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The burnout construct with reference to healthcare providers: A narrative review

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Abstract

Burnout syndrome is a psychological response to long-term exposure to occupational stressors. It is characterized by emotional exhaustion, cognitive weariness and physical fatigue, and it may occur in association with any occupation, but is most frequently observed among professionals who work directly with people, particularly in institutional settings. Healthcare professionals who work directly with patients and are frequently exposed to work overload and excessive clinical demands, to ethical dilemmas, to pressing occupational schedules and to managerial challenges; who have to make complex judgements and difficult decisions; and who have relatively little autonomy over their job-related tasks are at risk of developing clinical burnout. In turn, clinical burnout among clinicians has a negative impact on the quality and safety of treatment, and on the overall professional performance of healthcare systems. Healthcare workers with burnout are more likely to make mistakes and to be subjected to medical malpractice claims, than do those who are burnout-naïve. Experiencing the emotional values of autonomy, competence and relatedness are essential work-related psychological needs, which have to be satisfied to promote feelings of self-realization and meaningfulness in relation to work activities, thus reducing burnout risk. Importantly, an autonomy-supportive rather than a controlling style of management decreases burnout risk and promotes self-actualization, self-esteem and a general feeling of well-being in both those in charge and in their subordinates. The purpose of this article is to discuss some of the elements constituting the burnout construct with the view of gaining a better understanding of the complex multifactorial nature of burnout. This may facilitate the development and implementation of both personal, behavioural and organizational interventions to deal with the burnout syndrome and its ramifications.

Keywords

Mental energy, competence, autonomy, relatedness, healthcare providers, burnout, occupational stress

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Introduction

Burnout syndrome is a psychological response to long-term exposure to occupational stressors. Emotional exhaustion, cognitive weariness and physical fatigue are the predominant symptoms. Sleep impairment, irritation, impatience, disengagement from and cynical attitude to one's work, and feelings of ineffectiveness are other common but secondary features.[1–3] Although burnout may occur in association with any occupation, it is most frequently observed among professionals who work directly with people,[4] particularly in institutional and organizational settings.[5] At first, the signs and symptoms of burnout are subtle, but they tend gradually to escalate, and if ignored, may eventually culminate in significant clinical burnout, with an uncertain prognosis.[6]

Significant clinical burnout is associated with diminished personal motivation, job satisfaction, efficiency and productivity[7] and is an important cause of absenteeism, occupational

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incapacitation and poor quality of life.[5,8,9] It is sometimes associated with medical conditions such as depression, anxiety, insomnia, cognitive impairment, cardiovascular disease and metabolic disorders.[10,11] Thus, burnout should be viewed as a definite public health concern, which requires both preventive and remedial interventions.[12]

In the context of the workplace, authoritarian controlling measures employed by management such as surveillance, performance evaluations, strict deadlines, non-informative feedback and non-constructive criticism, without any positive and caring support should be regarded as occupational stressors, which have the potential to diminish feelings of autonomy, competence and relatedness.[13,14] Such diminution may result in erosion of intrinsic motivation with a consequent negative impact on professional performance and job satisfaction with an increased risk of burnout. On the contrary, empowering professionals to make autonomous judgements and decisions and to be responsible and accountable for their choices, and using positive, informative, constructive and sympathetic feedback, promote a sense of autonomy, competence and relatedness. In turn, satisfying the psychological needs of autonomy, competence and relatedness will strengthen intrinsic motivation, and consequently improve professional performance and personal well-being,[13–15] and ultimately may decrease burnout risk.[14]

In this narrative review, we focus on some psychological mechanisms, which influences the initiation and promotion of burnout syndrome, including conservation of mental energy resources, intrinsic motivation and meaningfulness, and on both organization- and clinician-directed intervention required to mitigate the effects of professional occupational stressors with the view of reducing the incidence and prevalence of burnout.

