Burnout syndrome in medical professionals: a manifestation of chronic stress with counterintuitive passive characteristics

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Abstract

By operational criteria, burnout appears to be a multifaceted behavioral syndrome consisting of maladaptive individual responses subsequent to prolonged stressful situations. Given the intense physical and cognitive demands of providing high quality healthcare to a wide spectrum of patients, healthcare professionals are particularly susceptible to developing burnout syndrome, a notable phenomenon that has gleaned significant societal attention in recent years. Clearly, widespread manifestation of burnout by health care professionals represents a serious potential threat to the overall quality of patient care and to the realization of positive outcomes to multiple treatment strategies. It will most certainly engender a serious negative impact on the economic viability of the entire healthcare system. Presently, our brief review focuses on current research efforts to 1) provide precise behavioral and psychiatric diagnostic criteria for burnout syndrome in healthcare professionals, 2) identify potential etiological factors and ongoing stressors, and 3) outline an integrative approach for treatment and prevention.

REVIEW ARTICLE

INTRODUCTION

By operational criteria, burnout appears to be a multifaceted behavioral syndrome consisting of maladaptive individual responses subsequent to prolonged stressful situations. Manifestations of burnout include indifference, immobility and a lack of desire to initiate actions/behaviors that can be considered as coping strategies designed to alleviate the condition. Thus, potential etiological factors and ongoing stressors converge to engender dysfunctional psychological and physiological processes (Stefano *et al.* 2002; Esch & Stefano 2002; Esch *et al.* 2002a,b,c,d; Stefano *et al.* 2005; Stefano *et al.* 2008) that present as a lack of desire to continue to endure ongoing stress situations. In effect, the additive behavioral components of burnout syndrome represent it as counter-intuitively passive in nature.

Given the intense physical and cognitive demands of providing high quality healthcare to a wide spectrum of patients, healthcare professionals are particularly susceptible to developing burnout syndrome, a notable phenomenon that has gleaned significant societal attention in recent years (Hansen & Girgis 2010). In particular, resi-

dency training is associated with a significant degree of chronic stress, leading to interference with an individual's ability to establish rapport, sort through diagnostic dilemmas, and work though complex decision making critically linked to proper treatment strategies. In effect, burnout is associated with a variety of negative psychological consequences to leading to significant risk of medical errors leading to negative impact on patient safety (IsHak *et al.* 2009).

Behavioral hallmarks of burnout syndrome include a state of exhaustion, generalized cynicism, and lack of efficacy in medical practice. In psychological terms, 'Exhaustion' is the feeling of not being able to offer any more of oneself at an emotional level; 'cynicism' is contemplated as a distant attitude towards work; and 'lack of efficacy' is the feeling of not performing tasks adequately (Montero-Marin *et al.* 2011; Maslach *et al.* 2001). At present there is no generally valid, internationally agreed definition of burnout (Kebza & Solcova 1998; Korczak *et al.* 2010). Because it is not listed in ICD-10 or DSM-IV, a diagnosis of burnout is made by reverting to other psychiatric conditions such as depression. In light of the above, our brief review focuses on current research efforts to 1) provide precise behavioral and psychiatric diagnostic criteria for burnout syndrome in healthcare professionals, 2) identify potential etiological factors and ongoing stressors, and 3) outline an integrative approach for treatment and prevention.

THE PREVALENCE OF BURNOUT SYNDROME IN MEDICAL PROFESSIONALS

For medical professionals, the development of initial symptoms of burnout syndrome may begin as early as medical school (i.e. Dyrbye *et al.* 2006). Rates of burnout symptoms in medical students have been estimated to range from 28% to 45% (i.e. Zoccolillo *et al.* 1986, McManus *et al.* 2004) and are associated with an approximate 10% increased likelihood of suicidal ideation (Dyrbye *et al.* 2008). Potential etiological factors include environmental stress during medical training as well as inherent personality traits such as introversion and neuroticism (Delva *et al.* 2002). Accordingly, the phenomenon of burnout appears to be initiated during medical school and may be sustained at significantly high rates of occurrence through residency training (Shanafelt *et al.* 2002) and later stages of medical practice (IsHak *et al.* 2009).

