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Handbook on Burnout and Sleep Deprivation



TRAVIS N. WINSTON Editor

NOVA

HANDBOOK ON BURNOUT AND SLEEP DEPRIVATION

RISK FACTORS, MANAGEMENT STRATEGIES AND IMPACT ON PERFORMANCE AND BEHAVIOR

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PREFACE

Job burnout has been well described and refers to a transformation that occurs in persons exposed to considerable occupational stress, particularly in fields that involve human interaction. It is a pathological syndrome in which overwhelming work demands lead to emotional depletion, maladaptive detachment, and feelings of personal inefficacy. This book discusses risk factors that lead to burnout as well as its impact on performance. This book also discusses the affect sleep deprivation has on academic performance and management.

Chapter 1 - It is well-known that insomnia is not the same as sleep restriction for a number of reasons including the fact that many insomnia patients underestimate their total sleep time, which may actually be close to normal. However, many patients with insomnia actually do have a chronic reduction in their objective total sleep time. This review will focus on the medical implications of chronic partial sleep restriction in normal individuals and the extent to which these findings are consistent with pathology found in patients with insomnia. Specifically, chronic partial sleep deprivation is associated with movement toward abnormal blood glucose and insulin; movement toward abnormal cardiovascular outcomes including elevated hsCRP; movement towards inflammation based on IL-6; movement toward decreased immunity based on NK-cells and decreased response to influenza vaccination; and movement toward weight imbalance based upon leptin. These data suggest that insomnia patients with reduced total sleep time should be at least at the same level of risk as normal individuals with a few nights of sleep restriction. A number of relevant abnormalities, including increased cortisol, sympathetic activity, blood pressure, and metabolic rate with some evidence of abnormal glycemic control and inflammation have been found in insomnia patients. Such data suggest that treatment for insomnia should involve normalization of objective total sleep time, and that such therapy should also reduce the incidence of the above abnormalities. However, cognitive behavioral treatments for insomnia, for example, are based on the use of sleep restriction as a treatment. Our understanding of the relationship between pathology stemming from chronic partial sleep deprivation and that seen in insomnia with decreased objective total sleep time suggest that sleep restriction as a treatment for insomnia could actually increase risks, as indicated in recent performance data.

Chapter 2 - It is perhaps not surprising that a majority of residents will experience job burnout during the course of their training when considering the stressors to which they are exposed. These include extended work hours, frequent traumatic events, such as patient death and disability, and disrupted sleep schedules. Numerous predictors of burnout have been examined in this population, including personality traits, gender, support network and educational loan debt. The potential consequences of job burnout may be severe, including

depression, suicidality, injury, sub-optimal patient care, poor academic performance and unprofessional behavior. Several interventions designed to minimize burnout have been explored, including work-hour limitations, mindfulness-training and stress reduction programs. Few have shown benefit and so the potential implications of job burnout in resident trainees continue to drive further investigation. This chapter will review the existing literature on the prevalence and predictors of resident burnout, the consequences to residents and the patients for whom they provide care, and the efficacy of current interventions. It will conclude with suggestions for future directions in research and regulatory policy-making.

Chapter 3 - Though producing a state which superficially resembles sleep, many sedatives induce a "chemical immobility", with important differences to natural sleep. The electroencephalography (EEG) patterns under sedative-hypnosis do not usually mirror the patterns seen during NREM and REM sleep. An important exception are the $\alpha 2$ agonists that produce a state of sedation that is closer to natural sleep than the sedative-hypnotic drugs that target the GABA_A receptor, which includes benzodiazepines and propofol. This chapter will review the neurobiology of natural sleep, comparing and contrasting it to the states produced by different sedative-hypnotics and discuss ramifications for the sedation of patients.

Chapter 4 - Becoming a physician takes a lot of time and dedication. It's a challenge getting into medical school and once you're there you're dropped into an overwhelming knowledge void and fear of how you are going to learn it all. This feeling of angst and low self-esteem is further aggravated by a hierarchal hazing type of training environment where time demands lead to sleep deprivation and fatigue. It's not surprising that stress and burnout has an impact on those in training. Most individuals get through it. But it doesn't stop there. Increasing complexity and accountability in today's health care environment has added additional pressures to physician practice further perpetuating high levels of stress and burnout that can adversely affect both physical and emotional behaviors. And more disturbingly it can adversely impact patient outcomes of care. Physicians are a precious resource and we need to look for opportunities and strategies that can help them better adjust to these changes. Learning more about the factors affecting physician behaviors and how it affects physician attitudes and performance opens up the door for solutions. Changing the learning environment, allowing input to gain a better understanding of physician wants and needs, providing appropriate administrative and clinical support, and offering programs that enhance physician well-being are all part of the cascade of things that we can do to reenergize our physicians and make them want to continue to work in a satisfying rewarding health care environment.

Chapter 5 - The rationale presented here concerns an interdisciplinary and holistic approach to the phenomenon of burnout. Up to now, the perspective on this phenomenon focused on the burnout of individuals. Consequently, it has been primarily regarded from a psychological viewpoint. The emphasis has been placed on bolstering the resilience of the affected persons, on encouraging them to scrutinize their motivating factors and pay more attention to their own work-life balance. The reason: the excessive pursuit of external recognition and appreciation robs them of their energy. Instilling this important and valuable awareness prompted numerous affected persons to reset their priorities: they sought a substitute for their previous exceptionally high commitment to their work. It is now becoming clear, however, that a noncommittal "by the book" attitude is at odds with entrepreneurial objectives such as increasing productivity, innovativeness and competitiveness, as well as the trend towards a knowledge-based society. Thus, employers have to ask themselves whether

they view the motivating factors of their employees – be quick, strive for perfection, be strong, work hard, satisfy everyone – as being more beneficial or detrimental. In any case, employees have certainly learned their lesson and are increasingly paying more heed to their employability. This has led to a renewed shifting of the burden, which had occurred as a sort of "privatization of the problems", back to employers. There, a very comparable phenomenon – both in terms of the initial situation and the course it takes – can be observed, which is aptly referred to as "organizational burnout". Within organizations, the self-neglect of needs (i.e., the need to create value in the form of earnings) is certainly not the problem – to the contrary. And, neglect of the work-life balance and important social contacts make no sense at all in this context. Because just as is the case with individual burnout, the problems do not arise *due to* the initially present intrinsic motivation, problems only occur when there is an internal loss of this motivation: external motivation cannot compensate for it. The decisive question, which has been largely overlooked up to now, is: How does this inhibition of a motivator, which is extremely valuable to everyone, even happen?

Chapter 6 - A research has been undertaken in order to examine relationships between new management methods and their impact on stress and double-bind situations by among medical heads and head nurses. Induced by economic pressures on the one hand, and a changing social world on the other hand, stress at the workplace is an increasing phenomenon. Medical heads and head nurses are subject to many changes affecting their practice. Because of their responsibility for achieving the objectives assigned by the institution in terms of performance and profitability, they find themselves increasingly caught in paradoxical situations. These situations may be sources of stress. As the closer link between stress, managerialism, and professionalism remains quite unexplored, this study addresses this issue in the perspective of double-bind situations. It also aims to examine strategies that medical heads and head nurses develop in order to deal with these situations.

Chapter 7 - In recent years, there has been an increasing interest in the question whether job performance of burnout employees is impaired. Reduced job competence is one of the main features in most definitions of burnout and several studies suggest that the performance of burnout employees is indeed poorer compared to that of healthy employees. One of the factors contributing to reduced job competence may be an impaired cognitive functioning. Many employees suffering from burnout report memory problems and difficulties with concentration. This paper reviews the evidence for impaired cognitive performance in burnout and addresses whether the results provide support for the various psychopathological processes that could underlie these cognitive impairments. A number of studies, but not all, showed that the performance of people suffering from burnout on neuropsychological tests is indeed inferior to that of healthy controls. Although it is not yet clear which psychopathological processes underlie these cognitive impairments, our findings suggest that impaired cognitive performance in burnout may stem from a structural condition which cannot be easily reversed. Finally we propose future directions for research on cognitive performance in burnout and conclude that further research is needed to investigate whether different subgroups of burnout patients can be distinguished and whether the subgroups offer a different prognosis toward recovery of burnout symptoms and cognitive impairments.

Chapter 8 - The chapter describes the design, realization, and results of a prospectively designed two-wave study, the goal of which was to verify the potential connections between burnout, selected psychosocial characteristics and the main known risks of cardiovascular diseases in a sample of economically active Czech men and women. Part of the project was

an intervention oriented to lower the incidence of risk factors of cardiovascular diseases and burnout syndrome. The next aim of the project was to prove the influence of education in subjects on a reduction in the risks of cardiovascular diseases (and burnout). The sample (78 persons, 64 women, 14 men; mean age 48.4; SD 11.6; minimum age 22, maximum age 67) was constructed by addressing Czech and foreign firms, companies, and institutions. The changes in biochemical variables due to the intervention, and the decrease of total cholesterol and LDL cholesterol can be considered as a very positive finding. The changes in psychological variables can also be considered as favourable: A set of risk characteristics decreased and the level of perceived social support that represents the protective factor increased. The results imply that the lipids concentration and its metabolism are relatively very sensitive to personality and psychosocial characteristics that can be generally considered as a risk to health. The particular variables came out as predictors less often than factors that represented several variables.

Chapter 9 - Background. Several studies suggest that teachers are affected by burnout. Recent studies show that the teacher's personal image, with respect to the work-family interface, can be a source of psycho-social stress and contribute to burnout. Other studies emphasize that satisfaction in the relationship with both students and parents is a protective factor. Objectives. This study aims at exploring the incidence of burnout among teachers in primary schools and at describing the characteristics of the syndrome, taking into account their age, their marital status and whether they have children or not. A further objective of this study is to identify, among the principal sources of teachers' occupational stress, those that better predict the occurrence of burnout. Among these stress predictors, we considered the work-family interface, the relationship with colleagues and the level of satisfaction in the teacher's relationship with both students and parents. Method. 500 teachers from the cities of Turin, Rome, Bari and Cagliari completed the Maslach Burnout Inventory and an adaptation of the Organizational Stress Indicator. All of these teachers were employed in primary schools. The data were analysed using multiple linear regression and variance analysis. Results. 26.8% of the teachers surveyed presented high levels of emotional exhaustion, 29.8% had the highest scores of depersonalization; 28% had a low level of personal accomplishment. 7.6% of the teachers were in burnout. This study shows that teachers' age affects emotional exhaustion and personal accomplishment. The work-family interface, the level of dissatisfaction in the relations with students and their parents, and the relationship with colleagues are all predictors of emotional exhaustion. Conclusion. The results of this study highlight the need for burnout prevention, aimed at improving teachers' relations with colleagues, students and their parents.

Chapter 10 - There is the perception that professionals working in Intensive Care Units (ICUs) are particularly exposed to stress which can lead to burnout. Previous studies have shown differences in burnout levels among nurses and physicians working in ICUs. The aim of this study is to identify and explore the differences in burnout levels between physicians and nurses working in the same Intensive Care (IC) settings in Portugal, and to hypothesize what can account on these differences. A cross-sectional study was conducted, in ten ICUs in the Region of Northern Portugal, using self-reporting questionnaires for the evaluation of the frequency and intensity of burnout syndrome: Maslach Burnout Inventory (MBI), socio-demographic, academic and professional factors, as well as work experiences. Statistical analysis was performed using SPSS (19) v.18.0. From a total of 461 eligible intensive care personnel, 218 physicians and 82 nurses participated in the study; 33% of nurses and 25% of

physicians exhibited high burnout levels (considering both the professionals in burnout and in high risk of burnout). Distribution of subdimensions of burnout by occupational category indicated higher levels of emotional exhaustion in nurses (p=0.019), higher depersonalization and higher personal and professional completion in physicians. Using MBI, differences were identified in burnout levels and burnout subdimensions between nurses and physicians working in Portuguese ICUs. Nurses exhibited higher levels of emotional exhaustion, while depersonalization and personal and professional achievement were higher among physicians. The factors that can account on this are both related to socio-demographic variables and work experiences as well. Strategies need to be adopted by these teams in order to prevent burnout.

Chapter 11 - Background. In a scholastic environment the educational relationship often exposes teachers to the dangers of burnout. Burnout is a defensive response to conditions of chronic or extreme stress. Various descriptive models of work-related stress indicate the relationship between the condition of stress and the adequacy of coping strategies used by workers. Recent studies indicate that the connection between defensive strategies and two types of burnout (depersonalization and reduced personal accomplishment) is stronger in secondary school teachers than in primary school teachers. *Objectives*. This study aims to explore the incidence of burnout among teachers in secondary schools and describes the psycho-social sources of stress and burnout, as well as the coping strategies of teachers, taking into account the education level in Italian schools (middle school students ages 11 to 13 and high school students ages 14 to 19). A further objective of this study is to identify those principal coping strategies that can best predict the occurrence of burnout. Method. 250 secondary school teachers completed the Maslach Burnout Inventory, the Ways of Coping Questionnaire and an adaptation to the school environment of the Organizational Stress Indicator. All teachers came from secondary Italian schools (middle school and high school). The data was analyzed using multiple linear regression and an analysis of variance. Results. 8% of the secondary school teachers experienced burnout. Research shows that high school teachers have the highest levels of burnout and the lowest levels of personal accomplishment. The research data also shows the relationship between the coping strategy known as "escape/avoidance" and job burnout. The dysfunctional coping strategies (escape/avoidance, reduced problem-solving plans and little social support) are predictors of emotional exhaustion and depersonalization. Conclusion. The results of this study highlight the connection between dysfunctional coping strategies and burnout in secondary high school teachers and confirm the need for preventative measures aimed at adaptive coping strategies.

Chapter 12 - *Background:* The educational process brings to medical students a considerable amount of stress that can lead to reduced academic success, professional performance, dissatisfaction and burnout. In the recent time several research findings brings the fact that studying and training as a formative period gives a significant contribution to further occurrence of burnout in medical profession. *Aim:* We assessed the influences of academic stress and the adverse effects in the form of psychological distress and burnout syndrome in medical students. *Methods:* This study was in the form of a voluntary anonymous questionnaire, contained: socio-demographic data, self-reported health status and influences of studying activities conducted on 380 medical students who attended the final year. Mental health status was estimated by: General Health Questionnaire – GHQ-12 and Maslach Burnout Inventory – MBI. *Results:* About 50% females and one-third of male students (p=0.01) assessed their general stress level as moderate or high. Exams were cited as a highstressor in about 50% of all, frequently in female students (p<0.001). Stressful effects

of communication with teaching staff was reported frequently by males (p < 0.001), while contacts with patients were considered to be stressful by female students (p = 0.011). The scores of GHQ-12 questionnaire were above the threshold in 54%, with values higher in females (p = 0.028). High scores were found among 58% in subscale of Depersonalization, and 38.8% on a subscale of Emotional exhaustion MBI. Stressful effect of the exams, contact with patients and teaching staff correlate significantly with scores of GHQ-12 and scores of Emotional exhaustion and Depersonalization of MBI. *Conclusion:* The prevalence of burnout among the medical students at the and of studying highlighted the importance of modifying the curriculum for better overcoming of stressful influence medical training. Effective measures of stress reduction would be targeted to the optimization of the exams, communication improving, and the development of practical skills.

Chapter 13 - Burnout is a reality that affects all individuals, including those involved in religious pastorate (Hall, 1997). Considering its repercussions, research may help in buffering burnout's far reaching effects. This preliminary study focused on the holistic wellbeing of lay catechists in Malta, a very specific population which has not been studied as such before, in view of burnout reality. Lay catechists are committed Catholics who are non-ordained and fully committed to catechism and evangelization within their church. They normally hail from different groups, each guided by different spiritualities, within same faith. Participants (N = 217) completed measures assessing burnout, wellbeing, personality, spirituality, and vocational satisfaction. Results suggested moderately high levels of burnout, and low scores of personal accomplishment. Furthermore, results suggest that fully committed catechists may be more vulnerable to stress and burnout, than candidates. More pertinent to this study, vocational satisfaction predicted a small albeit significant of the variance of burnout even after controlling for personality and subjective well-being. Thus, the stronger the sense of call, the less likely one risks burnout. The psycho-social and spiritual implications of these results were discussed.

Chapter 14 - In this chapter, the definition and measurement of burnout will be discussed, followed by an exploration of the factors which contribute to burnout in medical trainees along with the likely consequences. Many interventions have been used to prevent and manage burnout, including building resilience in individuals and within organizations. The effectiveness of some of these interventions will be reviewed, with a focus on educational management strategies. The chapter concludes with examples of specific interventions which are being used to prevent and manage burnout in New Zealand medical trainees. In the chapter, the term 'medical trainees' will be used to refer to both undergraduates (medical students) and postgraduates (junior doctors in a training programme).

Chapter 15 - Burnout is a prolonged response to chronic emotional and interpersonal stressors on the job, and is defined by the three dimensions of exhaustion, depersonalization, and inefficacy. Previous literature on burnout has focused on relationships between burnout and psychological and behavioral health. The present study examines relationships between burnout and burnout outcomes, including strain, depressive symptoms, insomnia, suicide attempts, behavioral outcomes, and poor well-being. Three hundred forty-three Japanese full-time workers participated in this survey. Multiple regression analyses revealed that although exhaustion was associated with almost all burnout outcomes, these relationships disappeared after controlling for the effects of chronic fatigue. This result suggests that exhaustion overlaps with chronic fatigue. Depersonalization was associated with negative behavioral outcomes and suicide attempts, and inefficacy was associated with strain and depressive

symptoms, after adjusting for the effects of working hours and chronic fatigue on burnout outcomes.

Chapter 16 - Doctors and other health care workers are believed to be particularly susceptible to burnout compared to the general public. In the last two decades, recognition of the importance of burnout among doctors has spurned much research in the field. Burnout is affected by both work-related and non-work related factors, and appears to be influenced by specialty and geographical location, with developing countries, surprisingly, faring better than developed countries. Targeted intervention, epidemiological studies and strong policy formation are needed to combat this epidemic.

Chapter 1

THE IMPLICATIONS OF SLEEP RESTRICTION RESEARCH FOR INSOMNIA DIAGNOSIS AND TREATMENT

Michael H. Bonnet^{*} and Donna L. Arand

Kettering Medical Center and Wright State University Boonshoft School of Medicine, Dayton, OH, US

ABSTRACT

It is well-known that insomnia is not the same as sleep restriction for a number of reasons including the fact that many insomnia patients underestimate their total sleep time, which may actually be close to normal. However, many patients with insomnia actually do have a chronic reduction in their objective total sleep time. This review will focus on the medical implications of chronic partial sleep restriction in normal individuals and the extent to which these findings are consistent with pathology found in patients with insomnia. Specifically, chronic partial sleep deprivation is associated with movement toward abnormal blood glucose and insulin; movement toward abnormal cardiovascular outcomes including elevated hsCRP; movement towards inflammation based on IL-6; movement toward decreased immunity based on NK-cells and decreased response to influenza vaccination; and movement toward weight imbalance based upon leptin. These data suggest that insomnia patients with reduced total sleep time should be at least at the same level of risk as normal individuals with a few nights of sleep restriction. A number of relevant abnormalities, including increased cortisol, sympathetic activity, blood pressure, and metabolic rate with some evidence of abnormal glycemic control and inflammation have been found in insomnia patients. Such data suggest that treatment for insomnia should involve normalization of objective total sleep time, and that such therapy should also reduce the incidence of the above abnormalities. However, cognitive behavioral treatments for insomnia, for example, are based on the use of sleep restriction as a treatment. Our understanding of the relationship between pathology stemming from chronic partial sleep deprivation and that seen in insomnia with decreased

^{*} Corresponding author: Michael H. Bonnet, Ph.D. Sycamore Kettering Sleep Disorders Center Miamisburg, OH 45342, (937) 384-4820, (937) 384-4826+ fax, bonnetmichael@yahoo.com.

objective total sleep time suggest that sleep restriction as a treatment for insomnia could actually increase risks, as indicated in recent performance data.