The nature of burnout

According to the World Health Organization (WHO),[16] burnout is an occupational phenomenon but not a medical condition. It is brought about by unresolved chronic occupational stress and is characterized by feelings of energy depletion or exhaustion; by increasing mental detachment from one's job, or feelings of negativism or cynicism related to one's job; and by reduced professional efficacy.[2,17,18]

Although the WHO does not consider burnout to be a medical condition, it is important to recognize that persons with persistent significant clinical burnout may have subclinical depression and may be vulnerable to clinical depression;[19–21] and also may exhibit significant cognitive dysfunction (impaired executive functioning with poor memory and concentration), anxiety, cardiovascular and some metabolic disorders.[10,11,22] Therefore, it is essential to rule out certain medical conditions including clinical depression, primary anxiety, mental maladjustment or work-related disorders before committing to a diagnosis of occupational burnout.[23–25]

As there are no universally agreed or binding diagnostic criteria for burnout, interested researchers and healthcare professionals use disparate ways of defining, measuring and evaluating the phenomenon, and as these diagnostic criteria are often vague and clinically problematic, it is difficult with any accuracy or consistency to determine the true epidemiological features of burnout.[20,26–28]

Nevertheless, it is evident that anyone with a personal trait of neuroticism, with type A personality behaviour, or those who are over-concerned with time management and control of situations and relationships, are at risk of burnout.[28–30] Experiencing difficulties with self-forgiving, dealing with ambiguity and uncertainty, setting personal boundaries and with exercising cognitive flexibility or letting go of unpleasant emotions and thoughts, are all additional risk-factors for burnout.[6]

It might be prudent to recognize burnout as a distinct work-related medical entity rather than considering it merely an occupational phenomenon since this may promote consensus regarding binding diagnostic criteria for burnout, and may facilitate documentation and accumulation of evidence-based epidemiological data, thus advancing the planning of interventional policies to deal with this significant public health concern.[25] If true burnout were to be recognized as a distinct, not uncommonly occurring medical entity, then formalities for the granting of extended sick leave, or even early retirement, with the associated economic considerations, might more readily be met. This will certainly benefit burnout sufferers who, without a medically diagnosed reason for their debilitating condition, are not infrequently labelled as either 'lazy', seeking excuses not to work,[31] or as suffering from depression or other psychiatric ailments.

Mental energy and burnout

Mental energy is an abstract construct with dynamic properties that cannot be precisely defined or measured that powers the intrapsychic mechanisms. It can be viewed as a psychological resource that self-regulates and self-controls emotion, mood, motivation, willpower and endurance, tolerance, inhibition and regulation of responses, cognition, executive functioning, judgement and decision-making,[32–34] all of which are essential for accomplishing goal-directed tasks[35] and for functional behaviour in response to extrinsic stressors.[32,36] Resources of mental energy are finite,[17,33,36,37] and burnout will occur in susceptible persons when the mental energy necessary for self-control exceeds the limited available resources, and the capacity of one's psychological mechanisms to cope with and to adapt to intrinsic or extrinsic stressors.[28,37]

Exposure to and coping with stressful situations require continual monitoring of the stressors, and effortful regulation or inhibition of arousal, sensations, urges, negative emotions and spiralling thoughts, as well as functional mental capacities such as cognitive flexibility and attention

shifting. All these mental activities of self-control, drain or consume some of the finite inner resources of mental energy, so that what is available for subsequent effortful self-control is diminished. Depletion of resources of mental energy compromises the functional activity of self-control and diminishes or negates any ability to change or overcome maladaptive behaviours and detrimental responses to intrinsic and extrinsic stressors.[32] Furthermore, once resources of mental energy are depleted, other salient contributors to effective goal-directed performance such as interest, ambition and drive become ineffectual.[38]

Apparently, mental energy can be conserved, sustained or even enhanced by rest[32] and by activities that satisfy the psychological needs for autonomy[39] (i.e. sense of volition), relatedness (i.e. sense of belonging and social connection) and competence (i.e. a sense of mastery and effectiveness).[36] Such activities include engaging in pro-social and recreational activities, in pursuits that are meaningfully in accord with one's moral and ethical values, or are interesting and pleasant.

Allocating quality time for family and friends, for restful vacations, for activities that one most enjoys such as listening to music or reading a good book, for reflection and defusing of negative emotions and thoughts, for strategizing and creative thinking, and taking regular breaks briefly to disengage from the daily work routine and to give the mind a rest, all can go a long way towards conserving or even boosting resources of mental energy and maintaining a positive frame of mind.[40] Other extrinsic factors such as a healthy diet, good sleeping patterns and physical exercise are also invaluable in this regard.[36] In contrast, chronic intrinsic non-work-related stressors such as rumination, self-preoccupation, inner conflicts and memories of unresolved sad or unfortunate experiences, covertly drain resources of mental energy.[36,41]