The prevalence of burnout syndrome in established medical professionals has been broadly estimated to range from 25% to 60% (Panagopoulou *et al.* 2006). It is a reasonable prediction that with the increased specialization of the medical profession, administrative duties and managed care, the prevalence of burnout among practicing physicians is likely to increase (Gundersen 2001). Prior clinical studies also suggest that the intensity of burnout may significantly differ according to specific medical specialties with high vulnerability of occurrence observed for oncologists, intensive care physicians, and surgeons (Ptacek *et al.* 2012; Celedova *et al.* 2011).

The occurrence and intensity of burnout syndrome may also be influenced by 1) demographic factors and personality traits, 2) life style decisions, and 3) work and organizational factors. In this regard, burnout seems to be less prevalent among males, younger and married medical professionals, or those with children (Gundersen 2001). In contrast, vulnerability to burnout may be increased by compulsiveness, high self-esteem and unrealistic perfectionism (McManus *et al.* 2004). Because the life styles of medical professionals may substantially be influenced by the cadre of professional demands, vulnerability to burnout is markedly increased by regular sleep deprivation with associated physical and mental fatigue (Dyrbye *et al.* 2006).

With regard to occupational factors, job satisfaction is usually associated with lower levels of burnout. In contrast, increased likelihood of burnout is associated with negative perception of job demands, lack of support from colleagues or supervisors, increased working hours and number of caseloads (Graham *et al.* 2002). Despite the prevalence of high rates of burnout in medical professionals, elucidation of complex etiological factors necessitates further investigation (Panagopoulou *et al.* 2006).

BURNOUT SYNDROME AS A SPECIFIC STRESS DISORDER

Burnout poses psychosocial and psychosomatic risk factors with potentially severe negative consequences for afflicted medical professionals and globally for their associated healthcare organizations. Symptomatically, it can affect an individual's physical and/or mental health, giving rise to psychosomatic disorders such as cardiorespiratory alterations, severe headaches, gastritis, ulcers, insomia, dizziness, etc., or psychopathological disorders such as anxiety, obsession-compulsion, interpersonal sensitivity, depression, hostility, paranoid ideation, alcoholism and other addictive disorders (Esch & Stefano 2011, Stefano *et al.* 2012). For healthcare organizations, widespread incidence of burnout syndrome among professional healthcare providers can lead to serious reduction in performance and productivity, excessive rotations within medical units, absenteeism and termination, ultimately leading to marked deterioration in quality of care (Montero-Marin *et al.* 2012).

Mechanistically, it is appropriate to evaluate functional linkages of burnout syndrome to debilitating physiological processes evolving from prolonged stressful situations. Because dysregulation of hypothalamic-pituitary-adrenal axis (HPA axis) function has been observed in many stress-related disorders (Esch *et al.* 2002d), alterations in multiple HPA axis functions may represent contributing factors to the etiology and persistence of burnout syndrome (Verhaeghe *et al.* 2012). Accordingly, selected studies have observed that individ-

uals afflicted with burnout have lower plasma cortisol levels after awakening as compared to control subjects, with no observable differences in cortisol secretion during the during the rest of the day (Mommersteeg *et al.* 2006; De Vente *et al.* 2003; Grossi *et al.* 2005). Collected empirical data indicate that chronic stress can lead to significant downregulation of immune function with impairment of effective immune response against infection and serious chronic disorders such as cancer, high blood pressure, and diabetes (Mommersteeg *et al.* 2006). Furthermore, stress-induced alterations in neuroendocrine regulation of normal HPA axis function may result in compromised immune responsiveness (Mommersteeg *et al.* 2008). Accordingly, a prior clinical study evaluating burnout in cohorts of young physicians observed that physicians who scored high levels of personal accomplishment showed significantly higher numbers of total lymphocytes, T cells (CD3), T helper cells (CD4), and T suppressor cells (CD8) in comparsion to those scoring lower values for personal accomplishment (Bargellini *et al.* 2000). These findings suggest that there may be a causal relationship between reduced lymphocyte number and selected symptoms of burnout. In contrast, a recent clinical study demonstrated an association between burnout and increased production of the anti-inflammatory cytokine interleukin-10 (IL-10) by monocytes after lipopolysaccharide stimulation and to higher plasma concentrations of the endogenous steroid hormone dehydroepiandrosterone sulfate (DHEAS) (Mommersteeg *et al.* 2006). The adaptational changes to burnout syndrome characterized by alterations in immune parameters are by nature complex, and are consonant with observed neuroimunological changes associated with other pathophysological disorders exacerbated by chronic stress (Esch *et al.* 2002; Stefano & Kream 2011).