Keyword: Sleep restriction, chronic partial sleep deprivation, insomnia, sleep disorders, hyperarousal, hypertension, diabetes, depression, pain

INTRODUCTION

Both chronic partial sleep deprivation and insomnia are extremely common. While it might seem that these two conditions are similar, they differ in important respects. Of most importance, chronic partial sleep deprivation is voluntary, which means that it can be 'cured' at any time by the simple behavioral response of spending more time in bed. Patients with chronic partial sleep deprivation also differ from insomnia patients in that they fall asleep quickly and have high sleep efficiency both while sleep restricted and when allowed normal times in bed. Insomnia patients, conversely, report short sleep times and residual dysphoria despite longer time in bed. Patients with insomnia typically overestimate how long it takes to fall asleep and underestimate their total sleep time. The result is that some patients with the clinical diagnosis of insomnia actually have normal sleep latency and sleep efficiency based on PSG recordings ('paradoxical' insomnia). This means that a clinical diagnosis of insomnia does not technically require objective partial sleep deprivation. However, many patients with insomnia do have chronic reduction in their total sleep time and may, therefore, suffer from the consequences of both involuntary partial sleep deprivation and insomnia.

The purpose of the current chapter is to review the physiological and medical impacts of chronic partial sleep deprivation and to compare those with findings in insomnia patients both with and without reduction in total sleep time. Initial sections will explore the cardiovascular, glycemic, hormone, inflammatory, immune, and metabolic changes observed during sleep restriction in normal individuals and in insomnia patients. Insomnia treatment studies that have included these measures as outcome variables will also be discussed. Finally, similarities and differences in outcomes will be examined as a means of understanding differences in sleep restriction and insomnia and the implications for insomnia diagnosis and treatment.

Sleep Timing and Parameters

Chronic partial sleep deprivation: Both in experimental methodology and in real world practice, chronic partial sleep deprivation (or sleep restriction) is accomplished by moving bed time later, moving wake time earlier, or both while leaving the sleep period within the habitual time frame. There are no data to suggest that experimental results differ based upon placement of restricted sleep within the normal sleep period: results consistently show decreased sleep latency, increased sleep efficiency, reduced REM and SWS minutes that approximate normal (unless time in bed is extremely reduced).

Insomnia: Insomnia patients commonly report chaotic sleep patterns and timing. However, it is often unclear if irregular sleep scheduling is the cause or result of the insomnia. Patients often report difficulty falling asleep or remaining asleep during their normal sleep time and therefore extend their time in bed in an attempt to obtain some of the 'lost' sleep.

This choice, of course, can exacerbate the sleep problem. One of the goals of sleep restriction in cognitive behavioral therapy for insomnia (CBTI) is to use the chronic partial sleep deprivation paradigm is to regularize sleep timing. While the effects of improving the consistency of sleep timing apart from sleep restriction have not been studied in insomnia patients, a study that reduced variability of bed time in irregular sleeping college students to a standard deviation of 0.11 hours for 38 nights by sleeping in a laboratory environment (versus 1.3 - 1.44 hours before and after the lab stay) showed no significant differences in PSG, performance, or mood variables. [1] Irregularity of sleep in insomnia patients has also been examined in a voke-control study where the momentary sleep and EEG arousal pattern of primary insomnia patients were imposed on age and sex-controlled normal sleepers by the production on time-matched awakenings and arousals for a week to determine if this sleep pattern itself was associated with the development of insomnia symptoms. [2] In this study, total sleep time was reduced to 350 minutes per night for the week, and the outcomes, including increased objective and subjective daytime sleepiness and increased SWS and REM on the recovery night were consistent with chronic partial sleep deprivation rather than insomnia. An analogue of this experiment was also performed with insomnia patients. [3] In this study, after EEG-defined insomnia patients' baseline nights, the patients had their insomnia made 'worse' but imposition of additional wake time during the night so that their total sleep time was set at 80% of their screening total sleep. This resulted in patients who were allowed to sleep 254 minutes on average for each night for a week. The results of this study were also consistent with partial sleep deprivation rather than exacerbation of symptoms found in patients with primary insomnia. During the week, MSLT values decreased significantly from 15.6 to 11.1 minutes, as expected from sleep deprivation, rather than increasing as would be expected if insomnia were intensified. Although this reduction was statistically significant, the final 11.1-minute value was still within the normal range for the test. [4] The value can be compared with the 11.1 minute sleep latency reported by Dinges et al. [5] in normal young adults after baseline sleep. When these normal young adults then had their sleep limited to 5 hours per night for 5 nights, their MSLT value was reduced to 3.0 minutes. These results highlight that insomnia patients become sleepier with reduced sleep but that the resulting sleepiness is equal to normal sleepers at baseline and much less than that seen in normal sleepers after similar sleep loss. The difference in MSLT values prior to and after sleep reduction may reflect the degree to which hyperarousal in insomnia can mask sleep tendency. The importance of these data is that they suggest the large magnitude of masking that the hyperarousal associated with insomnia produces. They also suggest why insomnia patients with reduced sleep time do not appear to report symptoms similar to normal individuals with chronic partial sleep restriction.

In the U.S., 20% of the population sleeps less than 6 h per night on weekdays indicating a situation of chronic partial sleep restriction on workdays for millions of people. [6] This review will examine the impact of sleep partial sleep deprivation, usually lasting 1-5 nights, on medically important outcome variables following sleep restriction and in insomnia patients. If impacts are similar and we know that increased total sleep time reverses the impact of partial sleep deprivation, significant empiric evidence would support increased total sleep time as a treatment for insomnia. Unfortunately, increased objective total sleep time above set guidelines has not been used as an outcome goal for insomnia treatment.

Cardiovascular Effects

Sleep Restriction: Studies have examined a number of cardiovascular variables including heart rate or heart rate variability, sympathetic activity, blood pressure, and incidence of heart disease in relationship to sleep restriction. A summary of these studies can be found in Table 1.

Van Leeuwen et al. [7] found increased heart rate after 5 days with 4 hours of time in bed in healthy young men. Lusardi [8] found increased heart rate from 0700 - 1200 in a group of 36 Subjects (Ss) following a night with 4 hours in bed compared with night of 8 hours. Meier-Ewert et al. [9] found a 22 bpm increase in heart rate after 10 days with 4.2 hours allowed in bed. In a large sample of 478 Ss using hypertensive medication, Kawabe and Saito [10] found significantly increased heart rate in the morning and evening following nights of 5.7 (versus 7.3 hours of sleep). Mezick et al. [11] recruited 79 male college students evenly split between short and average length sleepers based on one week of actigraphy. Sleep durations of less than 5.5 hours were associated with poorer heart rate recovery after stress and greater reduction in heart rate variability during stress and cognitive tasks. Of two negative studies, Omiya [12] found no difference in heart rate compared with baseline over a month with reported total sleep time on 4.6 hours on average and Bonnet & Arand [13] did not find a difference in heart rate after one night with sleep period time reduced by 50%.

Spiegel and colleagues [14], [15] imposed 4 hours of time in bed for 6 days compared with 12 hours in bed in healthy men and found lower heart rate variability (associated with increased sympathetic and/ or decreased parasympathetic activity) during sleep restriction in the 0900-1300 timeframe.

Blood pressure following varying amounts of chronic partial sleep restriction has been examined directly in at least 5 studies, and in a number of epidemiologic papers. In a large sample of 478 Ss using hypertensive medication, Kawabe and Saito [10] found significantly increased morning systolic blood pressure following nights of 5.7 (versus 7.3 hours of sleep). Lusardi [16] found elevated systolic and diastolic blood pressure in recently diagnosed hypertension patients after a night limited to four hours of sleep compared with a night of eight hours of sleep. Tochikubo [17] also found elevated systolic and diastolic blood pressure following a night with 3.6 hours of sleep (compared with 8 hours) in a group of male telecommunication workers. Lusardi [8] found elevated systolic and diastolic blood pressure from 0700 - 1200 in a group of 36 Ss following a night with 4 hours in bed allowed compared with night of 8 hours. Mezick et al. [11] found that diastolic blood pressure was increased during tasks following shorter nights of sleep as determined by actigraphy. However, Van Leeuwen et al. [7] found no change in blood pressure measured for 10 minutes in the morning after 5 days with 4 hours of time in bed in healthy young men. A recent three-week study with time in bed reduced by only 1.5 hours in a small group of normal subjects also found no change in blood pressure. [18]

A number of epidemiologic studies have shown associations between blood pressure and sleep duration. [19], [20], [21], [22], [23], [24] While most studies have shown increased blood pressure in association with short sleep times, usually 5-6 hours or less, some have not shown significant differences, particularly in children and the elderly. [25], [26], [27], [28]

Epidemiologic Studies of Sleep Duration and Heart Disease

The Nurses' Health Study examined incident coronary heart disease (CHD) over 10 years and found an increased risk ratio of 1.45 (95% Confidence Interval: 1.1-1.92) for those reporting ≤ 5 hours sleep per night compared to those sleeping 8 hours per night [29]. Other studies have reported similar results for ≤ 5 hours [30], [31] or ≤ 4 or 5 hours of sleep in women. [32], [33] Similar results have been reported in some more recent studies [34], [35] but not in others [36], [37], [38], [39]. Three of the four negative studies did find a significant relationship in patients with insomnia. One interesting study including PSG data found that CHF patients with a subjectively long time in bed actually had short objective sleep times that were predictive of mortality [40]. As almost all of the previous reports were based on questions about usual sleep duration, they may reflect individuals who have a short sleep requirement as well as those who chronically sleep restrict themselves. In addition, as indicated in the latter study, a subjective report may often differ from the underlying objective time asleep. In fact the results may actually support the possibility that a majority of individuals reporting short sleep duration may actually link sleep duration more closely with insomnia rather than chronic partial sleep deprivation. In addition, It is possible that individuals reporting long sleep durations may actually have reduced objective total sleep time while reporting subjectively increased sleep duration (by reporting time in bed rather than actual time asleep).

Parameter	Implicated in Chronic Partial Sleep Deprivation	Implicated in Insomnia	Insomnia with Behavioral Treatment	Insomnia with Pharmaco- therapy
Heart Rate or Sympathetic Activity (Increased)	[11]; [7]; [8]; [10]; [9]; [18]; [15]; [14];	[41]; [42]; [43]; [44]; [45]; [46]; [47]; [48]; [49]; [50]; [51]; [50]; [48]; [52]	Exercise [53]	
HR/Symp no difference	[13]; [12]	[54]; [55]; [56]		Lormetaze-pam [57] Zopiclone [57]
Blood Pressure (Increased) Incidence studies	[16]; [17]; [8]; [11]; [10];	[58]; [59]; [60]; [61]; [39]; [60]; [61]		Zolpidem [62]
Blood Pressure (no change)	[7]; [18]	[35]; [63]		
Cardiac Disease Positive Incidence studies	[20]; [21]; [22]; [19]; [23]; [24]; [29]; [30], [31]; [32], [33]; [34];	[37]; [64]; [65]; [36]; [66] meta-analysis of 10 studies; [67]; [68]; [69]; [70]; [71]; [59]; [60]; [61]; [36]; [37]; [39]		
Negative Incidence studies	[25]; [26]; [27]; [28], [36], [37], [38], [39]	[35]; [72]		

 Table 1. Summary of Cardiac Parameters Implicated to be Abnormal in Restricted

 Sleep and Insomnia and Results from Available Treatment Studies

Insomnia: Two of three initial studies showed significant elevation of heart rate in insomnia patients compared with controls, and a meta-analysis of these three studies showed a significant 5.7 overall beat per minute difference with a standard deviation of 2.04. [41],

[42], [73], [74] Participants in the positive studies were objective insomnia patients carefully selected and matched with good sleeping controls. Recent large studies found increased heart rate in insomnia patients throughout the day and night [50] or prior to sleep onset and during stage 2 sleep throughout the night compared with controls. [49] Other studies have found differences in heart rate at sleep onset in insomnia patients compared with controls. [44], [43] Additional studies have shown evidence of elevated cardiac activity in insomnia patients where significant differences in heart rate were not found. For example, in a recent study, Cellini et al. [51] found a 9 bpm increase in heart rate in their insomnia group which was not statistically significant at the .05 level but did show elevated cardiac activity including a significantly shorter PEPlog (enhanced sympathetic tone), higher RPPlog (increased cardiac metabolic demand), and lower HFlog (reduced vagal tone) in a small group of insomnia patients compared with good sleepers. Three other studies have found increases in PEP variables in young insomnia patients in comparison with controls. [46], [47], [75] One problem with these studies is that real world variability in heart rate makes group differentiation more difficult. One treatment study that examined lormetazepam and zopiclone did not find changes in heart rate [57] in primary insomnia patients as a function of treatment. However, these medications may have an independent effect on heart rate. Studies of exercise as therapy for insomnia have shown generally positive results [76], although only one could be found that actually measured cardiovascular outcome variables. In that study [53], those participants with a VO2 max improvement of 10% or more had less poor quality sleep and short sleep duration nights.

Analysis of all night heart rate variability (HRV) has shown both primary insomnia patients and individuals with PSG-defined situational insomnia have increased low-frequency and decreased high-frequency electrocardiographic spectral power, suggesting increased sympathetic activation and decreased parasympathetic activity compared with good sleepers. [41], [52], [50] These results were not replicated in a study with a single afternoon observation or a study with a wide age range. [55], [54] However, a study that examined heart rate variability based upon simple standard deviations in a group of 1908 subjects found significantly increased heart rate variability in insomnia patients (consistent with sympathetic activation) compared with normals at all observation points, [45] and another study of 130 Ss showed increased sympathetic activation during wake, stage 2 and REM sleep in insomnia patients compared with controls. [49] Spieglehalter et al. [44] did not find differences in HRV between primary insomnia patients and controls in their study until they reduced their insomnia sample to patients who also had a reduced sleep duration as defined as a sleep efficiency of less than 85%. In this subsample, the objective insomnia patients showed a reduction in high frequency activity (consistent with decreased parasympathetic activity).

Studies suggest that heart rate and heart rate variability in both chronic partial sleep deprivation and insomnia are consistent with sympathetic activation. Insomnia studies have shown that effects were stronger in patients with objectively decreased total sleep. The crucial question here is whether the hyperarousal that underlies insomnia also produces restricted sleep. It is also unclear if these cardiovascular effects are related simply to reduced sleep or whether they are related to the stress underlying chronic partial sleep deprivation versus central hyperarousal in insomnia patients.

Lanfranchi et al. [58] documented significantly higher systolic blood pressure and decreased systolic pressure dipping across the night in primary insomnia patients compared with controls. The only significant difference in the groups based on PSG recordings was

fewer periodic limb movements in the insomnia group. This suggests it was not differences in EEG sleep, such as increased wake time or arousals, that caused the blood pressure difference. However, it is unknown if nocturnal blood pressure is even more abnormal in objective insomnia patients. In a recent study, Huang et al. [62] showed that patients with poor sleep and controlled hypertension who continued to have a non-dipping blood pressure pattern at night had significantly improved (dipping) nocturnal blood pressure when treated with zolpidem 10 mg at bed time. Other treatment combinations including zolpidem given to patients with good sleep and placebo administration to patients with poor sleep did not result in significant improvement. Fifty percent of the patients with poor sleep were converted to a normal nocturnal blood pressure profile versus 9% in the placebo group. These data are important because these patients had previously been diagnosed with hypertension, were treated, and were on stable therapy at the time of entry into the study (but were at elevated risk secondary to the lack of blood pressure dip during sleep). The data suggest that hypertensive patients who report insomnia need to have a formal sleep evaluation to rule out sleep apnea along with nocturnal blood pressure measurement to determine if additional sleep-related therapy is necessary.

Unfortunately, the hypertension treatment study did not include PSG recordings, so the degree of objective sleep disturbance is not known. However, the fact that there was improvement only in patients with poor sleep implies that only the combination of poor sleep and medication produced significant benefit.

Epidemiology of Hypertension and Cardiovascular Disorders

Many older studies have shown an association between insomnia and elevated cardiovascular risk. [66] A more recent study showed an increased incidence of hypertension in telecommunication workers with insomnia [61], but this was not replicated in a group of normotensive females with poor sleep [63] or in the Atherosclerosis Risk study. [35] In a large study including PSG recordings, Vgontzas et al. [59] have shown an elevated risk for hypertension in patients with insomnia who also slept for 6 hours or less on their PSG but not for insomnia patients who slept more than 6 hours on their PSG or normal subjects who slept less than 5 hours on their PSG. The most significant hypertension risk was in insomnia patients with a PSG sleep time of 5 hours or less. All analyses were adjusted for age, race, sex, BMI, diabetes, smoking status, alcohol consumption, depression, and sleep disordered breathing.

These data suggest that hypertension risk increases as PSG total sleep time decreases in patients with insomnia but not in normal short sleepers. In addition, patients who complained of poor sleep and slept for less than 5 hours on their PSG also had an increased risk for hypertension but much lower than patients with objective insomnia. This study was the first to suggest that medical risk for insomnia patients is dependent upon the severity of objective insomnia and that short sleep in insomnia patients is more significant than short sleep in normal individuals. [59] It is also one of few studies to classify severity of insomnia based upon an objective measure of total sleep time. These data suggest that patients with objective deficits in total sleep time and a report of insomnia are at much greater risk than patients with only a subjective complaint or patients without insomnia who have a short total sleep time. These data also expose a serious problem in the majority of insomnia studies, which have

selected patients based entirely upon subjective report of insomnia. Such studies minimize the power of their results by combining patients with and without objective reduction in total sleep.

The same investigators re-evaluated these patients 7.5 years later and found the risk for development of hypertension during the 7.5-year period was again significantly increased in objective insomnia patients in analyses controlled as in the first study. [60] The level of risk was similar to that seen for patients with sleep apnea. [60] While treatment studies have suggested that improved sleep does improve nocturnal blood pressure, no long-term studies have examined the extent to which treatment for insomnia reduces the risk of developing hypertension or other cardiovascular disorders.

Many studies have shown an association between reported insomnia and the development of coronary heart disease. A 1999 review and meta-analysis of 10 studies that had been published at that time found a combined risk ratio of 1.92 (95% CI, 1.62-2.31) between difficulty falling asleep and heart disease outcomes such as myocardial infarction. [66] Six additional positive studies were included in a more recent review [77], [67]], [72], [68], [69], [70], [37]. Three interesting studies have examined both sleep duration and sleep disturbance in association with CHD and found that short sleep duration itself was not associated with the development of CHD while a significant association was found for patients with both short sleep duration and disturbed sleep [36], frequent insomnia, [39] or difficulty initiating sleep. [37] In general, many of these studies have been criticized because the poor sleep could have been associated with unknown sleep apnea. Some of these studies have controlled for BMI or snoring, but these variables are not always linked to sleep apnea. Therefore, the studies by Vgontzas and colleagues of hypertension that included objective measurement of respiration and sleep are invaluable. [59], [60]

Both the in laboratory studies [59], [60] and the epidemiologic studies that included both poor sleep and sleep duration questions [36], [39], [37] support the conclusion that insomnia associated with short objective sleep duration plays a more crucial role than short sleep time in hypertension and other cardiac negative outcomes.

Glycemic Control

Sleep Restriction: Empirical studies have typically hypothesized a decrease in glucose tolerance or a reduction in insulin sensitivity following chronic partial sleep deprivation (see Table 2). Two studies have reported reduced glucose tolerance. In a typical design, normal young adults have been allowed 4 hours in bed for 5-6 nights and test parameters are compared with 5-6 nights of extended (10-12 hours) or normal times in bed. [14], [78] Other studies that often included only one night with sleep reduced to 4 hours [79] or different subject populations have not reported differences [80].

A number of studies have reported reduced insulin sensitivity after varying periods of sleep restriction. [78], [81], [82], [83] In one study, a single night with sleep time limited to 4 hours was associated with reduced insulin sensitivity compared with a normal 8-hour sleep period in healthy individuals. [81] On the other hand, one study found increased glucose and increased insulin with no change in insulin resistance after 5 nights with four hours in bed. [84] A recent study of a 1.5-hour reduction in time in bed over three weeks reported reduced insulin sensitivity after the first week with return to baseline on the following weeks. [18]

While the number of subjects was small, these results suggest that some findings could be related to stress rather than sleep loss itself.