In the context of burnout, emotional intelligence plays a significant role in how we respond to psychosocial and occupational stressors and in determining levels of job satisfaction. Emotionally intelligent or mature persons cope better with occupational stressors, adapt more effectively to work-related emotional demands, experience higher levels of job satisfaction, and a lesser likelihood of, or lower levels of burnout, depression or anxiety compared with persons who are less emotionally intelligent.[12,42] Emotionally intelligent persons are self-aware of their strengths and weaknesses, can effectively self-regulate their emotions and behaviours, are mature and disciplined in relation to goal-directed actions and have the ability to conserve mental energy. Furthermore, they have good interpersonal skills, can avoid power struggles and show perseverance and psychological flexibility.[43,44] Thus, emotional maturity and intelligence may be a protective factor in relation to 'burnout'.

In general, the burnout-associated characteristics of cognitive weariness, emotional exhaustion, physical fatigue or impatient or irritable behaviour in response to long-term exposure to psychosocial or work stressors will occur when the strain that the stressors generate, exceeds one's mental coping capacity and one's finite resources of mental energy. However, clear understanding of the neural mechanisms that generate and regulate mental energy, and the role that mental energy plays in complex information processing, cognition, emotion, mood and alertness is missing.[28,35]

Numerous other factors contribute to the depletion of mental energy. These include genetic predisposition and inherent personality traits, emotional immaturity, past or unresolved emotional conflicts, the need to exercise effortful self-control in trying to override the impulses, urges and temptations of adverse social circumstances; and making necessary judgements and decisions about difficult or complex issues, or facing important challenges that require a great deal of mental deliberation and effort. All too often these are significantly augmented or exaggerated by ill health, family difficulties, unresolved financial issues and other stressful life events.[1,32,36,37,45]

It is essential for both healthcare workers who are self-employed, and for any organization employing healthcare workers to be cognisant of, and to understand the potentially dire consequences of energy-depleting behaviours, and to take action to change them in order to promote psychological coping capacities and resilience before the development of debilitating symptoms of clinical burnout.[40,46–48]

Meaningfulness and psychological needs in relation to job performance and satisfaction

Perceiving work-related activities as meaningful is important for work motivation, commitment, satisfaction and overall well-being[49,50] and reduces the risk of burnout.[50] In the context of work, meaningfulness should be viewed as a subjective personal experience formed by judging the significance of and the emotional value derived from work, and to what extent the job satisfies the worker's psychological needs of work-related autonomy, competence and relatedness.[50,51]

Worker's autonomy refers to a sense of volition, with professional activities being self-determined and self-governed, enabling the expression of the worker's full professional potential so that the dimension of work-related psychological empowerment is fulfilled. Relatedness refers to the self-selected interpersonal trusting and caring relationships and connections with others and reflects the degree of feeling of belonging to the workplace community, and competence refers to the mastery, efficacy and the impact of goal-directed activities, to materialization of opportunities to develop skills and capabilities, and to self-improvement and achievements.[13–15,52,53]

The drive to perform professional goal-directed activities is autonomously intrinsically motivated by determinants such as interest, meaningfulness, authenticity or satisfaction, which are directly derived from the activity itself; or is

extrinsically motivated by the determinants of success, promotion, prestige, reputation or financial reward. Extrinsic motivation is not derived directly from the activity itself, but rather stems indirectly from the consequences or rewards of that activity. However, intrinsic rather than extrinsic motivators are the impetus to goal-directed activities, which necessitate cognitive flexibility, problem-solving skills, conceptual understanding, creativity and dexterity.[14,54]

When choosing and pursuing their careers, most medical, dental or allied health professionals are not driven primarily by extrinsic motivators, but rather by intrinsic motivators such as parental example, intellectual challenges, strong interest in human biology, pathology and health, by caring for the ill, and by moral values such as making significant contributions to society or, ultimately, by altruism. Most healthcare providers reap their most meaningful satisfaction from personal and professional contact with patients, from caring for them and from being able to contribute to their well-being.[6,54–56]

Alignment of the health system's values, mission and vision with those of healthcare providers themselves, as well as promoting feelings of autonomy, competence and relatedness, are essential psychological elements that support and maintain their intrinsic motivation,[54] and are protective of burnout. Any erosion of these psychological needs by whatever means, may have a negative impact on intrinsic motivators, with consequently increased risk of burnout as discussed below.