BURNOUT PREVENTION AND TREATMENT

Current clinical literature has suggested multifaceted approaches for prevention and treatment of burnout syndrome. The most effective prevention is believed to begin at the level of medical education. It is advisable that medical students should receive training in effective personal management of the emotional demands of their work. In terms of medical education, the need to train students to understand and cope with emotional demands is in apparent contradiction to the emotional detachment that is often promoted as part of the hidden curriculum of undergraduate and postgraduate training (Panagopoulou *et al.* 2006). Effective management of existing burnout usually includes differential changes in the nature of work and in the work environment (i.e. changing work load, work organization etc.) or specific psychological treatment (psychotherapy, relaxation techniques). It has been demonstrated that psychological treatment to reduce burnout symptoms is effective to a certain extent and the rate of recovery is highly variable. For example, a 2005 study reported a significant reduction of burnout complaints over a 6 month period in 30–50% of working healthcare professionals after physical and cognitive intervention (Van Rhenen, Blonk *et al.* 2005). Furthermore, Huibers *et al.* demonstrated that 43% of fatigued healthcare employees on sick leave showed significant improvement and that 62% had resumed work (Huibers *et al.* 2004). Additional studies evaluated key factors influencing patient sensitivity linked to positive treatment outcomes including individual differences in physiological responses to stress (Mommersteeg *et al.* 2006). In terms of potential HPA axis dysfunction, it was anticipated that psychological interventions for treatment of burnout symptoms would effectively restore normal secretory patterns of plasma cortisol observed in healthy controls. Unfortunately collected clinical data yield no clear answers. For example, Mommersteeg *et al.* reported that 14 sessions of psychotherapeutic intervention led to a significant reduction in burnout-related complaints linked to restoration of circulating levels of cortisol after awakening (Mommersteeg *et al.* 2006). In contrast, another clinical study found no change in urinary cortisol levels of burnout patients subsequent to four months of stress management intervention (Moch *et al.* 2003). The contradictory results of interventional therapies on cortisol secretion may be determined by high variability in classification of burnout symptoms as well as by differences in interventional procedures. Clearly, further studies in this area are needed.

It is anticipated that a significant portion of medical professional exhibiting symptoms of burnout syndrome will be differentially diagnosed with comorbid symptoms characteristic of DSM IV-listed depressive disorders. Due to the lack of precise diagnostic instruments, it is not clear whether comorbid depressive symptoms represent significant risk factors for development and persistence of burnout syndrome (Kaschka *et al.* 2011). That said, employment of antidepressant and/or anxiolytic agents should be proactively evaluated as adjuvant pharmacotherapy in difficult cases where psychologically oriented stress management approaches are not providing clear cut positive outcomes. Interestingly, a similar combined psychotherapeutic/pharmacological approach has been reported for treatment of chronic fatigue syndrome (Prasko *et al.* 2010).

INTEGRATIVE APPROACH TO BURNOUT

Despite individual differences in the nature and severity of burnout symptoms across cohorts of healthcare professionals , current biomedical science provides clear evidence for the causal relationship of chronic stressful experiences on diminution of physiological and mental health processes (Crocetti *et al.* 2010; Esch & Stefano 2010; Klopp *et al.* 2012). Operationally, stress is usually defined as a complex of behavioral and

physiological reactions to external or internal threats and carries a strong cadre of adaptational components (Esch & Stefano 2011). Two major components of autoregulatory stress responses are functionally linked in vertebrate species, the HPA axis and the sympathoadrenal medullary (SAM) system. Commonly described pathophysiological changes in stress-related disorders involve alterations in normal patterns of cortisol secretion (Izawa *et al.* 2010) , norepinephrine and epinephrine release and metabolism, and constitutive nitric oxide production and release (Stefano & Kream 2011). Concerted dysregulation of the HPA axis and SAM systems may result in failure to terminate or shift originally protective mechanisms that may lead to a vicious cycle of disease-supporting pathophysiological events.