A number of epidemiologic studies have suggested an association between abnormal glycemic control and short sleep times. [85], [86], [87], [88], [89], [90], [91], [92], [93], [94] A few studies have not shown significant association between short sleep times and abnormal glycemic control. [95], [96] In a meta-analysis that included 10 studies, an overall risk ratio of 1.28 (95% CI = 1.03 - 1.60) for short sleep durations (<= 5-6 hours per night) was obtained. [92]

Parameter	Implicated in Chronic Partial Sleep Deprivation	Implicated in Insomnia/Poor Sleep	Insomnia with Pharmacotherapy
Glycemic Control (abnormal)	Glucose tolerance decrease [14]; [78] Insulin sensitivity reduced: [78]; [81]; [82]; [83]; [18]	[97]; [98]	Melatonin [99]
Glycemic Control (no difference)	[80]; [79]; [79]; [84]	[100]	
Diabetes Risk Positive Incidence Studies	[29]; [94]; [89]; [90]; [91]; [92]; [93]; [87]; [88]; [86]; [85]	[101]; [102]; [103]; [104] [105]; [93]; [106]; [107]; [92]; [86]; [108]; [109]	
Diabetes Risk Negative Incidence Studies	[96]; [95]		

Table 2. Studies of Glycemic Control in Sleep Restriction and Insomnia with Insomn	ia
Treatment Studies Noted (there were no behavioral treatment studies)	

One of the significant issues with all of these studies is that a reported short sleep duration could reflect someone with chronic partial sleep deprivation or just a short sleep requirement or insomnia with reduced sleep duration. The extent to which normal short sleepers versus insomnia patients are included within samples could determine the strength of relationships observed.

Insomnia: A few studies have examined blood sugar levels in patients with reduced and poor sleep. In one study, patients with subjective insomnia were found to be at increased risk for an abnormal glucose tolerance test. [97] Patients with diabetes and poor sleep were found to have significantly worse levels of glucose and insulin compared with diabetes patients with better sleep [98], but poor sleep patients without diabetes did not have elevated levels. In a small study of sleep center patients, the incidence of abnormal glucose tolerance test results was not greater in a group of 19 primary insomnia patients versus controls (18% vs. 12%). [100]

Diabetes

Several epidemiologic studies have shown an association between poor sleep or insomnia and elevated diabetes risk. [102], [107], [110], [103], [104], [105], [111], [93] One study suggested that this relationship may have occurred through elevated heart rate associated with

sympathetic activation. [107] Patients with diabetes and insomnia had elevated insulin, IP-10 and leptin compared with diabetes patients without insomnia. [106] The meta-analysis that showed an increased risk ratio for diabetes in association with short sleep durations also showed an increased risk ratio for patients who indicated that they that had difficulty initiating sleep (RR = 1.57 with a CI of 1.25-1.97) and difficulty maintaining sleep (RR = 1.84 with a CI of 1.39-2.43). [92] The risk ratios for insomnia are somewhat larger than those for normal individuals with short sleep duration.

Vgontzas et al. [101] also examined risk ratios in their PSG population for patients with diabetes or elevated blood sugar. Similar to hypertension, patients with objective insomnia who slept 6 hours or less were at increased risk for diabetes while patients with insomnia who slept for more than 6 hours were not. These data were adjusted for age, race, sex, BMI, smoking status, alcohol consumption, depression, and sleep disordered breathing. Normal sleepers who slept less than 5 hours in the lab were not at risk. In contrast with the hypertension data, poor sleepers who slept for less than 5 hours in the lab were not at increased risk for diabetes. However, the data consistently suggest that the risk for diabetes or abnormal glycemic control increases as insomnia increases, as measured by complaint and total sleep time reduction, and these are both necessary for the increased risk. Treatment with 2 mg of prolonged release melatonin given nightly for 5 months to a group of 36 type 2 diabetes patients with subjective insomnia (as an extension of a double blind crossover treatment versus placebo study) [99] showed significantly improved sleep efficiency and decreased awakenings based on actigraphy and significant improvement in glycemic control as measured by HbA1c. [99] The authors justified the use of prolonged-release melatonin in this clinical setting because of potential relationships between melatonin and insulin production. Despite the suggestion that improving sleep may improve diabetes markers, no studies have examined whether long-term treatment of insomnia will reduce the risk of development of diabetes.

Studies have consistently suggested decrements in glycemic control for significant periods of sleep restriction and in subjective and objective insomnia. The single study comparing both short sleep and insomnia with subjective and objective criteria suggested greatest risk in insomnia patients with short sleep. [101]

Hormones

Sleep Restriction: Studies of cortisol, leptin, and ghrelin after sleep restriction are summarized in Table 3.

Cortisol: Significant sleep restriction typically includes a significant increase in evening cortisol. [14], [15], [78], [112] However, this evening increase may be accompanied reduction of cortisol in the morning. [113] Several other studies have reported significant decreases in morning cortisol. [114], [115], [116] Five studies that did not find significant changes in cortisol could be explained by fewer nights with less sleep restriction on experimental nights. [117], [118], [81], [83], [7]

Ghrelin and Leptin: Decreased levels of leptin [15], [119], [120], [121] and increased levels of ghrelin [119], [121] were found in the initial 4-hour time in bed studies of sleep restriction. Reduced leptin after sleep restriction was also found by Chaput [122] However, these results were not replicated in a study of postmenopausal women. [123] A study

involving three weeks with time in bed reduced by 1.5 hours showed a significant decrease in leptin after the third week. [18]

Other studies, usually involving fewer nights of sleep restriction, were unable to replicate findings of decreased leptin. [124], [113], [82] Three recent studies have actually shown significantly increased leptin levels (not [125]) with no change in ghrelin after sleep restriction. [79], [125], [112] While this might have occurred in the two earlier studies secondary to a design that allowed increased caloric increase and weight gain, diet was closely controlled in the latter study, which suggested that earlier results showing decreased leptin might have involved caloric restriction. [112]

Parameter	Implicated in Chronic Partial Sleep Deprivation	Implicated in Insomnia	Insomnia with Pharmacotherapy
Cortisol (Increased)	[14]; [15]; [78]; [112]; [114], [115],	[126], [127], pm; [128]; [129]; [130] am; [131]	Doxepin [134]; Triazolam [135]
	[116] [113]	pm & am; [132]; decreased am [133]	
Cortisol no effect	[117]; [118]; [81]; [83]; [7]	[136]; [137]	Ramelteon [138]
Cortisol decreased in morning	[114]; [115]; [116]		
Ghrelin (increased)	[119]; [121]		
Ghrelin no change	[125]; [123]; [79]; [112]		
Ghrelin decreased		pm [139]	
Leptin (decreased)	[120]; [119]; [121]; [122]; [18]		
Leptin: No change	[124]; [113]; [82]; [123]; [125]	[139]	
Leptin: Increased	[79], [112]	[106]	

Table 3. Studies of Cortisol, Leptin, and Ghrelin in Sleep Restriction and Insomnia with Insomnia Treatment Studies Noted (there were no behavioral treatment studies)

Insomnia - Cortisol: Cortisol levels were significantly increased in 8 of 10 studies that compared insomnia patients with controls. [126], [127], [136], [133], [129], [128], [137], [130], [131], [137] In contrast with sleep restriction studies, which typically show reduced morning cortisol levels, two recent studies with insomnia patients have shown significantly elevated cortisol levels in both the evening and morning. [130], [131]

One pair of studies [127] first showed that hourly blood cortisol levels during sleep were significantly elevated in primary insomnia patients compared with controls and subsequently that patients with primary insomnia treated with doxepin 25 mg. had a significant decrease in cortisol levels measured each hour during the night but did not numerically reach control levels [134]. Elevated cortisol levels in insomnia patients have also been reduced with triazolam and loprazolam with rebound at withdrawal. [135] However, this was not the case

with ramelteon. [138] These studies suggest that cortisol, particularly in the evening, is consistently elevated in patients with insomnia and that sympathetic activation/stress may play a more prominent role in these patients in comparison with normal individuals undergoing chronic partial sleep restriction, where results are less consistent.

Ghrelin and Leptin: Increased leptin was found in subjective insomnia patients with diabetes as compared with diabetes patients without insomnia. [106] Another experiment found that primary insomnia patients had significantly decreased ghrelin at night compared with age-and-weight-matched normal sleepers but no change in leptin. [139]

These reported changes seem at odds with the initial sleep restriction results. The Motivala et al. [139] study suggested that the paradoxical findings may have been based upon sampling of ghrelin at night while the sleep restriction studies have typically sampled during the day. However, the role of ghrelin and leptin in both sleep restriction and insomnia will require further experimental work.

Inflammation

Sleep Restriction: A number of studies have suggested that proinflammatory cytokines such as interlukin-6 (IL-6) and tumor necrosis factor (TNF- α), or high sensitivity CRP (hsCRP) are increased following sleep restriction (see Table 4). A recent study modeled a fairly typical workweek with 6 nights of sleep limited to 6 hours in bed followed by recovery nights with 10 hours in bed. [118]

There was a significant reduction in IL-6 during the sleep restriction with recovery to baseline during the recovery nights. Several previous studies with sleep restriction ranging from four hours in bed on one night to 4 hours in bed for 12 nights have consistently found increased IL-6 [140], [141], [142], [115], [7]. Two studies found increases in TNF- α [141], [142], and one found an increase in males but not females. [115] Two of three studies have reported significant increases in CRP. [140], [9], [7]

Insomnia: Recent studies have begun to document an association between insomnia and inflammation. IL-6 and TNF- α have been shown to have a significantly different pattern of secretion in objective insomnia patients compared with controls. [143] A study of primary insomnia patients with diabetes showed significantly increased IP-10 (an interferon-inducible protein-10 linked to inflammation) compared with diabetes patients without insomnia.[106] Another study has shown that hemodialysis patients who were poor sleepers based on the Pittsburgh Sleep Quality Index (PSQI) had increased hsCRP compared with better sleeping patients and that PSQI scores showed significant positive correlations with hsCRP, IL-1 β , and triglyceride levels. [145]

Additional studies of inflammation markers in patients with objective insomnia are greatly needed. One study has examined treatment of rheumatoid arthritis in patients with poor sleep as determined by PSQI with anti— TNF- α medications and found a significant decrease in wake time during sleep and increased sleep efficiency after 2 months of treatment. [144] Better-controlled studies in well-defined insomnia populations are needed.

Changes in markers for inflammation are consistent in chronic sleep restriction studies, but there are too few and no directly comparable studies in insomnia patients to compare decrements with normal short sleep or chronic sleep restriction.

Parameter:Implicated in ChronicInflammation MarkersPartial Sleep Deprivation		Implicated in Insomnia	Insomnia with Pharmacotherapy
Increased IL-6	[115];[7]; [140]; [141]; [142];	[143]	
Increased TNF	[115]; [141]; [142]	[143]	[144]
Increased CRP	[7]; [9]	[145]	
Decrease IL-6	[118]		
No change CRP	[140]		

 Table 4. Studies of Inflammation in Sleep Restriction and Insomnia with Insomnia

 Treatment Studies Noted (there were no behavioral treatment studies)

Immunity

Sleep Restriction: Changes in immune function during and following sleep restriction have been reviewed recently [146] and are summarized in Table 5. In a 2008 study where young men were allowed 4 hours in bed for 3 nights, a significant increase in leukocytes and neutrophils was found. [147] In a similar design with postmenopausal females, increased leukocytes and monocyte counts were reported. [148] In a single night study that allowed two hours of sleep in young men, the increased leukocytes and neutrophil counts found in the initial young adult study were replicated. [149] A study by van Leeuwen et al. [7] found decreased NK-cells and increased β -cells with no change in t-cells after 5 nights with four hours of available sleep time.

In an immunization study, Spiegal et al. [150] found a decrease in production of antibody cells in young adults who were immunized after 4 nights with time in bed limited to 4 hours. Ten days after immunization, antibody titers were less than half in the subjects who had been immunized during sleep restriction in comparison to controls. However, differences were no longer significant after three to four weeks. Another study that examined antibody responses to hepatitis B vaccination found that shorter actigraphic sleep duration but not sleep quality or sleep efficiency was associated with a lower secondary antibody response. [151]

Insomnia: Two studies have directly examined immunity in primary insomnia patients and controls and have shown significant decreases in the numbers of CD3+, CD4+ and CD8+ T cells [153] and reduced NK-cell responses [152] in patients compared with controls.

Other large studies have shown a relationship between poor sleep and infection. A 1997 study in a group of 276 healthy volunteers showed that a subjective sleep efficiency of less than 80% (poor sleep) was independently associated with a greater risk of developing an upper respiratory infection. [154] A prospective study that followed a group of 153 healthy individuals prior to and after a viral challenge found that 88% of the participants became measurably infected. [155] In the latter study, sleep diaries showed that pre-infection sleep efficiency was again independently associated with risk of infection with 16 possible confounds controlled. Odds ratios were significantly increased for participants with sleep efficiency less than 93% (lower third of sample) and lower than 85% (lower 10% of sample).

A recent study of sleep duration and pneumonia risk attempted to better differentiate types of reduced sleep duration and better control for sleep apnea while evaluating adequacy of sleep. [156] A report of inadequate sleep was related to a 1.44-fold increased risk of

pneumonia when controlled for 8 confounders including BMI, snoring, and hypertension and even with control for habitual sleep duration. Interestingly, risk was not increased in individuals who only reported short (but adequate) sleep. Prather et al. [151] gathered actigraphy and sleep diary data from patients obtaining a hepatitis B vaccination. Shorter sleep durations, especially less than 6 hours, were associated with decreased likelihood of clinical protection. However, this relationship was with sleep duration rather than sleep efficiency, as in the earlier studies, suggesting that individuals with decreased time in bed as opposed to poor sleep (i.e., suffering from sleep deprivation rather than insomnia) were most at risk. However, no data suggest that insomnia patients with short sleep durations are at less risk for any pathology than normal individuals with short sleep durations. The immunity studies with both primary insomnia patients and poor sleepers suggest significant relationships in patients, but additional work, including treatment studies showing improved immune function, is needed.

Evidence suggests decreased immune function in both chronic sleep restriction and in patients with insomnia. However, there are no direct comparison studies.

Table 5. Studies of Immunity in Sleep Restriction and Insomnia with Insomnia Treatment Studies Noted (there were no behavioral treatment or pharmacotherapy studies)

Parameter	Implicated in Chronic Partial Sleep Deprivation	Implicated in Insomnia
Immunity (decreased)	[7]	[152]; [153]
Increased leukocytes, neutrophils, or monocytes	[147]; [148]; [149]	
Vaccination/Infection	[150]; [151]	[154]; [155]; [156]
No change vaccination/ infection		[151]

Metabolism

Sleep Restriction: Studies of sleep restriction have either found no change in energy expenditure [125], [157], [79] or a reduction in resting metabolic rate [158] over sleep restriction periods of up to 5 nights in comparison with baseline sleeping conditions (see Table 6).

Insomnia: Significant increases in whole body metabolic rate have been shown in patients with primary insomnia selected for both objective insomnia and paradoxical insomnia [159], [160] and matched for sex, age, and weight. Relative data for these groups with respect to their individual control groups are shown in Figure 1 and show greater elevation in whole body metabolic rate in objective insomnia patients compared with paradoxical insomnia patients. The elevated metabolic rate was also found in within-sleep stage comparisons, so the data could not be explained on the basis of increased wake time in the insomnia patients. The average metabolic rate $(\dot{V}O_2)$ in normal individuals during sleep in these two studies was 266 ml/min. In the baseline study with objective primary insomnia patients [159], the average $\dot{V}O_2$ was 296 ml/min. In a lorazepam treatment study, the placebo value for mean $\dot{V}O_2$ during sleep for the insomnia patients was 299 ml/min. [163] This $\dot{V}O_2$

was significantly reduced with lorazepam at 1.5 mg hs and 0.5 mg tid compared with placebo to 285 ml/min. [163] In comparison with these values, patients with paradoxical insomnia had a mean $\dot{V}O_2$ of 277 ml/min during a baseline sleep recording that was significantly higher than a control group of good sleepers. [160] Therefore, the reduction in $\dot{V}O_2$ resulting from the treatment of insomnia with lorazepam did not reach the level of controls or paradoxical insomnia patients.

Other insomnia studies have documented increased brain metabolic rate both asleep and awake using functional neuroimaging. [161] Primary insomnia patients had less decline in metabolism during sleep in the reticular system, hypothalamus, thalamus, insular cortex, amygdala, and hippocampus compared with controls. This suggested increased general arousal and increased activity in the "emotional arousal areas" of the brain. In another study, positive correlations between wake time during sleep and brain metabolic rate in areas associated with emotion were found. [162] Treatment with eszoplicone in primary insomnia patients reduced NREM metabolism in brainstem arousal centers, thalamus, and parietal cortex. [164]

 Table 6. Studies of Metabolism in Sleep Restriction and Insomnia with Insomnia

 Treatment Studies Noted (there were no behavioral treatment studies)

Parameter	Implicated in Chronic Partial Sleep Deprivation	Implicated in Insomnia	Insomnia with Pharmacotherapy
Metabolic Rate		[159]; [160]; [161];	Lorazepam [163]
(Increased)		[162]	Eszoplicone [164]
Metabolic Rate	[165]; [79]; [125]		
(No change)			
Metabolic Rate	[158]		
(Decreased)			



Figure 1. Percent increase in whole body VO2 across the night in patients with objective insomnia (divided by their control subjects at the same time points) and in paradoxical insomnia patients (divided by their control subjects at the same time points). [159], [160].

The metabolic data suggest significant differences between insomnia patients and normal individuals with restricted sleep. Metabolic rate appears to be unchanged or reduced during sleep restriction while being elevated in insomnia patients.

Implications of Sleep Restriction for Insomnia Diagnosis and Treatment

Insomnia has historically been diagnosed on the basis of a subjective report of long sleep latency or increased wake during the sleep period. This subjective diagnosis has led to treatments aimed at improving these subjective symptoms. It has been suggested that this approach is analogous to a decision to treat all chest pain by administration of pain medication. [166] What if the real pathology associated with insomnia is the increased risk of cardiovascular disease, diabetes, hormone alteration, inflammation, decreased immunity, and sympathetic activation? And what if the risk is unrelated to reported sleep latency and subjective sleep time but rather with objective total sleep, which is frequently unrelated to subjective report in these patients? One implication is that diagnosis may not be possible without a measure of objective total sleep time. Unfortunately, this measure is almost never obtained in insomnia patients outside of occasional research studies. Another implication is that treatment efficacy based upon subjective responses of improved sleep latency or sleep efficiency may not be relevant.

For example, consider cognitive behavioral therapy for insomnia. This approach, which avoids side effects of medications, was highly recommended by the NIH. [167] Unfortunately, a central component of cognitive behavioral therapy for insomnia is sleep restriction! This therapy was developed to respond to the fact that patients with insomnia sometimes significantly increase their time in bed in hope of being able to obtain sleep. It might be reasonable to tell an insomnia patient who is spending 11 hours per day in bed that he will not be able to spend all of this time asleep and that time in bed needs to be reduced. However, the clinical practice is to ask the patient for his subjective report of the hours that he actually sleeps each night and to then reduce time he is allowed in bed each night to this number. Time in bed is typically reduced to 5-6 hours per night. Because insomnia patients typically underestimate their time spent asleep each night, their time in bed is frequently set for much less sleep than they had previously had, and these patients become unwitting participants in what can become yearlong sleep restriction experiments. [168] Sleep restriction, of course, is very effective in reducing sleep latency and increasing sleep efficiency in both normal young adults and patients during the significantly shorted sleep time that is allowed. The essence of the success of CBTI is that it produces significant reduction in sleep latency and improvement in sleep efficiency.

The problem is that improved sleep efficiency applies to the 5-6 hour sleep periods and not to normal nights. Because cognitive behavioral therapy does not involve drug administration, there has been no requirement to measure reports of side effects associated with the therapy, although as expected, studies are beginning to show increased sleepiness and decreased psychomotor performance as side effects of this treatment. [169] However, the sleep restriction literature reviewed here suggests clinically significant changes in many important measures that may be secondary to this 'therapy.' Unfortunately, these variables have not been measured in a CBTI treatment study. In contrast, development of hypnotic medication has typically required documentation of significant reduction in objective sleep

latency or improvement of sleep efficiency in standard 8-hour sleep periods. However, these studies frequently document decreases in sleep latency or increases in total sleep time of only a few minutes. Of course, risk data suggest that it may be more important to successful treatment to increase total sleep time to over 7 hours, for example, as a more relevant outcome rather than simply a statistically significant increase in sleep time. Another useful outcome variable might be improvement in total sleep time and improvement in laboratory values such as improved blood pressure, hsCRP, or HbA1c.