Competence of medical or dental clinicians refers to the knowledge, cognitive ability and skills that enable them to make clinical problem-based judgements, choices and decisions with the outcome of effective and efficient patient-specific clinical solutions, and with the ability to change the course of treatment accordingly to changing circumstances.[57–59]

The competent clinician's judgement and decision-making are guided by evidence-based statistical data, by personal experience and by the expert opinion of colleagues, in consultation with the patient. This process is time-consuming and differs from patient to patient, even for the same medical condition, and requires a great deal of personal autonomy regarding judgement, decision-making and execution of treatment.[57,60,61] The feeling of belonging to, sharing common values with and recognition by the professional organization, whether it be a hospital, a professional association or a statutory body, (i.e. relatedness), is essential for efficient and effective job performance and satisfaction, and for delivery of a high-quality 'patient-centred' healthcare service.[54]

Electronic health records, patient portals and performance metrics have recently been implemented in many healthcare organizations (such as Medical Aids) with the intention of improving the efficiency and productivity of healthcare providers and of the organization as a whole.[54,62] However, an unintended consequence of these reforms has for some healthcare providers been the erosion of psychological needs such as autonomy, competence and relatedness, and of the professional satisfaction derived from meaningful, exclusive engagement with patients.

These 'controlling' systems evaluate the efficiency and effectiveness of performance, competence of the clinician based on quantitative units, ignoring the clinician's knowledge, clinical judgement, decision-making, quality of treatment outcome, patient's satisfaction and, not least of all, empathy. Many clinicians do not identify with these newly implemented 'controlling' mechanisms and find them psychologically oppressive, diminishing intrinsic motivation, and thus possibly or probably contributing to the increased incidence and prevalence of burnout among clinicians.[6,54,56]

Burnout among healthcare professionals

Burnout can and does affect susceptible persons in a wide range of professions, trades and many other occupations, and indeed, even the unemployed may experience stress, anxieties, frustrated aspirations and yearnings sufficient to precipitate some form or degree of 'burnout'. Burnout occurs across the entire range of healthcare professionals, in almost every branch or speciality of medicine or dentistry, and in paramedical and auxiliary medical personnel, but to avoid tedious repetition, only the most extensively reported group, physicians (specialists in internal medicine) and the group representing the authors of this article, dentists, are discussed below.

Recent studies have shown that more than 50% of physicians in the fields of general internal medicine, neurology, family medicine and emergency medicine experience some symptoms of burnout, and the prevalence of burnout among medical students and residents is higher than among students pursuing other careers.[46,47,62–64] This may be because those who developed burnout did not have the necessary psychological coping capacity to deal with the emotionally and physically intense demands of the profession (i.e. long working hours, great number of patients, work intensity and high burden of responsibility), shift irregularities and night shifts, frequent additional overnight and weekend call duties, dealing with patients' suffering, pain and death, ambiguity, role conflict and never-ending clerical work,[6,12,27,55,64,65] and this may be why substance abuse, depressive symptoms and reduced quality of life are not uncommon among burned-out persons.[64]

The Covid-19 pandemic can only exaggerate the existing crisis of burnout among front-line healthcare workers owing to the psychological stress and distress stemming from dealing with overwhelming numbers of seriously ill patients, over long extra hours, and sometimes with sub-optimal essential medical equipment (personal protective equipment, respiratory ventilators).[46]

Job satisfaction and productivity is reduced among physicians with burnout, who tend to make more referrals and

to order more tests compared to burnout-naive physicians. Those experiencing clinical burnout are also more likely to deliver suboptimal patient care, to make medical errors, and to be more subject to medical malpractice claims. Conversely, self-perceived or actual medical errors, troubling medico-legal issues and dealing with difficult and dissatisfied patients may increase the intensity and the burden of burnout.[47,54,62–64] Importantly, patients' satisfaction and compliance is reduced when they are treated by burned out physicians.[66]

In dentistry, chronic occupational stress is also a recognized risk factor for burnout.[67–70] The prevalence of burnout among dental practitioners reportedly varies between countries,[67,69–71] for instance, with 7% reported in Hong Kong, 13% in the United States and 29% in Turkey. Dentistry is a clinical profession requiring particularly constant close interaction between dentists and their patients, careful clinical examination and analysis of dental and relevant medical findings, diagnoses varying from very simple to rather complex, and astute formulation of clinical judgements and decision-making, combined with refined manual skills, to achieve the best possible treatment outcomes.[4,62,72] Dental practitioners also need to have a sound working knowledge of business, finance and technology to be able to manage their small enterprises; and of course, like any other professionals, have to keep up with the latest developments in their field of expertise.[4,62]

