various parameters of these types.

The main core issue which emerges out all the above mentioned theories ultimately, is that, in response to the work-related challenges, the individual, let us say an anesthesiologist, a junior resident, a consultant, or a private practitioner, after appraising the situation, tries to adapt as per their capabilities. Once they start realizing that this progressively evolving process of chronic stress is getting beyond their capacity to adjust/cope up or their coping strategies to protect themselves are becoming ineffective, then they start going toward the process of burnout.^[31]

So, it is our contention that, rather than differentiating these as individual subtypes, it would be prudent to consider it as a continuous, progressive, and relentless progression of the same pathophysiological process, which eventually turns irreversible [Figure 2], unless some corrective measures and strategies are implemented.

The clinical features will depend upon the type/stage of the above-mentioned spectrum. Many anesthesiologists try to appear as very disciplined, strict, and keen workers, trying to learn the newer skills, protocols, and methodologies. However, with the passage of time and factors like odd and unpredictable working hours, conflicts with the co-workers, especially with surgeons/administration, inability to have semblance of control over the work situation ("playing the second fiddle"), tedium of the daily chores, stagnation and unsustainable professional growth, the unpredictability of the patients' outcomes, fear of

litigation, financial/job security, and lack of recognition by the patients/relatives and the society at large, to mention a few, the progression toward the burnout is initiated. The very involved, very disciplined, high-flying achiever slowly starts getting disillusioned, discouraged, and frustrated. Factually, Farber has published many articles such as studies, reviews, and elucidations describing the chronology of the presentations/features of progression of burnout.^[32-34,49-51] Accordingly, when the worker realizes and apprehends that there is significant discrepancy between the number of efforts put in by them and the outcomes in the form of results, outputs, appreciation, and rewards/incentives actually achieved at the work, then they start sliding down the downward spiral of burnout.

The literature confirms that once established, the process then becomes a major risk factor for the systemic manifestations of multiple systemic disorders, viz., endocrine, cardiovascular, and exacerbation of metabolic conditions and the spectrum of psychological/psychiatric manifestations.^[26]

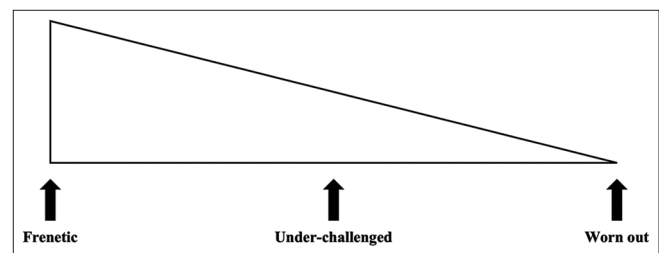


Figure 2: Proposed progression spectrum of various stages of burnout

Table 2: Types of spectrum of burnout syndrome (modified from Farber,^[29,49] Montero-Marín et al.^[30])

Subtypes	Level of dedication to the work	Main value	Characteristics
Frenetic	High	Involvement	Highly applied and committed individuals Works to the point of exhaustion Neglecting own needs Increasingly greater efforts in the face of difficulties High involvement in work Ambition and need for achievements Overload Grandiosity Inability to acknowledge failure Anxiety and irritability
Underchallenged	Intermediate	Indifference	Lack of development Indifference and superficiality in tasks Boredom Negatively affected by monotonous work Absence of overload-induced stress Contemplating another job Lack of challenges, motivation, or desire for engagement
Worn out	Low	Neglect	Lack of control Lack of recognition Difficulties in performing tasks Lack of involvement in work Neglecting responsibilities Depressive symptoms Given up Apathetic Lack of enthusiasm

The assessment of hypothalamo–pituitary–adrenocortical axis (HPA) hypofunction, if carried out at an earlier stage after recognizing the features of burnout, may be useful in the early diagnosis of burnout. The following tests are recommended: ^[35]

- a. salivary cortisol levels- decreased,
- b. cortisol awakening response (CAR)- lower level or lesser increase than expected,
- c. dehydroepiandrosterone sulfate levels (DHEAS)- higher levels,
- d. cortisol: DHEAS ratio- much lower than expected, and
- e. dexamethasone suppression test (DST)- stronger suppression.

Burnout has been also implicated as a risk factor for the exacerbation of coronary artery disease and myocardial infarction.

Many questionnaire-based tools for the diagnosis and confirmation of burnout have been devised by several researchers. Maslach Burnout Inventory (MBI), ^[52] psychological state of stress measure (PSSM) that was later modified to PSSM-A, ^[36] perceived stress scale (PSS), ^[8] and working condition and control questionnaire (WOCCQ) ^[14] are some of them. It is beyond the scope of present discussion to dwell upon these in detail.

The psychosocial problems such as sleep disturbances, depressive thoughts, decreased social interaction, marital and other family problems ultimately culminate into suicidal ideation. One Finnish study concluded that, nearly 25% of anesthesiologists some time or the other had planned or thought about committing suicide. ^[37] One very large study, a survey of the anesthesiology trainees in the USA, concluded that there was high prevalence of depression, burnout, and suicidal ideation. It further concluded that these problems among trainees may actually affect the safety and care of the patients. ^[12]

Many anesthesiologists succumb to pressure and turn toward alcoholism and substance abuse. The burnout being the main reason, ease of availability of these agents to the anesthesiologists also may be an additional significant reason. Commonly abused drugs may be opioids, especially, morphine, fentanyl, and pentazocine, volatile anesthetic agents, nitrous oxide, and intravenous anesthetic agents like propofol and ketamine. ^[38-41]

The pandemic of coronavirus disease 2019 (COVID-19) can be considered as a classic example of how a "continuous duty schedules, excessive workload, risks to one's own survival, and higher chances of contracting the infection" can lead to occupational stress/burnout among the frontline anesthesiologists. ^[42] However, due to exhaustive nature of this

theme and paucity of the space in the present discourse, it is considered to explore this topic separately as an individual review.