The very few studies that have examined these important clinical outcome measures have been reviewed in the text and listed in the tables. Few studies have examined changes in cardiovascular variables with treatment, but treatment of insomnia patients with non-dipping blood pressure with zolpidem improved sleep and blood pressure [62], and there is a suggestion that improvement in $\dot{V}O_2$ max with exercise may be related to improved sleep. [53] Two studies have shown decreased whole body [163] or brain area [164] metabolic rate with lorazepam and eszoplicone respectively. A single study of glycemic control showed improvement in HbA1c [99] and improved sleep with treatment using prolonged release melatonin. Cortisol and sleep were improved with administration of doxepin [134] and triazolam [135] but changes were not found after administration of ramelteon. [138] A single study, in patients with rheumatoid arthritis, has shown improvement in sleep with anti-TNF-a therapy. Unfortunately no treatment outcome studies could be found for measures of immunity. However, all of these studies are limited in number of subjects and length of treatment. Replication studies with longer treatment periods and documentation of increased objective total sleep time are important, as it is not clear the extent to which improvement in these clinical dimensions is related to increased total sleep time, as expected from our knowledge of sleep restriction effects, rather than to the specific medications utilized. However, the variety of medications and interventions used suggest that non-traditional therapies that reduce underlying hyperarousal, pain, or other disruptive factors to allow increased total sleep time could be effective treatments that could avoid some of the negative consequences of traditional hypnotics.

All of these data suggest that the current methods for diagnosis and treatment of insomnia need to be re-evaluated. Historical reliance on subjective symptoms may not be sufficient for either diagnosis or treatment, especially when evidenced-based alternatives are available. [166] Many studies have now shown that insomnia is a significant risk factor for several medically important clinical outcomes that can be objectively and economically measured by a number of laboratory tests. The major rationale for insomnia evaluation and treatment needs to be objective risk reduction rather than subjective complaint, and the best current data suggest that evaluations need to begin with assessment of objective total sleep and the use of treatments with proven means of increasing total sleep time or reduction in risk for significant medical outcomes in clinical populations where objective sleep time is reduced.

CONCLUSION

A review of clinical outcomes associated with chronic partial sleep deprivation and insomnia suggests many similar features including similar significant impact on cardiovascular, glycemic, inflammatory, immune, and hormone (cortisol) variables. In

general, effects were greater in patients with insomnia, especially when the patients had a documented reduction in objective total sleep time. These data suggest that appropriate therapies for insomnia should produce increased total sleep time to at least 7 hours and/or improvement in important clinical laboratory values such as HbA1c. Treatments that involve sleep restriction with time in bed of less than 8 hours, such as cognitive behavioral therapy for insomnia, must be evaluated for potential to actually increase the medical consequences of insomnia.

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Chapter 2

JOB BURNOUT IN INTERNAL MEDICINE RESIDENTS: PREDICTORS, CONSEQUENCES AND INTERVENTIONS

Jon Ripp

Icahn School of Medicine at Mount Sinai, New York, NY, US

ABSTRACT

It is perhaps not surprising that a majority of residents will experience job burnout during the course of their training when considering the stressors to which they are exposed. These include extended work hours, frequent traumatic events, such as patient death and disability, and disrupted sleep schedules. Numerous predictors of burnout have been examined in this population, including personality traits, gender, support network and educational loan debt. The potential consequences of job burnout may be severe, including depression, suicidality, injury, sub-optimal patient care, poor academic performance and unprofessional behavior. Several interventions designed to minimize burnout have been explored, including work-hour limitations, mindfulness-training and stress reduction programs. Few have shown benefit and so the potential implications of job burnout in resident trainees continue to drive further investigation. This chapter will review the existing literature on the prevalence and predictors of resident burnout, the consequences to residents and the patients for whom they provide care, and the efficacy of current interventions. It will conclude with suggestions for future directions in research and regulatory policy-making.

INTRODUCTION

A 27-year old first-year internal medicine resident, who has been averaging 10-hour work days on an inpatient general medicine rotation for the last 5 consecutive days, is called by a ward nurse to evaluate a patient complaining of shortness of breath. The intern had just been notified by his senior resident a few minutes earlier that there were two new admissions waiting for him to be seen in the emergency department. On his way to examine the dyspneic patient, a code is called overhead. The resident runs to aid in the resuscitation procedure.

After performing chest compressions for several minutes, the patient does not survive. Exiting the room of the expired patient, the resident remembers that he has another patient in distress to examine and new patients waiting for his initial assessment in the emergency room. Feelings of inadequacy swell as he questions whether he is capable of performing these duties. He steps into a nearby stairwell to be alone and begins to cry.

Scenarios such as these are unfortunately all too common during internal medicine residency training, a period of enormous personal and professional growth for trainees in which time they will develop the skills they use throughout their career. However, it is a time in which they will face hazards as well.

DEFINING AND MEASURING BURNOUT IN INTERNAL MEDICINE RESIDENTS

Job burnout has been well described and refers to a transformation that occurs in persons exposed to considerable occupational stress, particularly in fields that involve human interaction. It is a pathological syndrome in which overwhelming work demands lead to emotional depletion, maladaptive detachment, and feelings of personal inefficacy. [1] Burnout has been measured in numerous professional groups, including nurses, [2] lawyers [3] and teachers. [4] Doctors both in training and in practice, and from a variety of specialties, all seem to be at risk. [5] A number of instruments have been developed to test and measure job burnout. The tool most commonly used in internal medicine residents is the Maslach Burnout Inventory. (MBI) The MBI is proprietary and investigators must pay for its use and reproduction. The MBI is a 22-item survey-based self-administered questionnaire that asks respondents to rate on a 7-point Likert scale the extent to which they agree or disagree with a variety of statements regarding attitudes, emotions and behaviors that they might experience on the job. Test items are categorized into 3 dimensions or domains: depersonalization (DP), emotional exhaustion(EE) and personal accomplishment(PA). For each of the 3 domains, a "subscore" is generated such that respondents who complete the MBI receive 3 separate scores. These scores are said to be low, medium or high and are based on the scores of the health care worker cohort through which the inventory was original validated. One important potential limitation of the instrument to consider when using it to study resident physicians, is that the original population upon which the MBI scoring system was generated consisted of medical personnel from a variety of different fields, but did not include trainees. [1]

Given the length of the MBI, investigators have sought to develop truncated versions for ease of administration. One- and two-item modified versions of the MBI have been used and their performance characteristics have been shown to be valid approximations of the full instrument. [6] Some controversy exists regarding how best to define burnout using the MBI subscores. The intent of the investigator who developed the instrument was for the subscores to be compared in a continuous fashion. [1] However, the convention most commonly used in studies measuring job burnout with the MBI in internal medicine residents defines burnout by high subscore on either of the EE or DP domains. [7] Some have decided to be stricter, defining a case as someone with a high score on both the EE and the DP subscales. [8] Others

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still, in keeping with the MBI's developer, define burnout continuously, suggesting that it likely occurs across a spectrum, rather than in a dichotomous fashion. [9]

STRESSORS OF RESIDENCY TRAINING -Why Does Burnout Happen?

A third- year internal medicine resident sits down at 3:30AM to begin charting the 4 patients she recently finished evaluating for admission to the hospital. It had been a particularly busy day that started at 6:30 AM the prior morning. In addition to managing a large patient service, the resident provided care for a patient who had decompensated on the hospital floor, necessitating transfer to the intensive care unit. The resident had been awake for this entire period. Within a few minutes after sitting at a computer terminal to type in her notes, she is approached by a medical student who asks her to help evaluate a patient who is having a small amount of rectal bleeding. The resident stands up, takes her pager off of her belt, shouts an expletive and throws the beeper against the wall.

Perhaps it should not be surprising that resident physicians experience burnout. They are exposed to seemingly innumerable stressors during the course of training, many of which could be categorized as psychological trauma. In fact, one study which examined the types of stress that medical students experience, found that the typical third-year medical student is exposed to the same amount of psychological trauma in a single year that a lay person is exposed to in their entire lifetime. [10] The structure of graduate medical training likely exposes residents to the same, if not greater, levels of stress than students. Most stressors residents experience could be categorized into one of the following groups: work demands, work-life imbalance and emotional stress.

Work Demands

The sheer volume of resident work hours is impressive. Resident physicians are named as such because historically they resided in the hospital. Hospital life was considerably different in that era when diagnostic and therapeutic options were limited and patients experienced extended, relatively uneventful, inpatient stays while recovering from illness. Prior to 2003, when nationwide restrictions and regulatory measures went into place [11], residents in some specialties reported working as much as 100 hours per week. [12] Only New York State had previously imposed resident duty hour regulations in the wake of the Libby Zion case. Libby Zion, the daughter of the famed journalist Syndey Zion, was an 18-year-old woman who was admitted to New York Hospital in March 1984 and died within a few hours after arrival from cardiac arrest. Syndey Zion claimed negligence, setting off a series of events ultimately leading to the Bell Commission Report, which implicated overworked and sleep-deprived residents as a potential cause of medical errors. The release of the report led to greater oversight of residency training and limited duty hours in New York State, [13] yet some believe it led to an erosion of professionalism. [14] Increased concern nationwide prompted national restrictions in July of 2003, which limited the work week to 80-hours and total shift

length to 30-hours. [11] In July 2011, resident duty hours were restricted further, particularly for first year residents who were no longer allowed to work greater than 16 hours at any one time. [15] Concerns about patient care and medical errors, perhaps best expressed in the Institute of Medicine Report entitled, "Optimizing Graduate Medical Trainee (Resident) Hours and Work Schedules to Improve Patient Safety," are likely what prompted these most recent changes. This report, which based many of its recommendations on evidence from the literature on sleep deprivation in other professions, suggested that working shifts shorter than 16 hours may decrease the risk of fatigue-related errors. [16] Numerous studies have shown that residents experience excessive sleepiness [8, 17-19], yet debate continues regarding the net benefit of duty hour limitations. [14, 20] Shorter resident shifts lead to more sleep, but also an increase number of handovers of patient care responsibility [21, 22], a known area where medical errors occur. [23]

Work-Life Imbalance

Residency training is a time in which the personal lives of trainees outside of work are limited by work responsibilities. As a result of an inability to participate in activities that might be considered restorative, residents frequently report an imbalance that has an impact on their overall wellness. The decrease in time spent outside of the training environment can take its toll on interpersonal relationships with friends and family as well. [24, 25]

Emotional Stress

There are numerous emotional stressors experienced during medical school and into residency, most notably the exposure to frequent traumatic patient experiences, including patient death and disability. [10, 26] Residents often experience grief and loss alongside the families and caregivers of the patients for whom they provide care. [27] These feelings may be compounded by a sense of responsibility or blame for challenging or unexpected events that occur. Often trainees have no outlet to express these emotions, leading to a sense of isolation at a time when they most need support. [28]

In addition to the stresses that accompany poor patient outcomes, trainees, particularly in their early years, experience little autonomy in their work lives [24] and have a low sense of internal locus of control. [29] Finally, most residents experience some degree of financial strain resulting from the burden of potentially enormous educational loan debt. [17, 30] These and other factors may explain why job burnout experienced in internal medicine resident physicians is relatively unaffected by decreased work hours [36,42], suggesting the likely multi-factorial causes of this condition.

REFLECTIONS IN THE LAY PRESS AND LITERATURE

Concerns about physician burnout are by no means limited to the researchers who study the process. The lay press and literature have made many references to their concerns over the years and often physicians are the authors of these pieces. Awareness of burnout among

physicians has been appreciated for some time. In 1939, the physician Dr. Joseph A. Jerger wrote:

"... I had come to realize one of the chief difficulties of (being a)...doctor -- the constant drain upon the emotions. To stand helplessly while relentless organisms destroy a beautiful mother, a fine father, or a beloved child, creat...(ing) terrible emotional distress; and this feeling is increased by the necessity of suppression..." [31]

The now iconic book "House of God" which seems to have made it onto most residents "must read list" is a cynical portrayal of life as a resident physician. [32] In this novel, the resident physician protagonist comes up with his own facetious rules of residency training as follows:

Laws of the House of God [32]

- 1) THE DELIVERY OF GOOD MEDICAL CARE IS TO DO AS MUCH NOTHING AS POSSIBLE.
- 2) GOMERS DON'T DIE.
- 3) THE PATIENT IS THE ONE WITH THE DISEASE.
- 4) PLACEMENT COMES FIRST.
- 5) THEY CAN ALWAYS HURT YOU MORE.
- 6) THE ONLY GOOD ADMISSION IS A DEAD ADMISSION.
- 7) IF YOU DON'T TAKE A TEMPERATURE, YOU CAN'T FIND A FEVER.
- 8) SHOW ME A (MEDICAL STUDENT) WHO ONLY TRIPLES MY WORK AND I WILL KISS HIS FEET.
- 9) IF THE RADIOLOGY RESIDENT AND THE MEDICAL STUDENT BOTH SEE A LESION ON THE CHEST X-RAY, THERE CAN BE NO LESION THERE.

The issue has not gone unnoticed by the lay press either. Time Magazine published an article in 2009 asking, "Are Medical Residents Worked Too Hard?", which addressed the ongoing debate over work hour limitations. [33] US News and World Report ran a piece in in 2005 entitled "Battling Burnout", which focused on finding meaning in one's training program. [34] The New York Times also published on the subject in 2012 with an article titled, "The Widespread Problem of Doctor Burnout." [35]

PREVALENCE AND INCIDENCE

A group of internal medicine residents and medical students sit in their "team room" at the end of the work day to "sign-out" their patient service and handover responsibility to the night team that will be covering their patients after they go home. The night team arrives at 4:30PM and typically accepts this transfer of care until about 6PM. The senior third-year resident who is conducting the session and relaying information about his team to the covering nighttime first-year resident arrived at 4:35PM and is already wearing his jacket in preparation to leave. He is brief in providing patient summaries and provides few details. He

interrupts the nighttime resident when she asks clarifying questions and tells her that she "doesn't need to worry about that." His descriptions are colored by statements such as, "this patient is a train wreck" and "this guy in room 407 would be better off dead." The first year residents in the room laugh uncomfortably and one of the medical students is noticeably disturbed.

Burnout is quite common in internal medicine residents in the United States, ranging from 55% to as high as 81% when measured late in the year. [7, 8, 17, 36] Prevalence varies by geography and, in part, based on the definition of burnout used. (Figure 2) In fact, residents often enter training already burnt out. In one study, 34% of incoming first-year residents screened positively for burnout at their orientation which immediately preceded the start of residency. [37] During the transition from student to physician, the development of pragmatic and efficient medical decision-making skills may come at the expense of personal patient connection, perhaps leading to disillusionment with the profession. Indeed, a considerable literature exists documenting the presence of burnout in US medical students, which was found to range from 37% in first-year students to 71% in third-year students. [38-40]

In addition to prevalence, some studies have taken a closer look at new cases, or incident burnout. Drawing the distinction between incidence and prevalence is important when considering the qualities that are characteristic of those who develop burnout relative to those who remain burnout free. Understanding this difference can inform future interventions aimed at mitigating the development of burnout and can clarify which residents are at greatest risk. When first-year residents at the University of Pennsylvania were screened at two points during their internship year, burnout prevalence rose from 4% at orientation to 55% late in internship. [8] (Of note, this study used a stricter definition of burnout, defined by high scores on both the EE and DP subscales, which likely accounted for the near absence of burnout at the start of the year.) In a multi-center cohort, 185 residents completed pre- and post-surveys which were anonymously linked. Of the 113 who were free of burnout at the start of internship, 85 (75%) developed burnout over the course of the year. [17]

What to make of such high burnout rates is a matter for discussion. One author argues that the difficult working conditions which might predispose to burnout may be necessary for professional development and that a more nurturing training environment may not lead to better doctoring. [41] Though burnout is defined as a pathological response to prolonged work stress, [1] it is possible that the prevalence of burnout in this population is so high because the instrument used to measure it registers depersonalization, which may actually serve as a helpful adaptive response to the stresses of training. Some degree of detachment on the part of trainees might be expected to develop in order to cope with their patients' "life and death" experiences. Despite these concerns, the MBI does remain the instrument of choice for measuring burnout in this population.

CORRELATES, PREDICTORS AND CONSEQUENCES

The majority of studies looking at burnout in this population have not attempted to correlate individual level variables with the development of new burnout, thus making it

difficult to identify which factors might be predictors and which might be the consequences of burnout. Nonetheless, given the nature of the variables studied to date, it is possible to at least develop a conceptual framework about how these variables might be interrelated, even in the absence of strong causal relationships. (Figure 1)



Figure 1. Conceptual Framework of Predictors and Consequences of Job Burout in Internal Medicine Residents.



Figure 2. Representative Sample of Burnout Prevalence in Internal Medicine Residents by Geographic Location.

Potential Predictors

The nationwide duty hour limitations that went into effect in 2003 created a natural experiment to measure the impact of work hours on job burnout in resident physicians. [11] Two studies looked at this specifically in internal medicine residents. In May 2003 and again in May 2004, all internal medicine residents at the University of Colorado Health Science Center were invited to participate in a survey-based study that included the MBI. After the implementation of duty hour limitations, overall burnout decreased only slightly, from 61% to 55% of the resident class, and this result did not quite reach statistical significance. (p=0.06) However, there was a statistically significant (p=0.03) decrease in the percentage of residents with high emotional exhaustion (EE) subscores (from 42% down to 29%) after the work hour mandate went into effect. One interesting finding of this study is that overall satisfaction with residency decreased after the duty hour changes. [36]

Internal medicine residents at the University of Washington were surveyed first in 2001 and then again in 2004 after duty hour limitations went into effect. In this study as well, only the percentage of residents with high EE subscores decreased significantly, from 53% to 40%, after the 2003 restrictions. (p=0.05) The small decline in those who met criteria for burnout overall (from 76% to 68%) did not change in a statistically significantly fashion. (p=0.17) In this cohort, more residents did report being happy with their career choice (80% v. 66%) after the work hour changes, compared with the group measured prior to the mandate. (p=0.02) [42]

In both of these studies, only the EE scores changed significantly after duty hour limitations went into effect. This finding suggests that there may be a linkage between emotional fatigue and the physical fatigue that presumably results from prolonged work hours. To date, there have been no published studies comparing burnout prevalence before and after the 2011 duty hour restrictions on levels of burnout in internal medicine residents.

Numerous studies have examined the impact of fatigue on job burnout in internal medicine residents. Most have done so using survey instruments that measure sleepiness. Perhaps the most commonly used instrument is the Epworth Sleepiness Scale. (ESS) The ESS asks respondents to consider how likely they are to fall asleep in a variety of scenarios using a 4-point scale. A total score is calculated and a threshold level is used to dichotomously define excessively sleepiness. [43]

One study found a correlation between sleep deprivation, as measured by the ESS, and a rise in burnout over the course of the first year of internal medicine residency. [8] Another group found that as burnout resolves, there is an increase in continuous sleep. [44] Despite these findings, the relationship between sleep, work hours and burnout needs to be further elucidated since residents continue to experience burnout even when prolonged shift lengths are decreased. [36, 42] This could be the case because decreased work hours have little impact on excessive sleepiness and burnout, or because sleepiness and fatigue may actually be different constructs and, as such, residents can be fatigued without being excessively sleepy. [45]

Most studies have included gender as a covariate when measuring burnout in this population. Only one, however, found a correlation in which male gender was associated with the persistence of burnout across all 3 years of residency. Of 58 first-year residents who completed 3 annual surveys, 42 (72%) scored positively for burnout all 3 years and male gender (odds ratio 3.31) increased the likelihood of being in the cohort with burnout. [46]

Loan debt may play a role. In a multi-center study of incident burnout, there was no correlation between educational loan debt and the development of new cases of burnout [17]; however, in a large study of over 2000 internal medicine residents who completed the Internal Medicine In-Training Examination (IM-ITE) in 2008, increased debt was correlated with at least 1 burnout symptom. [30] Though, this was a cross-sectional study making the direction of the relationship uncertain, it seems unlikely that burnout would lead to increased loan debt. It is more plausible that high debt predisposes residents to burnout.