In general, the motivation and satisfaction that the private dental practitioner derives from the profession is related to intrinsic motivators such as the intellectual and technical challenges of the work, the emotional reward of helping people in need, the satisfaction of developing close and trusting relationships with patients, and being to a large extent, in control over their working conditions;[4,62] though extrinsic motivators such as financial reward and socioeconomic status undoubtedly also play important roles.[4,62]

Factors associated with burnout risk among dental practitioners include having to manage difficult, uncooperative patients or dissatisfied patients with unreasonable expectations of clinical outcomes, unrealistic notions of the costs of treatment; also having to deal with unexpected dental/medical complications, and, fortunately rarely, with medical emergencies with potential litigations and with bureaucracy related to medical aids, insurance companies and government policies. Work overload, crowded schedules and time-pressure, long working hours, work-related financial difficulties and importantly, limited opportunities for career development are other risks associated with burnout among dental practitioners.[5,73,74] Mental coping, refined communication and other interpersonal skills, specific personality traits, emotional intelligence and positive life experience are some factors that may moderate the risk of burnout.[62]

Most dental practitioners are free entrepreneurs working in, and running their own practices. In addition to the core business of providing comprehensive professional dental healthcare services that require manual, technical and cognitive skills, and ongoing updating, self-employed dental practitioners also have to manage their staff members and the commercial aspects of their small businesses.[5,73,75]

Practitioners in 'solo' practices work long hours confined to the chair-side in relative isolation and with limited social contact and support. They usually treat a considerable number of patients each day, with little change of routine from one day to another, and with few realistic prospects for career development. This may promote feelings of entrapment in the work environment and of hopelessness.[5,73,75] The daily conflicts between providing the best possible oral healthcare outcomes, on one hand, and managing the financial and 'housekeeping' aspects of the practice, on the other hand, may generate psychological distress and may negatively affect both the quality of the treatment rendered and the long-term well-being of the dentist.[75]

However, there are also dental practitioners who work full-time in institutional settings such as public health clinics or universities, and others who work both in their own private practices and part-time in institutions.[75] Both groups are socially and professionally less isolated and may have stronger collaborative professional support and better career opportunities than dedicated private practice dentists.

From the authors' personal experience, working in institutional settings, however, burnout among dental practitioners can also occur with persistent work overload and high job demands, with unresolved work-related conflicts and lack of support from superiors, with lack of control or autonomy over decisions related to work issues and personal development and with lack of recognition and reward for professional efforts. In contrast, dental practitioners who work in their private practices have more control and autonomy in relation to workload and time management, have less friction with colleagues and no superiors to report or account to. Regardless of the nature of the work environment, work-mediated depletion of resources of mental energy is the prime cause of burnout.[30]

Sometimes, owing to the professional culture, burnout is viewed among dental clinicians as a sign of weakness and vulnerability, and therefore those with mild symptoms of burnout may intentionally ignore their symptoms of emotional exhaustion, cognitive weariness and physical fatigue and avoid seeking appropriate help until the symptoms become more severe.[76] As previously mentioned, severe clinical burnout is associated with physical illness and psychological disorders.[77]

Management

Both organization- and clinician-directed interventions are required to reduce the risk of burnout among healthcare professionals.[47,63] Burnout should not be viewed as solely a personal problem, but rather as a problem of the particular healthcare system as a whole, stemming from an unsupportive work environmental and organizational culture.[47]

Organization-directed interventions should seek to introduce structural and managerial modifications that will promote camaraderie, fairness and equity within a supportive environment and to foster systems and communication channels to deal regularly with staff promotions, opportunities of professional progression and career development, and with team building, briefing and debriefing on organizational matters. Furthermore, staff meetings for free discussions about occupational stressors, burnout and well-being, and about how to increase the autonomy, competence and relatedness of the clinical workforce should be held regularly.