In light of the above, a serious question is raised as to whether burnout syndrome represents a distinct psychiatric condition with a highly selective set of diagnostic criteria or whether it is merely a collective subset of a general class of stress-induced depressive disorders. Burnout syndrome is usually defined as a tripartite set of symptoms: 1) emotional exhaustion, in which overwhelming work demands deplete an individual's energy; 2) depersonalization and cynicism, in which an individual displays emotional detachments from job requirements ; and 3) feelings of inefficacy or inadequacy, in which an individual perceives and/or scores a lack of personal achievement. The extent and severity of burnout symptoms has been shown to vary by different degrees (Maslach *et al.* 2001). Explanatory models suggest that high workloads, lack of control and insufficient social support can lead to elevated stress responses. Other models suggest that burnout-related stress responses occur when there is an imbalance between high work efforts and low reward (De Jonge *et al.* 2003). From a broader perspective, prolonged stressful challenges on physical and mental well-being require behavioral, psychological, and physiological adaptations to be successfully put into effect to maintain normative homeostatic processes (Stefano *et al.* 2008; Kuzelova *et al.* 2010). Accordingly, burnout syndrome in medical professionals may in effect represent a paralyzing state of hyperarousal required for initiation of necessary counteractive existential measures in the face of chronic stressful situations.

Efforts on the part of clinical investigators to define specific diagnostic criteria for burnout syndrome and its specific pathophysiological mechanisms or methods of treatment are ongoing. Stress management approaches consist of various elements that are usually applied in combination with each other and/or in addition to other medical options. The four regular constituents of professional stress management strategies typically are nutrition ('healthy diet'), exercise, behavior (cognitive behavioral interventions, 'positive psychology') and relaxation, including, for example, meditation, autogenic training, progressive muscle relaxation or mild and 'meditative' movements as part, e.g., of Yoga or other similar exercises (Esch *et al.* 2013). There is a growing body of empirical evidence that indicates that these methods can be substantially beneficial in ameliorating debilitating psychological and physiological effects of chronic stress (Esch *et al.* 2007; Stefano & Kream 2011; Ptacek *et al.* 2011; Kream *et al.* 2010). We contend that in relation to the existing scientific literature in the area of stress research, burnout syndrome could be viewed as collective bundle of maladaptive behavioral and physiological responses to chronic stress. Thus, therapeutic/restorative approaches for prevention and treatment may derive from existing findings in the area of wellness and stress management with underlying molecular and neurobiological regulatory pathways (Esch & Stefano 2010; Esch *et al.* 2013)

CONCLUSIONS

Widespread manifestation of burnout by health care professionals represents a serious potential threat to the overall quality of patient care and to the realization of positive outcomes to multiple treatment strategies. It will most certainly engender a serious negative impact on the economic viability of the entire healthcare system. As described above, we have proposed to approach burnout syndrome as a collective of maladaptive individual responses subsequent to prolonged stressful situations. Prolonged stressful challenges to the physical and mental well-being of a living organism require behavioral, psychological, and physiological adaptations to be successfully put into effect to maintain normative homeostatic processes. We therefore propose that pragmatic efforts for prevention and treatment of burnout syndrome should derive from established stress management procedures. Stress management usually consists of one or more of the following instruments and activities: behavioral or cognitive, exercise, relaxation and nutritional or food interventions, including social support and spirituality. Stress management techniques may also possess specific and distinct physiological effects.

Beneficial behaviors and strategies to overcome stress may be neurobiologically driven by pleasure and reward mechanisms (Esch & Stefano 2010; Esch & Stefano 2011). Furthermore, behavioral pleasure and reward responses appear to be regulated via interactive common neurobiological mechanisms involving limbic autoregulatory processes driven by dopamine, morphine and other endogenous signaling molecules, many of which act via NO production and release. Stress management techniques may hold significant potential for efficacious treatment of burnout syndrome among medical professionals. Because there is strong evidence that burnout syndrome appears during the course of medical school studies and residency practice, early preemptive intervention may be required. In conclusion, we recommend that stress management techniques should thus become an integral part of the medical education.

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