Emotional support and social support network may be linked to burnout as well. In a Dutch study of internal medicine residents conducted in 2003, dissatisfaction with emotional support received from supervisors was found to correlate with EE and DP scores. [47] In another study of Michigan residents from multiple specialties, factors related to having a supportive work environment correlated with burnout domains. [48] Another group found that residents who developed new burnout over the course of their first year of training were nearly statistically significantly (p=0.06) less likely to report receiving regular (at least monthly) feedback (63% v. 86%) compared with those who remained burnout free. [17] Since this outcome was based on self-report, it is unclear whether these residents actually received less feedback or perceived receiving less, perhaps as a consequence of being burnt out. Nonetheless, these findings suggest potentially actionable areas to intervene by improving professional support.

A number of personality traits have been examined to see if there is a personality profile that might make residents more likely to burnout. Internal medicine residents with burnout just prior to the start of training at intern orientation were less likely to feel confident in their knowledge and skills to become an intern and more commonly self-reported anxious or disorganized personality traits. [37] Pessimism, perfectionism, poor coping skills and guilt regarding work-life imbalance have also been found to associate with burnout domains in residents from multiple specialties. [48] In one study examining incident burnout in a multicenter cohort of internal medicine residents, a small percentage (10%) of the residents who developed burnout over the course of internship identified themselves as disorganized, whereas none of the residents who remained burnout-free identified themselves as such. [17]

Potential Consequences

Residents with burnout more commonly screen positively on survey-based instruments used to detect depression when compared to their burnout-free counterparts. [7, 36] It should be noted that a positive depression screen is not equivalent to a diagnosis for depression. Self-reported history of depression has yielded more equivocal results. One study found that residents with burnout were more likely to self-report a history of major depression at any time during residency (31 v 11%) compared with burnout-free residents [7]; however, in a study looking at incident burnout, self-reported anxiety and depression did not correlate with the development of burnout during the first year of residency. [17] Most of the studies examining the link between burnout and depression have looked primarily at the correlation, making the direction of the relationship uncertain. Burnout could be the consequence of depression just as likely as it could be the cause.

There also appears to be a link between burnout and the severe consequences of depression. In October of 2005, 41% of all Dutch Medical Residents responded to a survey

that measured both burnout and suicidal ideation. Using a strict definition of burnout, 20% of respondents met criteria for burnout and 12% reported having suicidal ideation at some point during training. Suicidal ideation was more common among the residents with burnout. (20.5% v. 7.6%, p<0.01) [49]

There are other potential physical hazards to residents who experience burnout. One study found that burnt out residents were more commonly exposed to needle stick injuries and were more likely to be in motor vehicle accidents. [19]

Burnout may not only have impact on residents themselves, but also on the patients for whom they provide care. In one study, residents who met criteria for burnout were significantly more likely to report suboptimal patient care practices on an at least monthly basis. [7](53% v. 21%, p<0.01) These residents were asked to self-report on a whole array of questions related to sub-optimal patient care practices. For instance, burnt out residents were more likely to "find themselves discharging patients to make the service more manageable" or "avoid fully discussing treatment options." [7] In another study, internal medicine residents at the Mayo Clinic who were surveyed every 3 months between the years of 2003-6, were asked about whether they perceived committing medical errors each quarter. Residents who reported committing errors had higher mean burnout scores in each domain. Higher levels of burnout in each domain were associated with increased odds of future self-perceived errors. For instance, each 1-point increase in one's depersonalization score conferred a 10% increase in the odds of perceiving an error. Likewise, a 1-point increase in the emotional exhaustion score corresponded to a 7% increase in the odds of perceiving an error.[50] Given the selfreported nature of these studies, it is important to consider that being burnt out might color one's perception of the patient care they provide without actually reflecting true practice. The only study to look at the correlation between burnout and committed errors was conducted in a group of pediatrics residents. The study focused on medication errors and concluded that the presence or absence of burnout had no impact on the error rate. [51]

Job satisfaction may also be related to burnout in this population. Residents with burnout less commonly report being happy with their career choice.[7] There may also be consequences in terms of professional behavior. Though unstudied in internal medicine residents, burnout in medical students correlates with increased self-reported unprofessional behaviors [39] and increased observation of unprofessional behaviors during clinical clerkships.[52] Burnout may even affect academic performance. The emotional exhaustion domain of burnout has been found to correlate with lower scores on the Internal Medicine In-Training Examination. [30]

INTERVENTIONS

In February of his internship year, a resident makes an appointment to meet with his program director. He reports that he has been experiencing overwhelming feelings of selfdoubt and feels that he is not capable of performing his duties as a house officer. The resident indicates that, on a regular basis, he considers dropping out of the training program. On a couple of occasions he has shown up late to morning rounds and told his senior resident that he "just couldn't motivate to get out of bed and over to the hospital." He now seeks out his

program director for any advice or suggestions she might have regarding how he can manage these difficulties.

Despite the considerable literature that exists documenting the high prevalence and serious potential consequences of job burnout in internal medicine residents, there have been very few intervention studies aimed at mitigating its development. The impact of duty hour limitations has been previously discussed and thus far has not been shown to make a dramatic reduction in burnout prevalence. [36, 42]

The impact of stress management workshops has been explored. Forty-three medicine, pediatrics and combined medicine-pediatrics residents who participated in a single 4-hour stress management workshop had lower EE scores at 6 weeks after the intervention when compared with a control group. [53]

Self-selected practicing physicians who volunteered to participate in mindful communication and facilitated discussion interventions did show reduction in burnout after participation. Mindfulness is the quality of being fully present or attentive in everyday activities. It may correlate with finding greater meaning in one's work, greater empathy for one's patients, and it seems to decrease job burnout. In a 2007-8 study of 70 primary care physicians from Rochester, NY who participated in weekly 2-hour sessions to improve mindfulness, followed by monthly mindfulness sessions for 10 months, improved measures of mindfulness correlated with improved burnout scores in every domain. [54]

In another study, a group of 74 practicing internal medicine physicians from the Mayo Clinic volunteered to participate in biweekly facilitated discussion groups that focused on themes related to work-life balance and wellness. When compared with a control group, depersonalization scores decreased considerably in the discussion arm and remained lower, even at 12 months after the conclusion of the intervention. [55]

FUTURE CONSIDERATIONS FOR ADDITIONAL STUDY

There remain a number of unanswered questions regarding job burnout in internal medicine residents. It is unclear which individual and system-based factors correlate most with the development of burnout. Though several factors have been elucidated, more incidence studies are needed to better parse out those variables which best predict new cases of burnout during the course of training. Given that prolonged work hours do not seem to be the critical factor [36, 42], it would be helpful to develop and study additional measures of work intensity. Shorter hours may have no bearing on work intensity and, by compressing the same work responsibilities into decreased time, work hour limitations have the potential to increase work intensity. Though each individual likely responds differently to the various challenges and stressors of training, there may be a profile of characteristics that places some trainees at higher risk. Being able to identify the "at-risk" trainee creates an opportunity to provide such individuals with additional guidance and supervision throughout training.

Burnout, as it is defined, is a negative outcome in and of itself [1]; however, the full consequences of developing burnout in this population remain uncertain. A number of proposed negative consequences have been studied, but given that most residents develop burnout and far fewer develop these additional consequences, it is necessary to further

explore the full significance of burnout in this population. A better understanding of these consequences can help settle some of the debate about the level of concern that should be levied to address burnout through policies that promote resident wellness.

Certainly, studies to develop further interventions are needed as few have yet been shown to be effective. In light of the multi-factorial nature of job burnout, a multipronged approach should be considered that might include mindfulness training, facilitated discussion, improved individual-level feedback, and possibly even training schedules that decrease work intensity.

CONCLUSION

The process of professional development from student to practicing physician is transformative. It is a time in which the significant stressors faced may be hazardous to the trainee and to the patients for whom they provide care. Further study is needed to better characterize the precipitants and repercussions of job burnout, not only to protect our next generation of physicians and patients, but also to inform accrediting bodies. Ultimately, measures to address resident wellness and burnout should be incorporated into all residency programs and mandated by groups that regulate the training process.

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Chapter 3

CAN SEDATION FULFILL THE PHYSIOLOGICAL ROLE OF SLEEP?

Susana Vacas^{1,2} and Mervyn Maze^{1,•}

¹Department of Anesthesia and Perioperative Care, University of California, San Francisco, CA, US ²CEDOC, Chronic Diseases Research Center, NOVA Medical School / Faculdade de Ciências Médicas, Universidade Nova de Lisboa, Portugal

ABSTRACT

Though producing a state which superficially resembles sleep, many sedatives induce a "chemical immobility", with important differences to natural sleep. The electroencephalography (EEG) patterns under sedative-hypnosis do not usually mirror the patterns seen during NREM and REM sleep. An important exception are the $\alpha 2$ agonists that produce a state of sedation that is closer to natural sleep than the sedative-hypnotic drugs that target the GABA_A receptor, which includes benzodiazepines and propofol. This chapter will review the neurobiology of natural sleep, comparing and contrasting it to the states produced by different sedative-hypnotics and discuss ramifications for the sedation of patients.

INTRODUCTION

"You are going to sleep now" is an oft-used phrase both in operating room and other critical care settings. The use of the word "sleep" is meant to allay patients' anxieties of the unknown by providing a familiar connotation; however the word has also challenged scientists in the field to consider how the sedation-induced state compares with natural sleep using recent technological advances. The first important step is to understand the neurobiology of natural sleep and consider how closely sedative-hypnotics emulate that state.

[•] E-mail: mazem@anesthesia.ucsf.edu.

1. FUNCTION OF SLEEP

While it still is not certain why species throughout the animal kingdom indulge in sleep, the effects of sleep-deprivation on human and animal subjects allow the deduction of the precise needs that sleep satisfies. Sleep appears critical for restoration of key homeostatic mechanisms and to facilitate repair after injury and during an illness; this is particularly true of the central nervous and immune systems.

Brain plasticity theory is one of the most exciting explanations for the function of sleep. It posits that sleep correlates to changes in the development, structure and organization of the brain. Sleep is a non-homogenous state that can be categorized into non-rapid eye movement (NREM) sleep and rapid eye movement (REM) sleep by applying electroencephalographic (EEG) criteria (discussed below). Slow wave sleep (SWS) that occurs during NREM may be the mechanism that drives sleep homeostasis as it peaks early on during sleep and decreases with decline in sleep pressure [1]. Physiologic repair of the organism is accelerated during SWS as evidenced by the increase in the rate of anabolism [2]. Within the brain, the slow wave activity reduces the strength of synapses that were acquired for learning during wakeful activity [3-6]. This synaptic homeostasis provides the "space" and band-width to learn and thereby acquire new memories in the successive state of wakefulness [7]. The different forms of memory, referred to as declarative or explicit (consciously accessible memories of factbased information - knowing "what") and non-declarative or implicit (procedural memory knowing "how") develop over time through several unique stages: acquisition, translocation, consolidation (comprising stabilization and enhancement), and reconsolidation; deeper stages of NREM as well as REM sleep are required for some of these stages of learning and memory [8, 9]. Truncating stages of sleep can result in development of cognitive dysfunction [10, 11] the most severe of which occurs following total sleep deprivation [10]. In states of sleep deprivation in which the duration of REM and NREM are reduced, short-term learning and memory suffer; further, there are long-term health consequences of sleep deprivation including obesity, diabetes, cardiovascular disease, and even premature mortality [12]. Sleep deprivation also increases the risk of human-error related accidents [13] with a very real economic impact and harm [14]. Adverse outcomes of sleep disruption include impaired immune function [15, 16] with increased infection and disease, [15-17] negative nitrogen balance and protein catabolism, [18, 19] cardiovascular disease (hypertension and increased sympathetic activity), [20, 21] neurocognitive dysfunction (inattentiveness, amnesia), [10, 22] and other decrements in quality of life measures [23]. Sleep disruption has also been proposed as one of the factors contributing to in-hospital delirium [24]. During hospital care, sleep disruption has the potential to adversely impact patients' outcome and the concomitant cost of care through changes in the length of hospital stay and depletion of healthcare resources [25, 26].

Sleep is under control of two processes, a circadian clock that regulates the appropriate timing of sleep and wakefulness across the 24-h day and a homeostatic process ("sleep homeostasis") that regulates sleep need and intensity according to the time spent awake or asleep [27]. The circadian rhythm determines the appropriate timing of sleep while the aforementioned homeostatic process regulates sleep debt and depth depending on wakeful activity [3].

The stages of sleep are well categorized and have distinct behavioral and EEG signatures influenced by the balance between the ascending arousal and sleep promoting systems. These circuits are probably arranged in a manner analogous to a flip-flop or bistable switch of mutual inhibition to provide stability — so that once in a particular state (awake or asleep), each side of the switch inhibits the activity of the other side (i.e., the wake cells inhibit the sleep cells and vice-versa). This arrangement ensures that the person does not frequently transition between states of sleep and wakefulness; abnormal function of this switch is thought to explain narcolepsy.

Neurochemical changes in brain nuclei accompany the transition from wakefulness to the NREM sleep state. Cholinergic, noradrenergic and serotonergic nuclei all becoming less active in deep stages of NREM sleep. A pivotal role for inhibitory hypothalamic nuclei, the ventrolateral preoptic (VLPO) and median preoptic nucleus have been demonstrated in numerous studies of sleep [28]. During sleep, these inhibitory nuclei are active (ie. they are inactive in the awake state), releasing inhibitory neurotransmitters to suppress excitatory nuclei (that release arousal promoting amine-based neurotransmitters) [29]. The majority of the sleep-active neurons of the median preoptic nucleus release Y-amino-butyric acid type (GABA) into the arousal-promoting nuclei of the lateral hypothalamus including the orexinergic perifornical nucleus. The VLPO contains both inhibitory GABAergic and galanin type neurons. When activated, during sleep, the VLPO inhibits the histaminergic tuberomamillary nucleus (TMN), the orexinergic perifornical nucleus and the noradrenergic locus ceruleus (LC) reducing the excitatory drive produced by histamine, orexin and norepinephrine neurotransmission [28]. Conversely during wakefulness the VLPO is itself inhibited by excitatory activity in the TMN and LC. Excitatory orexinergic neurons act to stabilize this sleep-wake switch, as they do not innervate the VLPO and thus reinforce activity in arousal systems when activated. Sedatives and anesthetics target the sleep pathway to produce some of their sedative-hypnotic effects [29, 30].

Sleep cycles are classified as NREM and REM sleep. NREM sleep is divided into stages 1, 2 and 3, representing a continuum of relative depth. Each has unique characteristics including variations in brain wave patterns, eye movements, and muscle tone. The sleep stages can be assessed by polysomnography (PSG) that includes high-density EEG [31], a surface recording of the summation of excitatory and inhibitory postsynaptic potentials spontaneously generated in the cerebral cortex. Many of the restorative properties of sleep occur during the slow wave activity phase of NREM sleep; here delta waves predominate. In lighter stages of sleep waxing and waning alpha frequency oscillations ("sleep spindles" characteristic of stage 2 NREM sleep) occur as the thalamus, becomes hyperpolarized and then enters a bursting mode. In contrast, the EEG during REM sleep shows asynchronous high frequency activity and hippocampal theta rhythm.

2. NEURAL MECHANISMS OF SLEEP AND SEDATION

General anesthesia is a reversible coma and differs significantly from sleep. While natural sleep normally cycles through a predictable series of stages, general anesthesia involves the patient being taken to and maintained at a Guedel stage that is most appropriate

for the procedure. Stage III (surgical anesthesia) has features that are more similar to coma rather than sleep and is not further considered.

More analogous to natural sleep is the state produced by sedative-hypnotics. The majority of sedative-hypnotics, such as the benzodiazepines (BDZ) and propofol, activate GABA_A receptors. GABAergic drugs *directly* increase activity in the VLPO, but to a lesser degree than in NREM sleep; [32] these agents also inhibit activity in critical arousal-promoting nuclei such as the histaminergic TMN [29, 33] and the orexinergic perifornical nucleus [34] similar to sleep. Unlike natural sleep, however, they exert little effect on noradrenergic activity in the LC [29, 35]. During administration of BDZ, extracellular recordings demonstrated increase in LC activity [36], although this has been challenged [37]. GABAergic agents converge on the NREM sleep pathway at the level of the hypothalamus [33]. However, short-term administration of the GABAergic agent propofol permitted normal recovery after a period of sleep deprivation [38]. Sedatives also act in a less discrete fashion than sleep, targeting the cortex at lower doses and at higher doses targeting the spinal cord to inhibit motor reflexes [29].

The $\alpha 2$ adrenergic agonists, such as dexmedetomidine, converge on sleep pathways within the brainstem. These agents reduce noradrenergic activity in the LC and thereby *indirectly* activate the VLPO. Their mechanism of action overlaps more closely with sleep [32, 39] and thereby improve function in the autonomic nervous system and immune system. However, $\alpha 2$ agonists do not blunt orexinergic signaling which may explain the relative easy arousability of patients from dexmedetomidine-induced sedation [33, 40]. In a study comparing sedation with dexmedetomidine and BDZ in humans, it was shown that a thalamic nucleus that receives afferent input from orexinergic neurons is activated during an arousal stimulus in $\alpha 2$ - but not in BDZ- sedated subjects [41]. The easy arousability may facilitate management of the sedated patient by allowing neurological examination and weaning from mechanical ventilation. Dexmedetomidine induces a very similar EEG pattern in human volunteers to that seen in the deeper stages of NREM sleep [42], and studies have reported less memory perturbation (continuous recognition task) when compared to GABAergic agents [43].

3. OVERLAPPING ELECTROENCEPHALOGRAPHIC AND NEUROIMAING SIGNATURES OF SLEEP AND SEDATIVE HYPNOSIS?

The EEG patterns during sedative-hypnosis are atypical versions of the patterns seen during NREM sleep (e.g., spindles are typically slower). While GABAergic drugs may induce sleep-like patterns of activity (likely via modulation of the hypothalamic activity), they also distort the EEG by direct effects on corticothalamic networks [28]. BDZ hypnotics depress slow-wave activity in NREM sleep, not only during the night that subjects receive the drugs but also in the subsequent night [44]; neither sleep homeostasis nor circadian rhythm is facilitated by acute BDZ administration. Furthermore, acute withdrawal from long-term sedation with BDZs and opiate narcotics results in profound sleep disruption [45].

Dexmedetomidine and propofol have distinct electroencephalographic signatures with differences in the properties of slow oscillations and thalamocortical oscillations [46]. Each agent places patients into different brain states. Propofol enables a deeper state of

unconsciousness by inducing large-amplitude slow oscillations that produce prolonged states of neuronal silence [46]. Notably α^2 agonists produce a state that shares remarkable similarities with NREM sleep: showing both spindles and delta waves [47]. Spindles are a late phenomenon during GABAergic sedation as the thalamus is only deactivated at higher drug doses. This difference with both natural sleep and that produced by α^2 agonists is probably due to unperturbed noradrenergic signaling from the LC during GABAergic sedation [28]. In contrast, α^2 agonists suppress noradrenergic signaling and thus reduce thalamic activity at lower doses [32]. Curtailing noradrenergic signaling during sedation is important to reduce connectedness to the environment (akin to lack of awareness of our surroundings in sleep where noradrenergic signaling is also blunted) [32]. GABAergic drugs suppress consciousness, but not connectedness, and thus patients are able to interact with their environment at reduced levels of consciousness. This state of consciousness is similar to sleep inertia, a transitional condition that occurs immediately after awakening from sleep and is characterized by lowered arousal and short-term diminution in performance [48]. Sleep inertia is rare on arousal from REM sleep as the patients are conscious (dreaming) before they become connected to the external world. However in contrast to abundant evidence for NREM patterns of neural activity during sedation, evidence for REM-like activity during sedation is rare. It is therefore unlikely that the physiological roles of REM sleep are fulfilled by sedation.