Other more simple measures to mitigate the effects of professional occupational stressors include reducing clerical responsibilities, administrative duties and clinical work overload; and introducing greater flexibility and reduced managerial control in relation to working hours and how to carry out one's work, whenever possible.[46,47,55,63,64,66]

The current system of performance evaluation of clinicians at healthcare organizations should be reformed to recognize and value the quality of clinical judgement and decision-making, professional expertise and effort invested in delivery of professional services, and not merely focus on compliance with various imposed metrics or yardsticks of performance.[54]

Other organizational/managerial provisions or interventions with the potential to support a healthy work environment with a reduction in work-related stress include allocation of places set aside for relaxation and socializing with colleagues; and promotion of healthy personal lifestyles by encouraging the workforce to take leave when they feel exhausted or demotivated, to engage in physical exercise to achieve reasonable physical fitness, and to limit self-indulgent, unhealthy habits such as smoking and taking too much alcohol. All such positive, benignly concerned changes may promote the recharge of drained resources of mental energy and overall feelings of well-being.[64,66]

With regard to physical activities, regular physical exercise has a beneficial effect on mental states such as anxiety, depression and stress, since it requires taking time away from one's usual stressful life, and since endurance exercise has the capacity to downregulate some of the increased stress-related neural activities in the prefrontal cortex associated with hyper-vigilance and hyper-awareness.[78,79] Thus, physical exercise has the capacity to reduce stress, clear the mind of the worries of daily life, promote positive thinking and consequently to reduce the risk of burnout.[79]

Developing or established burnout should be managed by competent practitioners whose interventions should aim at improving psychological coping capabilities and mental resilience, and communication and time management skills, through various instruments including cognitive behavioural therapy, cognitive reappraisal, mindfulness and stress management techniques, and by encouraging regular continual education and professional development.[4,47,63] All these, hopefully, may result in the restoration of depleted resources of mental energy with a positive change of work behaviour, and an improvement in self-control, psychological coping, and resilience, and regain feelings of meaningfulness, relatedness and well-being.[6,27,80]

Since the need to fulfil multiple occupational roles to greater or lesser degree (clinical, educational, technical, managerial, supervisional, clerical) is taxing on resources of mental energy, the incipiently or actually burned out clinician should prioritize work responsibilities, focus on the most important ones, delegate tasks and reduce the mental energy invested in the time-consuming but less important activities; and should perhaps reframe work-related goals with moderate lowering of mental and physical effort.[81]

If professionals no longer find their occupation to be significant and psychologically rewarding, they should be strongly encouraged to find some sense of existential meaningfulness and relatedness outside the workplace, since enriching the sense of meaningfulness in any aspect of life increases levels of mental energy and should, therefore, reduce the severity of symptoms of burnout.[82]

Conclusion

Clinical healthcare professionals who work directly with people, and who are daily exposed to work-related stressors such as making problematical judgements and decisions, dealing with ethical dilemmas and difficult patients, pressing schedules and managerial challenges, are particularly at risk of burnout. These people commonly experience emotional exhaustion and poor job satisfaction that, in turn, may impair their ability to render efficient, effective and high-quality healthcare.

In institutional settings, when confronting the burnout phenomenon, managers should not focus merely on rewards such as pay increase, promotion or other extrinsic motivators as the solution, but rather focus on promoting meaningful institutional objectives, and for the professional, autonomy, competence and relatedness, which will promote or enhance intrinsically motivated behaviour.

More research is needed to determine which interventions are most effective in achieving best clinical results in managing burnout among healthcare physicians; and to develop strategies to monitor and stabilize the psychological and mental well-being of the healthcare workforce.

Limitations

A major limitation of any research about burnout syndrome is the difficulty in accurately determining its demographic and epidemiological characteristics. This is because there are no universally accepted diagnostic criteria for the burnout syndrome and so, when measuring or evaluating it and its management, different researchers and clinicians use disparate guidelines that are often indistinct and clinically controversial. This narrative review is, therefore, based on

reported results of studies, which are diverse in diagnostic criteria. Consequently, it is not possible to draw meaningful conclusions regarding the natural cause of, and recovery from burnout among healthcare practitioners, or whether there are pathogenic mechanisms, which are peculiar to healthcare practitioners in comparison with other service or help-rendering workers.

Further research is required to identify any genetic or epigenetic factors that either predispose to or confer resistance to the development of burnout, and the neurological mechanisms driving this syndrome; to determine the value of various stress-coping interventions in mitigating the burnout experience; to formulate evidence-based diagnostic criteria for and principles of management of burnout; and to have burnout recognized by the WHO as a clinical condition.

Author contributions

L.F. designed and conceptualized the article and wrote the first draft. R.A.G.K., J.L. and L.F. wrote the second and final draft. G.F. and S.L.S. did the literature search. R.A.G.K., M.S.N., S.L.S. and G.F. did the literature review. All authors edited, read and edited the final version of the article. R.A.G.K. was the manager of the project.

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