Coping Strategies (Preventive Measures and Treatment)

It is obvious from the discussion till now that work-related stress in anesthesiology is a hard reality and needs to be dealt with caution and care.

Two sets of measures are to be integrated at the following levels:

1. Individual/employee level
2. Organizational level

Individual level

The challenges at the work generate the reaction, appraisal, and attitudinal adjustments as per the capabilities of the individual. There is enough evidence that, if higher authority is delegated to the individual anesthesiologists, leading to higher control over the situation in terms of planning of work and time management, improvement in the "work environment," open communications, especially with the surgical colleagues, team effort, and less of ego clashes lead to higher job satisfaction and ultimately curtail the stress. ^[14] As described by Farber, ^[49] and as proposed by us, the early detection of the symptoms of burnout and taking corrective measures can and shall go a long way in preventing the progression of anesthesiologists from "frenetic" to "worn out" stage.

While dealing with anesthesiology trainees, more supportive and caring attitude and balanced supervision with built-in delegation of supervised responsibility and authority to perform certain tasks is needed. In our country, the misguided concept of "preventing the spoon-feeding" reluctance on the part of senior faculty in imparting pedagogical training and delegating the same to the resident community, is detrimental to the foundation building and clarifying the concepts of the trainees. This further adds to building up of sense of helplessness, frustration, and accident-proneness among the trainees of anesthesia. A report reiterates the importance of "mentoring" of trainees by the senior faculty in reducing the professional stress. ^[43] In case of some mishaps or untoward events, uncritical, "no-blame," and confidential discussion should effectively act as the dissipator of emotional overload and provide the required moral/emotional support. ^[43,44] More stress needs to be given on "simulator"-based training.

A specific nine point regimen has been devised and suggested as shown in Table 3. ^[45]

A similar seven-point plan has been suggested, which includes in addition to above-mentioned points, attitudinal and behavioral modification in response to stressful situations, in the form of planning and developing newer strategies to cope up with anticipated stress.^[46]

Organizational level

The transaction of the organization with the individual should be open/transparent, committed, and humane. The expectations and needs of the employee need to be listened to with benevolence and patience. It has been proven beyond doubt that, when in an organization, one employee or a group of employees is targeted, which leads to deterioration of entire work culture. The efforts of anesthesiologists should be rewarded either in cash or in kind, commensurate to their years of experience, skill, and efforts and proportionate to the surgical colleagues (effort–reward theory).^[21] A novel approach of combining the improvement of individual's capabilities as well as bringing about changes in the managerial practice has been suggested.^[47]

Summary and Conclusion

The real daily challenges inherent to practice of our mother specialty, anesthesiology, neither can be glossed over nor belittled. There shall be oddity of hours, cancellations of well-planned programs/functions/events and the sadness/

embarrassment arising among the family members, sudden deterioration of patient's condition, difficult situations arising during the conduct of anesthesia, differences of opinions, arguments, altercations with co-workers, especially surgical consultants, petty ego issues/competitiveness/jealousies of their own colleagues, administrative issues with the management, financial uncertainties, and feelings of helplessness/frustration due to lack or loss of control over the daily happenings in the operating room/organization. The anesthesia trainees have their own plateful of problems. All of these over the period of time cause direct or indirect stress, which, if unresolved, can culminate into "burnout." Our contention is burnout is a progressive, relentless, and generally irreversible process, especially if longstanding. No one else other than us, anesthesiologists, can understand our and our anesthesiologist colleagues' aspirations, expectations, problems, challenges, issues, and frustrations. So, we must have cooperation among us.

If preventive measures are intuitively and preemptively incorporated by the managerial personnel and leadership while administering the daily routine, the disastrous results can be averted.

In addition, the individual anesthesiologists need to adopt certain innovative and ingenious strategies to cope with chronic occupational stress related to anesthesiology.

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Table 3: Activity regimen for anesthesiologists

Activity	Description
Self-care	Physical activity, healthy habits, adequate sleep and rest, satisfying hobbies, enough time to spend with family and friends
Healthy nutrition	A daily breakfast, a diet that assures a BMI not higher than 23, only small and calculated doses of alcoholic beverages
Meditation	With deep relaxation, increased calm, and inner peace
Direct action	By establishing one's priorities and acting to achieve them and especially learning how to say "no" by practicing active assertiveness
Seeking support	By asking others for support and assistance when needed, mainly from family (spouse first), with a special accent on female physicians, whose professional activity combines with home duties
Situation mastery	Meaning avoiding chaos and embarrassing situations and mostly predicting possible crises and trying to avoid them
Adaptability	Which is another word for flexibility, a feature so needed in practicing a service profession such as anesthesiology, implying a continuous search for alternatives
Time management	Including time efficiency and a combination of time spent for the profession and time spent with family and friends
Sense of humor	Which establishes a mood or attitude that brings spontaneity, positive emotions, and fun into any activity

BMI=body mass index. Adapted from Jackson^[45]

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