Recent progress in *brain imaging* offers great potential for anesthesia research. Unfortunately none of the currently available imaging techniques can directly measure neuronal activity. Among the techniques available, the most relevant to the field of sleep and anesthesia are positron emission tomography (PET), functional magnetic resonance imaging (fMRI) and transcranial magnetic stimulation (TMS). These techniques are based on mapping hemodynamic or metabolic changes that are a direct consequence of neuronal activity [49, 50].

PET studies describe a very reproducible functional neuroanatomy in sleep [51]. By mapping changes in regional cerebral blood flow (CBF), studies have shown that in SWS, most deactivated areas are located in the dorsal pons and mesencephalon, cerebellum, thalami, basal ganglia, basal forebrain/hypothalamus, prefrontal cortex, anterior cingulate cortex, precuneus and in the mesial aspect of the temporal lobe. During REM sleep, significant activation were found in the pontine tegmentum, thalamic nuclei, limbic areas (amygdaloid complexes, hippocampal formation, anterior cingulate cortex) and in the posterior cortices (temporo-occipital areas) [51]. Despite its limitations, PET has shown that except for ketamine [52], most anesthetics also cause a global reduction in CBF when consciousness is lost [29]. A common finding during anesthesia is the deactivation of the thalamus [29]. The disruption of the thalamocortical connectivity, might be an essential common feature of anesthetic action [29, 53]. Studies with propofol showed deactivation of the thalamus and some midbrain structures, associated with the ascending reticular activating system [29, 54]. Dexmedetomidine also decreases CBF in the cortical and subcortical brain regions [55]. fMRI also provides information about the pathways and the anatomical localization of drug effect while not requiring injection of exogenous radioactive tracers. The continuation of spontaneous fMRI activity during sleep and anesthesia suggests that this activity may not simply represent mentation and sensory processing, but at least in part subserves more basic brain functions, possibly including (synaptic) homeostasis and memory consolidation [56, 57]. Studies performed in volunteers revealed that despite sedating subjects

to equivalent degrees, dexmedetomidine and midazolam had strikingly different regional effects on task-induced brain activity [41]. There were fewer voxels of blood oxygen level dependent activity seen in the subtraction scan between dexmedetomidine sedated and natural sleep states than with midazolam sedation [41]. The functional improvement seen in the dexmedetomidine group was probably due to a selective increase in activity of left medial pulvinar nucleus of the thalamus [41]. TMS studies showed that cortical effective connectivity is disrupted during early NREM sleep [58]. As with loss of consciousness during early sleep, anesthesia-induced loss of consciousness with BDZ is also associated with a breakdown of cortical connectivity [59].

4. DIFFERENT ACTIONS, DIFFERENT CONSEQUENCES

An *aim of sedation* should be to reduce connectedness to the environment, limiting the unpleasant experience of critical illness and the ability to interact with the environment. The latter is important at reduced levels of consciousness where interaction with the environment may lead to the inadvertent removal of lines or endotracheal tube in the operating room, ICU, and other arenas of anesthetic care. Because sedative-hypnotics act on different targets they produce different outcomes. Despite advances in the management of acute respiratory failure and sepsis, few clinical trials have examined the effects that supportive therapies, like sedation, may have on both short- and long-term outcomes in this vulnerable population. The pivotal work of the MENDs trial [25, 60, 61] indicated the benefits of dexmedetomidine, in the outcome of ICU population. Several studies have now demonstrated the association between the use of GABAergic BDZs and increased incidence [25] and duration [62] of delirium in ICU patients, promotion of infection, and prolongation of mechanical ventilation [61]. Therefore, the short-acting GABAergic sedative propofol and the $\alpha 2$ agonist dexmedetomidine are becoming widely used to sedate septic mechanical ventilated patients.

In early animal and human studies, dexmedetomidine had more anti-inflammatory effects than the GABAergic agents; dexmedetomidine improved bacterial clearance, whereas propofol impaired it [63, 64]. In addition, sedation with dexmedetomidine instead of BDZs reduces delirium by 20%-30% and improves arousability, cognition, and attentiveness in ventilated patients [25, 61].

CONCLUSION

Can sedation fulfill the physiological role of sleep? In humans EEG data support the concept that $\alpha 2$ agonists produce a state more akin to NREM sleep than GABAergic agents. This is supported by the drugs' mechanisms of action and further indirect evidence such as the release of growth hormone. Growth hormone is released during slow wave sleep and is higher in patients sedated with dexmedetomidine than propofol. Patients sedated with dexmedetomidine are also less susceptible to infections than counterparts on GABAergic medication [61], while this is plausibly related to direct effects on the immune system, it could be that dexmedetomidine produces a more restorative state of sedation [40].

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Sedative medications can contribute to iatrogenic injury, such as prolonging ventilator time and ICU length of stay and exacerbating acute brain dysfunction. This acute brain dysfunction, manifested as delirium and coma, occurs in 50%-70% of mechanical ventilated septic patients and is a significant contributor not only to death but also to functional and cognitive decline, which can persist for years after recovery of lung and other organ function, significant costs to patients and society. However, there are few randomized trials to guide clinicians when selecting sedatives, and none have explored the mechanisms underlying the differences in outcomes; some data indicate that GABAergic and $\alpha 2$ agonist agents have very different effects on innate immunity, apoptosis, arousability, and respiratory drive [64-66]. Nonetheless, there are no definitive outcome studies, which show that patients sedated with dexmedetomidine have "better" sleep than patients on GABAergic drugs.

Current technologies allow us to better understand sleep and the effect of sedatives on it; they also provide us with a window into the future of the field. As new brain imaging technologies improve, clinicians are able to gain a better vantage unto the mechanisms at work with regard to patient care. Furthermore, it also sets a clear aim for the growth and evolution of the field of anesthesia as it begins to see the critical relationship of sedation to sleep and to make good on that old and promised adage of restful and restorative sleep.

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Chapter 4

THE DOWNSTREAM EFFECT OF PHYSICIAN STRESS AND BURNOUT

Alan H. Rosenstein

Private Practice Internal Medicine San Francisco, CA

ABSTRACT

Becoming a physician takes a lot of time and dedication. It's a challenge getting into medical school and once you're there you're dropped into an overwhelming knowledge void and fear of how you are going to learn it all.

This feeling of angst and low self-esteem is further aggravated by a hierarchal hazing type of training environment where time demands lead to sleep deprivation and fatigue. It's not surprising that stress and burnout has an impact on those in training. Most individuals get through it.

But it doesn't stop there. Increasing complexity and accountability in today's health care environment has added additional pressures to physician practice further perpetuating high levels of stress and burnout that can adversely affect both physical and emotional behaviors. And more disturbingly it can adversely impact patient outcomes of care.

Physicians are a precious resource and we need to look for opportunities and strategies that can help them better adjust to these changes. Learning more about the factors affecting physician behaviors and how it affects physician attitudes and performance opens up the door for solutions.

Changing the learning environment, allowing input to gain a better understanding of physician wants and needs, providing appropriate administrative and clinical support, and offering programs that enhance physician well-being are all part of the cascade of things that we can do to re-energize our physicians and make them want to continue to work in a satisfying rewarding health care environment.

INTRODUCTION

Becoming a physician takes a lot of time and dedication. It's a challenge getting into medical school and once you're there you're dropped into an overwhelming knowledge void and fear of how you are going to learn it all. This feeling of angst and low self-esteem is further aggravated by a hierarchal hazing type of training environment where time demands lead to sleep deprivation and fatigue. It's not surprising that stress and burnout has an impact on those in training. Most individuals get through it. But it doesn't stop there. Increasing complexity and accountability in today's health care environment has added additional pressures to physician practice further perpetuating high levels of stress and burnout that can adversely affect both physical and emotional behaviors. And more disturbingly it can adversely impact patient outcomes of care. Physicians are a precious resource and we need to look for opportunities and strategies that can help them better adjust to these changes. Learning more about the factors affecting physician behaviors and how it affects physician attitudes and performance opens up the door for solutions. Changing the learning environment, allowing input to gain a better understanding of physician wants and needs, providing appropriate administrative and clinical support, and offering programs that enhance physician well-being are all part of the cascade of things that we can do to re-energize our physicians and make them want to continue to work in a satisfying rewarding health care environment.

Background

Getting into and out of medical school is a grind. It's a very competitive process and requires years of commitment and education. Survival is based on hard work and dedication, much of it through independent study. The training process is conducted in a non-user friendly environment which some have compared to the hazing process of fraternity indoctrination. You are overwhelmed, start out with low self- esteem, and seek to gain knowledge and technical competency through more study. This breeds a very autocratic, self-centered, self- reliant individual with little exposure to the values of developing team collaboration and interpersonal skills. The problem is further accentuated by time demands leading to exhaustion and fatigue. Many studies have reported a significant degree of stress, burnout and depression in medical students whose effects often carry through into the practice years [1-3].

When physicians enter practice there are multiple other factors encountered that further contribute to a high pressure stressful environment. The average medical school debt is now approaching \$200,000. For those just entering practice there's the stress of finding the right position and practice model. If choosing to go into individual or group private practice there's the stress of practice start-up, logistics, and overhead. For those already in established practice the new world of health care reform has changed practice perspectives. Increasing complexity, technology, and performance accountability, coupled with productivity schedules and declining revenues have added new levels of stress and burnout for practicing physicians forcing many physicians to re-evaluate their careers [4]. Recent studies have reported physician stress and burnout rates across a variety of different specialties as high as 40-50%
[5-9]. In response many physicians have either switched practice models seeking employed positions, tried to limit or diversify their services, and many have decided to either go into other fields or retire prematurely [10]. This is of particular concern with the growing disparity between demand and supply for physician services. So what do we need to do?

Understanding Physician Behaviors

Physicians just want to be good physicians. They are so focused on providing best patient care that they tend to lose perspective on outside factors that influence their actions and behaviors. This lack of social awareness has been referred to as having a diminished sense of "mindfulness" or "emotional intelligence" which at times may lead to unwanted consequences [11]. In order to modify physician behaviors we need to have a better understanding of the conscious and unconscious factors influencing these behaviors. We can divide these influences into two categories: Internal and external (see Table I below).

Internal	External
Age (generation)	Training
Gender	Debt
Culture & ethnicity	Environment
Geographics/life experiences	Revenues
Personality	Expectations

Table 1. Factors Affecting Physician Behavior

The internal forces reflect deep seated genetic, familial, or life experience factors that mold values, attitudes and behaviors. As far as age, there are well known attributes associated with the different generational groupings that are shaped by the current events of the day. Veterans and Baby Boomers whose parents were brought up during the depression and war years are described as hard working, loyal, thankful for and dedicated to their job, and willing to work extended hours to achieve task completion. Generations Xers and Millenniums are brought up with the age of technology and are characterized by challenging traditional hierarchal work models, looking at short term commitments rather than long term security, and believing in the importance of work- life balance and flexibility. Not to say that either group's values are right or wrong, but they can eventually conflict during stressful situations leading to confrontational reactions. Same can be said for gender differences. Males are typically more power oriented and dedicated to task accomplishment. During periods of stress they tend to dig in, retreat, and work independently. Females are more gregarious in nature and during stressful periods tend to reach out for group support. Stressful situations can exacerbate these differences. Different cultures have strong religious and ethnic beliefs that guide their value systems as to how they approach power, assertiveness, hierarchy, and gender expectations. During periods of stress misinterpretations or misunderstandings can lead to stressful confrontation. With the growing amount of diversity in both health care providers and patients this becomes a particularly important consideration. Geographic

differences between East Coast, Midwest, Southern, and Western regions also contribute to different styles of behaviors. All these factors and other associated life experiences can contribute to the different types of personality traits that drive individual thoughts, perceptions, and reactive behaviors. These differences may be amplified in physicians who are typically strong willed, ego centric, and perfectionists. Training in diversity management, cultural competency, stress management, conflict management, and adaption techniques to the different types of personality traits may be of benefit to help reduce stress and confrontational episodes exacerbated by these differences.



Figure 1. Physician Stress Levels.

The external forces are used to describe factors influencing feelings and behaviors molded later in life. Unlike the more deep seated internal factors the external factors may afford more of an opportunity to provide support services to help lower the incidence and impact of stress and burnout. For physicians, much of this starts with medical training.

As mentioned previously, there is a growing amount of evidence that medical school and residency training programs invoke a significant degree of stress on trainees that leads to feelings of isolation, insensitivity, exhaustion, burnout, and depression. Recognizing the

seriousness of this problem there have been several new initiatives introduced that are trying to change conventional medical training. One of the key aspects is to introduce concepts of team training and building collaborative relationships skills early in the curriculum to help improve personal relationships and reduce the impact of stress and autonomy by developing the concept of shared work responsibilities and enhanced work satisfaction [12].

Health care reform has introduced a new level of external pressures that have added increasing levels of stress to medical practice. This is particularly true for those who already have established practices. Greater external scrutiny and performance accountability, increasing complexity and dependence on technology, and declining revenues have added significant levels of stress to physician lives that has caused many physicians to re-evaluate their careers [4]. Many recent surveys have shown growing levels of physician dissatisfaction [13, 14]. In 2012 we reported the results of a survey of more than 2000 physicians nationwide that suggested that nearly 9/10 physicians reported feeling moderately to severely stressed and burned out. [15] (See Figure I). In response it is estimated that more than 90% of physicians entering into practice are choosing employee contract positions. For those already in private practice many have either sold their practices, decided to become salaried employees, or tried in other ways to diversify practice offerings. Some have decided to either leave the profession entirely by choosing another career or have just decided to retire prematurely [16]. This is of particular concern given the growing predictions of a physician shortage. There are things that we can do to help physicians better adjust to the stresses of today's environment but there are notable barriers that need to be overcome [17].

Changing Physician Behaviors

The first obstacle is getting physicians to take action. Despite their best intentions physicians often find it difficult to deal with internal stress. On one level it's difficult to get them to admit that they are under stress. If something is wrong, everyone else is to blame. If they do admit that they are working under stress, they'll rationalize that they always live under stress and can handle it by themselves. Then there's the issue of getting them to accept outside help. Opening up to outside assistance is inhibited by a number of different factors including a super-ego personality, concerns about intent, skepticism, worries about confidentiality, and fears that people will question their capabilities and competency. Even if they wanted to take action most physicians don't know how to limit their time commitments as they feel compelled to follow through on patient care demands and responsibilities that may prevent them from taking the time to get involved in stress reducing activities. We and the organizations that physicians are affiliated all need to take a pro-active role in trying to help physicians better adjust to business world pressures and help them achieve what they want to achieve, be proud and respected for practicing and providing good medical care.

In our survey we asked physicians what they needed to do to gain a better work-life balance. (See Figure II). Spending more time on recreational activities, getting more sleep and exercise, and trying to avoid overscheduling were the answers. Unfortunately most of the respondents felt that they were able to achieve these objectives. We then asked what they felt their organizations could do to help out. (See Figure III). They felt that providing appropriate wellness initiatives, exercise facilities, educational programs, coaching or employee

assistance support would help, but less than 17% of the respondents felt that these resources were made available to them. This needs to change.

In an effort to support our physicians we need to look to the organizations that they are affiliated with to provide support services to help their physicians better adjust to the pressures of the changing medical environment. Table II below provides a list of recommendations on how this might be done.



Figure 2. Physician Response to Stress Reduction.

For physicians the first step is to give them a reason to change. Getting them to understand how the pressures are affecting their lives and motivating them by re-enforcing the goal of trying to help them feel and do their job better will improve both care efficiency and satisfaction. Understanding their needs, being conscious of their time demands and responsibilities, making services convenient, and assuring confidentiality opens up the door to the acceptance and delivery of appropriate educational, training, or coaching support services designed to enhance a positive attitude and work-life balance.

For organizations, the first step in the process is to establish a mechanism whereby physicians are able to voice their concerns. Allowing confidential input without fear of reprisals or retaliation will give the physician an opportunity to discuss some of the issues affecting their practice. In response organizations need to listen, react, and provide appropriate support.

Some of the physician concerns involve logistical or operational issues around scheduling, staffing, process, or compliance with policies and procedures. Here the organization may be able to help by offering additional training, revising physician responsibilities or commitments, adding new technologies or equipment, and/ or by providing additional clerical or administrative support.

When the issues involve emotional or behavioral support there are several different approaches that can be taken. On a more global level the organization can choose to provide specialized educational or training programs that deal with issues related to diversity, stress, anger, time, or conflict management. Many organizations have added training programs to develop enhanced communication and team collaboration skills to improve workplace relationships, reduce stress and conflict, and improve overall satisfaction [18]. More progressive organizations have taken a deeper step in providing training programs on emotional intelligence, mindfulness, and empathy in an effort to improve physician social awareness and sensitivities to patient and staff values as an additional step to improve communication efficiency by gaining a better understanding of the other side's needs and perspectives [11, 19, 20].

Table 2. Recommendations

Physicians:	
•	Readiness and motivation to address
•	Stress/ time/priority management
•	Participation in wellness activities
•	Willingness to accept operational and/ or behavioral support
Organ	izations:
•	Engage/ listen/ empathize
•	Provide administrative/ operational/ clinical/ financial support
•	Provide emotional/ behavioral support
•	Provide education/ training (stress/ anger/ time management/
	communication/ E.I.)
•	Utilize Physician Wellness Committees
•	Provide counseling/ coaching services
•	Offer a Physician Employee Assistance Program (EAP)
•	Refer to behavioral management specialists

These types of services can be provided through a variety of different resources. If the organization has an active Physician Wellness Committee they may use this type of vehicle to provide appropriate support programs.

In more complex situations offering appropriate individualized physician coaching and counseling services has proven to be extremely beneficial in reducing stress and in some

cases providing needed career guidance. These services could be offered through the Human Resource Department, through other internal resources, through outside consultants, or through the use of a dedicated Physician Employee Assistance Program. More severe cases may require the use of outside resources who specialize in dealing with difficult physicians [21].

Barriers and Consequences

Despite the fact that physician stress and burnout are becoming more prevalent many physicians and their affiliated organizations are having difficulty in either recognizing the extent of the problem or have trouble dealing with it.

Many of the issues may have to do with the underlying organizational culture, administrative and/ or medical staff leadership, existing policies and procedures, educational resources, and effectiveness of intervention strategies [22].

Unfortunately the risks of not addressing the issue may lead to serious unintended consequences [23]. (See Table III).

Table 3. Consequences

Physicians:

- Decreased job satisfaction
- Feelings of irritability, moodiness, cynicism, apathy
- Sleep disturbances, fatigue
- Negative impact on physical health
- Negative impact on emotional health (anxiety, depressions, behavioral disorders)
- Performance liability
- Patient safety issues
- Patient satisfaction
- Career issues

Organizations:

- Culture, relationships, morale, staff satisfaction
- Increased turnover, recruitment and retention challenges
- Poor care coordination/ productivity/ efficiency
- Disruptive behaviors
- Patient safety and quality issues related to poor responsiveness, ineffective communication, judgment errors causing adverse events
- Patient satisfaction/ reputation
- Penalty/ liability

As discussed previously, physician stress and burnout can lead to dissatisfaction and frustration that may lead to either job changes or early retirement. The costs of recruiting a new physician may reach hundreds of thousands of dollars which doesn't include the downtime of indoctrination and adaptation. It's not just physicians. When stress and burnout

lead to disruptive behaviors this can lead to poor nurse and staff morale leading to problems with retention and increased turnover [24].

When stress, burnout, and fatigue lead to physical or emotional ailments, then there are concerns about performance efficiency and quality. Irritability, moodiness, and apathy can affect productivity issues that lead to duplication, waste, and communication gaps. In some cases this may lead to the occurrence of preventable costly medical errors or adverse events which negatively affect satisfaction, reputation, and may increase liability exposure [25, 26].

In the past organizations were either not aware of the extent of the problem, chose to ignore it, were reluctant to censure a physicians who brings a large number of patients and revenues into the organization, or didn't have a non- bias structure or process for dealing with the issue in an effective manner. Organizations can no longer afford to look the other way. The following section provides a list of recommended strategies.

Obviously this is a complex issue which requires understanding and change at multiple different levels. (See Table IV).

As mentioned preciously, revising the medical education process for physicians to include training in mindfulness, sensitivity, empathy, and communication skills will help improve personal relationship and team dynamics skills that will better enable physicians to adjust to the personal pressures and complexities of medical practice. Many organizations are now adding courses on health care efficiency and economics to better prepare physicians for the business side of medical practice.

Once the physician enters into practice the organization should make every effort to spend time with the physician to help discuss mutual goals and expectations as part of the onboarding process. Prior to a signed commitment both the physician and the organization should meet with each other to make sure that there is a good cultural fit.

Table 4. Strategies for Improvement

٠	Medical school training
•	Recruitment/ on-boarding
•	Organizational/ leadership culture
•	Physician/ organizational awareness
•	Motivation for change
•	Structure and process
•	Physician/ staff support
•	Intervention strategies
•	Recognition

Culture, leadership, and peer group attributes set the underpinnings of the work environment which can have a tremendous impact on feelings and behaviors. In order to prevent a noticeable disturbance in the force it is important for organizations to perform periodic internal assessments through surveys or selected interviews in an effort to uncover any underlying workforce issues which need to be addressed. Survey results can help raise levels of awareness and accountability and lead to discussion and implementation of appropriate improvement strategies. The motivational force is the common goal business case around quality, efficiency, and satisfaction by providing best practice patient care. Physicians,

administrative staff, and employees need to establish an appropriate forum in which they can safely share issues and ideas and be responsive to each group's needs.



Figure 3. Organizational Response to Stress Reduction.

Best practice care comes through a combination of defining best standards by setting appropriate guidelines, policies, and procedures, and through assuring compliance with appropriate standards of behavior necessary to provide best practice care. While there may be minor debates about regional customization of evidenced based standards of care, most of the significant issues occur with behavioral compliance.

Poor behavioral compliance can range from refusal to follow accepted practice protocols or guidelines [one example would be not following a hand washing policy], to delays in treatment, patient disposition, or chart documentation, to truly disruptive behavior which can interfere with good patient care by leading to communication or task completion gaps that can cause adverse events. In order to address these issues the organizations needs to have a structure and process in place defining appropriate behavioral standards and setting a consistent process in place for reporting, incident review, and appropriate follow up action [27]. The intervention process is the key.

As mentioned previously most physicians just want to practice good medicine. Stress, burnout, and the potential for inappropriate behaviors occur when everything else gets in the way. The best intervention then is early intervention at a time before stress and burnout gets to the point that it affects career decisions or clinical performance [28]. Listening to physician concerns, offering appropriate logistical, operational, or coaching support, provide training workshops on diversity, stress, or conflict management, and/ or adding additional training programs to enhance social awareness, communication, and team relationship skills can do a lot to ease tensions and prevent an unwanted incident from occurring.

If an incident does occur it's best to approach intervention through a multi-tier approach. The first level approach is to conduct an informal meeting [in the right time and place] to make the physician aware of the impact his or her behaviors had on others and explore other ways in which the situation could have been handled more effectively. In most of these situations the outcome was not intended and the physician will self-correct. With more significant or more frequent types of non- professional behaviors the next phase would be to take a more formal comprehensive approach to action. These sessions should be conducted by individuals with strong personal facilitation and conflict resolution skills. The purpose is to look for underlying causes and provide the appropriate operational and behavioral support services discussed previously. The third phase occurs when the physician either fails to acknowledge that there is a problem or refuses to comply with recommendations for improvement. It is at this stage where the organization needs to consider curtailing privileges or termination.

The final component is recognition. Like all of us, physicians want to be proud of the job they are doing, be respected, and occasionally be thanked or otherwise recognized for a job well done. In today's world it is crucial that we don't take physician services for granted.

CONCLUSION

Health care delivery is going through a period of rapid change and innovation which has added increasing levels of stress to all those involved in the patient care process. Physicians in particular are under increasing amounts of stress which has led to higher levels of dissatisfaction, burnout, and in some cases physical and emotional ailments that affect their willingness and capabilities to practice medicine. We need to look at physicians as a precious resource and do what we can to help them feel like they want to continue and enjoy being a health care practitioner.

We can't leave it up to themselves to take the necessary action to make changes so we need to do it for them. This starts by recognizing and responding to their needs, priorities, time commitments, and sensitivities, using motivational messages that we are here to help them by focusing on enhancing practice efficiency and satisfaction with their work place environment and patient care outcomes, and providing support to ease the pressures, stress, and burnout so prevalent in the physician environment. We can do this.

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Chapter 5

PERSONAL AND ORGANIZATIONAL BURNOUT: THE HOLISTIC PERSPECTIVE REVEALS SERIOUS DEFICIENCIES

Ruth Tröster^{*}

fab art unternehmensgestaltung, Munich, Germany

ABSTRACT

The rationale presented here concerns an interdisciplinary and holistic approach to the phenomenon of burnout.

Up to now, the perspective on this phenomenon focused on the burnout of individuals. Consequently, it has been primarily regarded from a psychological viewpoint. The emphasis has been placed on bolstering the resilience of the affected persons, on encouraging them to scrutinize their motivating factors and pay more attention to their own work-life balance. The reason: the excessive pursuit of external recognition and appreciation robs them of their energy. Instilling this important and valuable awareness prompted numerous affected persons to reset their priorities: they sought a substitute for their previous exceptionally high commitment to their work.

It is now becoming clear, however, that a noncommittal "by the book" attitude is at odds with entrepreneurial objectives such as increasing productivity, innovativeness and competitiveness, as well as the trend towards a knowledge-based society. Thus, employers have to ask themselves whether they view the motivating factors of their employees – be quick, strive for perfection, be strong, work hard, satisfy everyone – as being more beneficial or detrimental. In any case, employees have certainly learned their lesson and are increasingly paying more heed to their employability. This has led to a renewed shifting of the burden, which had occurred as a sort of "privatization of the problems", back to employers.

There, a very comparable phenomenon – both in terms of the initial situation and the course it takes – can be observed, which is aptly referred to as "organizational burnout". Within organizations, the self-neglect of needs (i.e., the need to create value in the form of earnings) is certainly not the problem – to the contrary. And, neglect of the work-life balance and important social contacts make no sense at all in this context.

^{*} Corresponding author's email: troester@fab-rt.de.

Because just as is the case with individual burnout, the problems do not arise *due to* the initially present intrinsic motivation, problems only occur when there is an internal loss of this motivation: external motivation cannot compensate for it.

The decisive question, which has been largely overlooked up to now, is: How does this inhibition of a motivator, which is extremely valuable to everyone, even happen?

INTRODUCTION

My research into the topic burnout was not due to an assignment. I needed clarification on my own account to prevent my getting into a burnout spiral again – in spite of therapeutic treatment.

Attended by a psychologist¹, I tried to embed a new engram to gain control over my motivating drivers and to facilitate an alternate behavior pattern. I described my "excessive" aspiration to perform as a kind of encasement, like a knight's armor, and my goal was to get rid of it.

Since my behavior to perform was encouraged during childhood, it seemed obvious at first that my aspiration would stem from a craving for external appreciation. However, that proofed to be a wrong assumption. Finally I made the astonishing discovery that the origin of my motivation is the self, my inner core. To consider that core as defective is as absurd as trying to get rid of the self. Therefore the question arose: Who or what sets the standard to differentiate "excessive"?

As a geographer, I am specialized on the recognition of regional patterns. Such patterns occur irrespective to the topics of specialists. So I started to do research, using my talent for interdisciplinary pattern recognition.

The findings of congruent interdisciplinary patterns concerning burnout and their influence on the development of burnout are presented in this chapter.

There are two necessary conditions which cause burnout: one internal and one external. The internal condition determines - consciously or more often unconsciously - a predisposition for burnout. The external condition is a barrier, which grows ever higher; the more one tries to overcome it.

THE INTERNAL CONDITION

Taking responsibility for oneself and caring for the own well-being cannot be delegated to others. That is why the internal condition is important.

Psychology: "The Yardstick of Exaggeration, or: Where Is the Limit?"

Up to now a "privatization of burnout problems" was observable – without considering the phenomenon that organizations can get into burnout, too. Since an 'organizational burnout'

¹ Specialized in Pesso Boyden System Psychomotor.

has striking similarities to an individual burnout², the designation 'burnout' for the former is not only justified but obvious.

Through various sources of information such as web pages, papers, and books as well as during discussions, I got the impression that burnout is viewed as unhealthy, mainly because of the following reasons:

People who work too passionately cannot be quite right in their heads.

There are more important things in life besides work.

Not paying attention to one's own work-life balance is irresponsible.

Family and other social contacts are important and not to be neglected.

It shouldn't be possible to disregard one's own needs and limits to such an extent.

If it is getting obvious that employees aren't able to look after themselves, it lies in the duty of the managerial staff to ensure healthy behavior.³

Based on these arguments, three questions arose:

- 1. What is mental health?
- 2. What are our needs?
- 3. What and where are the limits?

I found the **first question** answered by the World Health Organization:

"Mental health is not just the absence of mental disorder.

It is defined as a *state of well-being* in which ... every individual *realizes* his or her own *potential*, can *cope with* the normal *stresses* of life, can *work productively and fruitfully*, and is able to *make a contribution* to her or his community."⁴

In this definition there is not a single hint to be found either to a work-life balance, or to a certain amount of regeneration (instead of working too much), or to enough undisturbed recreation (instead of being constantly within reach). By the way: The term work-life balance indicates absurdly that work and life are two different things, as if there is no life during work but a kind of "zombie" existence.

To the contrary: In the definition of the WHO the reference to work is obvious as there are *two* causes for *missing* a state of well-being:

- a) Restrictions in realizing the own potential, working productively and fruitfully and making a contribution.
- b) Lacking the ability to cope with stress.

Up to now, *point b*) is seen as the main reason to cause burnout.

Point a) is about motivation. In my case, motivation had a more crucial impact:

Realizing my own potential, working productively and fruitfully, and making a contribution are exactly my motivation and the reason I love to work. Additionally, it matches the requirements of employers that their employees contribute to the performance of the

² Greve, 2012, pages 17-22.

³ In 2014 the German Occupational Safety and Health Act was modified: The monitoring of psychological risks now is binding.

⁴ WHO, 2007, emphasis mine.

company in the best possible way. This, however, is the main motive for employment according to application guides⁵.

Motivation, in my understanding, is the motive causing an action with the aim of realizing an intended purpose.

There are two possible origins of a motivation: an internal and an external locus⁶. Activities due to an internal cause are intrinsically motivated. Activities in reaction to external incentives are extrinsically motivated.

Since extrinsic motivation is a reaction to incentives *coming from* an *external source* its purpose is to satisfy the ego. In contrast to extrinsic motivation, intrinsic motivation is *coming from* an *internal source* and therefore the purpose has inevitably an outward projection. For a motivation that is coming from an inner source, namely the *self*, with the purpose of creating an outward *effect* 'self-efficacy' is the perfect term.

How substantial the motive of self-efficacy is in choosing a profession is reflected by social professions. The extrinsic incentive for such career decisions, i.e., the salary is commonly low. Teaching, medical care and nursing professions are indeed those professions where burnout occurs most often.

Intrinsic motivation is widely considered as the initial condition for a burnout – but not only for individuals:

The existence of organizations depends on realizing a purpose in answer to an *external* requirement. Becoming an entrepreneur is the result of both, being able to tell a requirement in the market as a purpose, and realizing an undertaking capable in altering that market condition positively. In reaction to such market requirements that are met and such demands that are satisfied, rewards follow respectively.

In the process of an organizational burnout, companies are losing their *self*-conception of creating a worthwhile change or improvement for the external market and in losing their *efficacy* in meeting external demands, they are doomed. Contrary to the burnout of individuals, the burnout of organizations is lethal: only organizations need a purpose in order to exist.

Regarding *point b*) and the abilities to *cope with stress*:

The 'Hardiness Inventory', a test developed by Suzanne Kobasa⁷, is relating three personality characteristics to the ability to cope with stress: The belief that one can exert *control* over a situation and is not a helpless victim of circumstances. People with a strong sense of *commitment*, who enjoy making a worthwhile contribution through their work, cope with stress more easily, too; as well as those who view *challenges* as chances offered to prove and increase skills. They are profiting through feelings of confidence and mastery⁸.

The linkage between intrinsic motivation and the ability to cope with stress is obvious:

To realize one's own potential through challenges increases the ability to cope with stress. The belief that one can exert control is sustained through the experience of self-efficacy. Highly committed people are intrinsically motivated.

This leads to the **second question**: Are there any personal **needs** or requirements that are not in alignment with intrinsically motivated behavior?

⁵ Yate, 2005, page 9.

⁶ Weibel, Rost, and Osterloh, 2007, page 8.

⁷ Quoted in Janda, 1999, pages 60-65.

⁸ Janda, 1999, page 65.

There are different opinions what needs have priority when and to whom. From an extrinsically motivated point of view, there is a need for external appreciation or recognition. The *external* strategy to satisfy the needs for esteem is but one of two possibilities, as Abraham Maslow describes in *The Theory of Human Motivation*. It leads into an impasse, as asserted factually, yet impressively, by Tim Kasser 2002 in *The High Price of Materialism*. The *internal* strategy to satisfy the needs for esteem is autonomous and not depending on reputation, prestige, recognition, attention, importance, or appreciation through others⁹. People following the internal strategy are apt to feel their worth, strength, and capability through experiences of being useful and necessary in the world¹⁰.

Being able to realize one's potential requires another step beforehand and that is to fathom the potential by searching for talents, capabilities, or even a calling. Once found there is an urge to practice these talents or realize the calling. That kind of insight into one's own potential leads, in turn, onto a level of further development. Maslow describes the need for self-actualization "as the desire to become more and more what one is, to become everything that one is capable of becoming"¹¹.

My own experience confirms Maslow's hierarchy of needs. However, in Kasser's analysis and supplementation of a collection of psychological and social studies I found a more objective basis in answer to the second question, since the collection refers to worldwide sources of data:

Deducing from this material "well-being and quality of life increase when four sets of needs are satisfied and decrease when they are not"¹²:

- Autonomy and authenticity
- Safety, security, and sustenance
- Competence, efficacy, and self-esteem
- Connectedness¹³

In these sets of needs, there is none that I disregarded:

Authenticity is the need to express the self. To be able to do that, a certain amount of autonomy is important. Authenticity and autonomy are necessary conditions to realize one's own potential and, according to the WHO definition, this, in turn, leads to a state of mental health.

I had the autonomy to act authentically and that was the reason why I loved my jobs. During that time the realization of my potential was not due to a conscious choice, but an unconscious one, as I learned while in therapy.

Safety is about sustenance and physical well-being, as well as psychological well-being. Threats to the feelings of safety and well-being are stressful experiences¹⁴. Being able to cope with the normal stresses of life, leads to a state of mental health.

However, there are limits: My own well-being was indeed important to me and the cause to resign from two jobs. Although stress always has an external source, stress is also a

⁹ Maslow, 1943, page 382.

¹⁰ Maslow, 1943, page 382.

¹¹ Maslow, 1943, page 382.

¹² Kasser, 2002, page 25.

¹³ Kasser, 2002, page 24.

¹⁴ Bauer, 2002, page 15.

question of individual judgment. I will get back to this point from a medical perspective later on.

Taken together, *competence, self-efficacy, and self-esteem* stand for the realization of creative power through commitment and engagement. Engagement is different from just loving to work over-time. Both, the quality of work and the realized purpose through work, are important. A purpose is realized through work whenever the work that is done leads to an intended effect. However, working effectively is not yet everything: Creative power is also connected with the intention to produce as much of this effect as possible and that means working as efficiently as possible. Peak experiences of self-efficacy are known as 'flows'. Since burnout cases increase in our working world, instead of mentally healthy states of wellbeing, the question arises whether the quality of work has deficiencies in being productive and beneficial.

Personally, I fail to see the flaw in perfectionism: Why is it wrong that I can identify myself with what I'm doing? If I won't do things in a way that I consider important, significant, and useful then why do it at all? How is it that my self-efficacy might be seen as an excessive aspiration to perform?

Finally, the greatest shortcomings I experienced were through the need for *connectedness*. A German idiom to express great gratitude "ich fuehle mich zutiefst verbunden" actually refers to increased feelings of connectedness. It makes sense since sharing between family-members, life partners, or friends cause affection and solidarity and this, in turn, leads to feelings of connectedness. It also explains the importance of pleasant social contacts.

Does not the same apply to business relationships? The more balanced a sharing between business partners is, i.e., the lesser the disparity between them is, the lesser one of the parties feels cheated and the more stable is the relationship.

In my case such a connectedness was obvious in the external relationships with customers. From those I received unmistakable signals of appreciation for my work. However, the more the external connectedness increased, it decreased internally. I was criticized more and more vehemently for not doing things properly. "Not doing things properly" absurdly included that I was supposed to make *more* mistakes.

It now is very easy to summarize the needs that I disregarded, as there are none.

The match between mental health and needs is very obvious:

Mental health/state of well-being:	Needs:
Realize own potential	Autonomy and authenticity
Cope with stress	Safety, security, and sustenance
Work productively and fruitfully	Competence, self-efficacy, and self-
	esteem
Make a contribution	Connectedness

The above links make sense and even coincide with our development seen from a sociological viewpoint which will be the next topic. Before I discuss that, there remains a last and **third question** to be answered:

What and where are the limits that are not to be overstepped?

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In the context of burnout the term 'limit' very likely refers mainly to *physical* limits of energy reserves. I will get back to that aspect with the medical point of view further down.

In a *psychological* context I was very aware of my limits at all times. Therefore I did not overstep them in as much as risking psychosomatic reactions of my body. Nevertheless, there was a motive that made me go to the limits of my capacities and push them very hard. The motive is:

Self-efficacy causes happiness!

According to the work of Peterson, Park, and Seligman, such a kind of 'engagement' that is leading to 'flows' has the highest influence on happiness and life satisfaction, measured by a correlation coefficient of 0.30^{15} .

A limitation in experiencing flows is certainly not desirable for personal reasons.

However, engagement is also consistent with economic objectives: From an economical point of view the productivity of capital is crucial and not what it costs¹⁶. Of all things that could happen to a company, is there anything better than relying on human capital that is highly productive and very willingly so, because flows are causing happiness?

'Meaning' has a similarly large impact on happiness and life satisfaction with a coefficient of 0.26. 'Meaning' refers to the sense that the benefit of the created effect ensures appropriate connectedness¹⁷.

Again this is consistent with economic interests: Any connectivity in customer, employee, or business partner relationships, which is accomplished of one's own accord, is close and stable and therefore can be obtained with a minimum of effort. Limitations to a meaningful connectivity make no sense at all – on a personal and certainly on an economic level: The existence of an enterprise depends solely on its meaningfulness for the market since the market only pays for such goods and services that are valuable enough to spend money on.

Pure pleasure pursuit as a hedonistic influence on happiness and life satisfaction has a significantly lower impact with a correlation coefficient of 0.17^{18} . However, 'pleasure' that arises from 'engagement' and 'meaning' is not only the result but at the same time the reason for such behavior.

In my personal opinion, it is impossible to put a limit to that kind of pleasure or respectively to success, in the case of organizations.

Seen psychologically, the "privatization" of individual burnout problems and the worklife balance could be taken as an encouragement to seek happiness, life satisfaction, wellbeing, and health *outside work*. Why? Viewed rationally there should be neither personal nor economical reasons for such a course.

Therefore, I looked more closely at what happens in the process of burnout and whether there might be a clue. After all, typical stages in the burnout process are resulting empirically from sober observations and collections.

The typical stages of organizations in the process of passing through a burnout spiral¹⁹ have striking similarities with those of $people^{20}$:

¹⁵ Peterson, Park, and Seligman, 2005, page 33.

¹⁶ Drucker, 2006, pages 58 and 110.

¹⁷ Peterson, Park, and Seligman, 2005, page 33.

¹⁸ Peterson, Park, and Seligman, 2005, page 33.

¹⁹ Greve, 2012, pages, 89-139.

²⁰ Greve, 2012, pages, 17-22.

Productivity is dimmed by feelings of insecurity.

Interest converts into disinterest.

Resources diminish and conflicts arise.

Meaning is lost to cynicism.

Loss of *control* is ending in dilemmas.

Purpose and self-efficacy are lost to a sensation of powerlessness.

Dynamics is fading and replaced by resignation.

Commitment turns into apathy.

The loss of energy leads to exhaustion.

This just roughly outlined process indicates clearly a 'crowding-out effect' of intrinsic motivation that cannot be compensated by extrinsic motivation.

All the aspects, highlighted above in italics, are present at the start of the burnout process – and they are associated with intrinsic motivation:

Without an internal sense of purpose and meaning there is no intrinsic motivation.

Dynamics, energy, productivity, and resources are side effects of intrinsic motivation, due to the satisfaction of needs in a very direct way and due to a correspondingly high level of well-being that facilitates efficiency.

Control, commitment, and interest are aspects that are important to a monitoring of selfefficacy. They are needed to keep intrinsic motivation running.

A crowding-out of intrinsic motivation is possible. Such an effect has been proven many times²¹:

The meaning of apathy in the context of burnout coincides indeed with characteristics of self-efficacy at a minimum²², and in contrast to intrinsic motivation: Namely to see one's own job as an onerous duty, to avoid challenges and to expend as little effort as possible and still keep the own position²³.

An experiment conducted by Kasser shows that feelings of insecurity actually produce materialistic tendencies and are not only causative factors²⁴. However, a crowding-out of intrinsic motivation can – in no way – be compensated extrinsically:

Motivation moves from its internal to an external locus when things are done while lacking identification with what one is doing and thus one is losing pleasure in doing it. Acting in obligation to others, out of a sense of duty to others, means doing things oneself wouldn't do out of one's own accord (the once internal locus). This raises expectations that such onerous doing for the sake of others should be appreciated accordingly. However, the probability for external appreciation and recognition is getting lesser, the more the pleasure in doing it is dwindling. Failing external appreciation then leads to weariness in doing anything at all.

The problems that go along with a prevalence of materialistic value orientation and extrinsic motivation²⁵ are consistent with burnout problems that call for a treatment:

According to Kasser, predominantly materialistic value orientations and extrinsic motivation are leading to a failure in satisfying needs²⁶: Well-being is undermined by,

²¹ Weibel, Rost, and Osterloh, 2007, pages 7-8.

²² Janda, 1999, page 185.

²³ Edelwich & Brodsky quoted in Angele, 2012.

²⁴ Kasser, 2002, page 41.

²⁵ Kasser, 2002, pages 29-86.

²⁶ Kasser, 2002, page 28.

deepened feelings of insecurity²⁷, by a weakened self-worth and low self-esteem²⁸, by lowquality and adversarial relationships²⁹, and by feeling pressured, compelled, controlled, and chained³⁰.

Assuredly intrinsic motivation – as a necessary initial condition for burnout and as a necessary condition for leading to a mentally healthy state of well-being, and to high quality of life – is not the problem. Therefore burnout cannot be solved privately by a change of personal characteristics – even if there is such *burn*ing that might be judged excessive from an outside point of view. Thus the question arises: to what extent is an external framework involved in the crowding-*out* of intrinsic motivation that leads to *burn-out*?

THE EXTERNAL CONDITION

"The whole evolution, i.e., the internal development and the external culture, is a moving of barriers." *Wassily Kandinsky*

Sociology: "The Social Context Sets the Standard"

Seen sociologically, a state of well-being does not only depend on the influence of individuals in exercising their own responsibility but is also influenced by the social context to a significant extent.

For that reason, the subjective well-being index (SWB) which is determined regularly through data from the World Values Survey³¹ consists of a measurement of both aspects: individual happiness as a personal aspect, and an overall life-satisfaction as an aspect of regional, social, political, and cultural contexts.

The lower the SWB index sinks, the more likely democratization will take place³². For example, a declining index preceded such events as the Arab Spring, or the fall of communist systems, indicating that society is getting too restrictive for too many people and does not allow free choice.

The extent to which a society allows free choice and control over one's life depends on the amount of:

- Possible and allowed self-determination and self-direction
- Variety and diversity to choose from
- Social tolerance and benevolence

²⁷ Kasser, 2002, page 42.

²⁸ Kasser, 2002, page 59.

²⁹ Kasser, 2002, page 72.

³⁰ Kasser, 2002, page 86.

³¹ A survey conducted since 1981 that measures changes in values and believes in 97 societies containing almost 90 percent of the world's population: www.worldvaluessurvey.org.

³² Inglehart, Foa, Peterson, and Welzel, 2008, page 272.

According to Schwartz's 'circumplex model of values', openness to change (stimulation, self-direction, and some hedonism) and self-transcendence (universalism and benevolence) are important values to intrinsically motivated people and they are contrasting materialistic values of self-enhancement and conservation³³. Thus the striking shift in values observed in a burnout process can also be explained by a crowding-out of intrinsic motivation³⁴.

Self-determination, choice, and benevolence are mutually dependent:

Without benevolence, tolerance, and trust, a society is neither offering nor creating choices. Without choice, self-determination is limited or even impossible. Self-determination, in turn, is very important, because it allows the necessary freedom to define:

Who one is and who one wants to be.

Those who take liberties in their self-expression have to reckon with massive sanctions under certain circumstances, namely whenever a society has a different view as to what is perceived as okay. In Germany, for example, nowadays even gay soccer-players have their coming out. This, however, happens just at the end of a career to avoid the risk of a setback. Other societies put a death penalty on 'being homosexual'.

Democracy, social freedom, and personal autonomy are playing important roles as 'action resources', since they offer more latitude in choices and development³⁵. If people are allowed to act more independently and if they have enough leeway to make their own decisions, then – as a result – they have more opportunities for self-realization and the value orientation continues further in direction to 'self-expression'³⁶.

Data obtained through the World Values Survey trace such a value orientation and an ever increasing significance of self-expression over the course of 25 years in almost all cultures³⁷. This very clear, ongoing, and – realistically seen – unstoppable trend is led by Scandinavian countries, which are among the happiest countries worldwide.

Therefore my desire, and obviously that of many others as well, 'to become more and more what I am, to become everything that I am capable of becoming³⁸', is the conscious choice of who I am and who I want to be.

Indeed, for individuals, there might be some empirical evidence that burnout leads to a conscious self-determination through asking: "Is this who I want to be?" This might also be done via exclusions as: "This is *not* who I want to be". There is a high chance that questions of that kind lead to a renewed searching for one's vocation or calling and this, in turn, is satisfying the need for self-actualization.

As long as any such self-determination is in accordance with society (or parts of society and within the cultural context of that part), there are no problems. Every culture creates a stock of behavioral repertoires that give guidelines as to which behaviors are considered favorable and which are not. This facilitates and simplifies interactions. When gestures or behavior patterns are associated with meanings, they are quickly and easily identified and interpreted and one knows how to read others.

³³ Schwartz, 1992: http://changingminds.org/explanations/values/schwartz_inventory.htm and quoted in Kasser, 2002, page 66.

³⁴ The shifting of the motivation's origin from an internal to an external locus is a shifting from one polarity to another. Example: Between the polarities of black and white there are different shades of gray: more white means less black and vice versa.

³⁵ Welzel, 2006, page 6.

³⁶ Welzel, 2006, page 6.

³⁷ Welzel, 2006, page 5.

³⁸ Referring to Maslow's definition of self-actualization.

This applies in particular to business relationships, where feelings of security in interrelationships are synonymous to feelings of trust.

However, in the process of an organizational burnout, a loss of cultural identity occurs. For an organization, the loss of cultural identity means losing behavioral guidelines and codes of conduct – internal as well as external: Without social cohesion there is no connectedness; without connectedness there is no unity; without unity there is no alignment; and without alignment there is no pooling of specialized tasks.

Whenever the pooling of specialized tasks is necessary to produce such goods or services that cannot be made by lone individuals, the loss of unity poses a rather large problem: Without unity and cooperation there are separation and a struggling for power. The greater the struggling for power and the more competition, the more the former unity crumbles. Strength and power are lost and with them the focus on satisfying customers. With that kind of loss in creative power, a company is not acting anymore – but only reacting. Reaction is synonymous to always being a step behind and that, in turn, is the greatest fear in business.

Therefore, those individuals who do *not* adapt to a change from intrinsic to extrinsic motivation are doing it right – personally and economically. The problem is that doing it right will get them into as much trouble as doing it wrong. This catch-22 situation is caused by a systems-law of compensating feedback³⁹ that cannot be avoided:

The harder you push the harder the system pushes back!

Cybernetics: "The Design of the Framework"

The principle of cybernetics and therefore the central mechanism to control systems can be expressed in a very simple formula: Form follows function!

Function is derived from the intention to realize a purpose. In turn, the physical form of the system derives what is needed to realize that function and to bring about the intended result.

This concept is easily explained via a thermostat. The thermostat is a popular example to explain feedback loops as a basic module of systems⁴⁰. However, a system consists not only of a variety of feedback loops that are interacting; a system is – in itself – a feedback loop⁴¹. Thus, systems can be determined as a standalone unit. However, without external interactions, systems are utterly useless. Therefore the usefulness of a system is dependent upon its ability to make an externally needed contribution. Such a contribution would not be possible without interactions. For interactions and, in general, for the ability to operate as a system in any complex network of systems a basic set of rules is mandatory.

Cybernetics is about those rules.

A thermostat is, in its physical form, a technical implementation in order to realize the purpose of automatically maintaining a constantly comfortable room temperature. It measures the current ambient temperature with a sensor and compares it with the desired temperature setting. In case of a deviation, the thermostat starts a correction procedure. This correction is

³⁹ Senge, 1990, page 58.

⁴⁰ Meadows, 1999, page 9.

⁴¹ Tröster, 2013, page 159.

done by a response mechanism that regulates the heating until the room temperature matches that of the setting.

A feedback loop includes:

- A goal
- Monitoring and feedback via information
- A response mechanism

If the response mechanism is supposed to work automatically, then rules are needed to allow self-organization. For a thermostat, those rules are very simple: In order to provide a constantly comfortable temperature (the purpose), all actions of the response mechanism must aim at maintaining or reaching the goal (a certain temperature level). Whether the response mechanism is going into action or not, depends on the current room temperature. The ability to detect deviations from the goal is enabled through a monitoring of the room temperature. Therefore, any actions of the thermostat are controlled by the room temperature and at the same time the room temperature is controlled by the thermostat. That is what is meant by a feedback loop.

Usually, the purpose is some kind of "yes-or-no-quality" concerning persons. For example: My answer to the question: "is that room temperature now comfortable?" is either yes – or no. Only in the case of its being *not* comfortable I will change the setting: maybe at first from $66^{\circ}F/19^{\circ}C$ to $70^{\circ}F/21^{\circ}C$ and then some time later back to $68^{\circ}F/20^{\circ}C$. Such settings serve as fixed goals for the thermostat but they are relative to the purpose of providing such a room temperature that is *always (in all ways) comfortable for me*. Realizing that purpose technically the thermostat provides a range of different settings to choose from.

It is now easy to understand that 'structures' are the means to realize a purpose. The entirety of information, energy, and material flows in a system – and therefore all the occurring 'processes' – are only made possible through structures and are directed by structures⁴². Without purpose as a guiding principle there wouldn't be any processes of information, energy, or materials flowing and accumulating in stocks.

The functioning of systems as feedback loops, their necessary compatibility with each other, and their hierarchical structuring, wherein any system is at the same time a subsystem to another system, are important points to an understanding of systems. All of this is enabled by a set of basic system rules serving an overall coordination and allowing interactions of all systems.

These basic system rules allow:

- Self-organization
- Variety and diversity
- Life

The rules are mutually dependent: Survival, resilience, differentiation, or evolution would not be possible without variety and diversity. No diversity could emerge without distinctness and no development without variety. Variety and diversity are, in turn, augmenting the chances for resilience, and survival through adapting to changes in the environment.

⁴² Referred to as DIN 19226-1 by Trantow, 2012, page 138.

Differentiation, development, resilience, and survival are system-level goals⁴³ that have top priority and they are enabled by corresponding rules.

The parallel of the above mentioned 'basic system rules' and the 'action resources' from a sociological perspective is obvious:

- Possible and allowed self-determination and self-direction
- Variety and diversity to choose from
- Social tolerance and benevolence (live and let live)

This means that human systems providing no or too few action resources – contrary to system rules – sooner or later get into trouble due to a lack of resilience, development, and differentiation which are affecting their ability to survive.

Such problems are emerging increasingly: Lack of differentiation has a negative effect on competitiveness. Lack of development has a negative effect on the ability to adapt to changes in the market. Lack of resilience has a negative effect on error-friendliness: Companies that cannot take the risk to fail are not capable of innovation.

A thermostat that fails to ensure a constantly comfortable temperature is not considered functional and would be repaired or replaced.

For companies this is not different: They realize a purpose. It is due to an *external* effect in a certain quality that decides how well a company realizes a purpose that is considered valuable by the market. Therefore, whether the company deserves a reward or not, is decided alone on the market side. Nevertheless, the notion prevails that enterprises serve to make profits, i.e., that their purpose are rewards. Such a priority automatically displaces the requirements of the market to a second place or to an even minor role: There is evidence that strong materialistic value orientations are related to a lacking of empathy⁴⁴. Without empathy, there is no genuine concern for the wishes and expectations of other people and therefore of the market. The concept of being rewarded even for unmet requirements is not only cynical but also witless.

A person affected by burnout told of a power struggle at top management level that had dramatic impact. These struggles broke out as the company achieved monopoly by insolvency of a competitor and that sent a signal to those employees who adjust to the role model of the most successful people in the company to copy that behavior. Due to the ensuing friction between employees, the company was intermittently unable to keep promises of delivery. Lucky for them, the unrestricted market power allowed for contracts that excluded any claims for damages. Yet no customer is keen to repeat the experience of being forced to shut down the whole factory for want of supplies. As that example shows, losing sight of the interests of customers is not at all trivial. Who in business can afford, the risks associated with such a dependency and not make it their highest priority to search for alternatives?

Both, the purpose as the main controls of a system, and the motive behind the purpose that is demonstrated by the role model of leadership, are underestimated in their impact on a system's right to exist. Top management behavior is considered successful. Therefore it is imitated, regardless of slogans issued on how to behave in order to successfully realize the purpose of the enterprise.

⁴³ Meadows, 1999, page 16.

⁴⁴ Namely: Interpersonal coldness, cynicism, distrust, self-centeredness. Kasser, 2002, page 70.

The motive, i.e., the real intention behind the purpose of a system, always reveals itself by what the system is doing. This is unavoidable and makes the true intent so transparent and obvious that discussions about it on the Internet are feared accordingly.

If a company's motive for action shall seriously be directed outward, then it must stem from intrinsic motivation. With an intrinsic motive external rewards are not the cause for action but, to the contrary: Self-efficacy emerges from a more or less "burning" interest (depending on how concerned one is) to cause a change or improvement for a community. Such an interest is caused by feelings of connectedness with that community and by seeing oneself as one of the benefiting and profiting members.

Systems Analysis: "The Operation of Systems"

From the perspective of systems analysis, there are two options for the efficacy of a system set up by humans:

- 1. The selection of the most effective leverage points.
- 2. The direction in which the "lever" is operated.

"Leverage points' [...] are places within a complex system [...] where a small shift in one thing can produce big changes in everything.⁴⁵" Through these points of power, the efficacy of the system can be influenced.

Leverage points are more or less effective, depending on where the lever is attached: The causal chain starts with intention, the motive why the system should exist. At the end of the causal chain there are usually material stocks, but also non-material stocks that are modified through in- and outflows according to occurring processes.

The intention to be the cause of a change and creating a system to that purpose emanates from a person, of course. It is a creative act in response to the following questions: "Who do I want to be in the face of this situation?" Someone who is outraged about something that is going wrong or lacking? Or someone who is going to do something about it?⁴⁶

An outraged person pushes the responsibility onto others that it is their duty to bring about the necessary change. The prerequisite for any appropriate action to follow is the decision to be an entrepreneur in this matter from now on. No matter how big or small one's contribution is: one will only be the cause of an envisioned change⁴⁷, if the order of events runs like this:

Be the cause! -> *Do* something appropriate! -> *Have* a change!

In the reverse order: have -> do -> be, the statement would be something like this: I *have* neither the power, nor the means, nor the ability to *do* what would be necessary in order to *be* successful here. If everybody would think this way, our world would be without entrepreneurs, inventors, and pioneers. Where there is a will, there is a way.

Each joint performance that cannot be done by lone individuals depends on the pooling of different specializations and strengths. The more related and aligned the intentions of those

⁴⁵ Meadows, 1999, page 1.

⁴⁶ To 'undertake' something leads to an 'undertaking'.

⁴⁷ The way to get there is to *be there*. That separates visions from a fancy.

people involved are, the more focused, goal orientated, and effective will be the combining of their strengths. To think of applications like laser cutting, that is enabled by a laser being focused to a tight spot through spatial coherence, is not an exaggerated image: this is just about light and not about what men might achieve.

The formation of a unit and the pooling of strengths are mutually dependent: The precondition to form a powerful unit is a shared vision respective to the purpose of the system as a whole. An individual contribution to one and the same purpose leads to a pooling of strengths which, in turn, is synonymous with cooperation. Whenever there is cooperation, there is also unity. Not being able to achieve great things through a unity tells a lot about the coherence of intentions.

Like the vision of having a constant temperature that once led to the invention of a thermostat, a vision initiates a feedback loop. It starts a process of experimentation how to realize the purpose in the best possible way. For example: What kind of intention – and corresponding behavior – of a host is causing a hotel guest to really feel appreciated and welcomed, instead of being some kind of a nuisance to the host until the day of payment? Or another example: How should the implementation of a technical device be designed, in order to be user-friendly and to supersede complex instructions?

The more self-organization is allowed, the faster a matching effect is found in creating change and realizing the purpose. The special, distinctive, and inimitable strength of the system as a whole, which can be refined, optimized, adapted, and supported technically, evolves from focusing on that effect.

It is not just due to a certain behavioral policy, but truly due to aligned intentions that gives a system its cultural peculiarity. Through the appropriate selection of team members, there is a sure and unrivaled distinction from other systems, aimed at creating other effects. If rules are very clear regarding an intended effect, then such rules will not restrict, but open up room to maneuver. Rules in that sense are similar to walls: Walls restrict the available space of a room; but without walls, there is no room.

Therefore, the most powerful leverage points apply where an effect is created – and the initial point is in deciding to be the cause of an effect. The least effective leverage lies in the manipulation of stocks. The most problematic points are those that intervene in evolved structures and processes.

Whenever there is an impulse wanting to optimize certain structures and processes, the motive assuredly is *not* to increase the efficacy of the system but just to increase the profits and therefore the rewards for the system as an extrinsic motive. For the efficacy of a system, the complex interaction of structures and processes is crucial. That interaction is designed by the guiding principle of the system and to that principle the system owes its right to exist. Any intervention in this complexity has implications that are *intuitively* being avoided as long as the motive is still *intrinsic* and stemming from the same *internal* locus as *intuition*.

It is not by chance that systems analysts speak of *'counter-intuition'* whenever a "lever" is being pushed in the wrong direction⁴⁸ and thus creating unwanted effects that travel within the system for some time and then show up somewhere as a consequence contrary to the one intended. Alas, counter-intuitive behavior is observed in systems time and again even though

⁴⁸ Meadows, 1999, page 1.

such behavior can be structured in typical patterns with equally typical – and therefore indeed predictable – consequences. These structures are referred to as 'systems archetypes'⁴⁹.

In the process of an organizational burnout, all kinds of systems archetypes occur in a once very successfully performing enterprise. The separation within the system is started by counter-intuitive behavior patterns. The consequences thereof lead down a typical spiral to a steadily declining efficacy and terminate in the meltdown – and in a quite literal sense: in the parting – of the company.

An organizational burnout does not mean that there is basically no more demand for the goods or services rendered to date, but that their benefits are no longer in a quality as worthwhile as it was initially the case. Unfortunately it is the organization itself that "sends" its former customers to competitors or - in case that there is no alternative due to comparable standards in an entire industry – customers stop asking for what they cannot have.

Likewise, the usefulness of a thermostat is decided alone by its *reliability*, and not whether it is technically able to regulate any temperature at all.

Economics: "The Practical Implementation Is Systemic"

How very important reliability is, especially for business relationships, "confirm an intuition of many experienced managers: that it is vital to hold to critical performance standards 'through thick and thin,' and to do whatever it takes to meet those standards. The standards that are most important are those that matter the most to the customer. They usually include product quality (design and manufacture), delivery service, service reliability and quality, and friendliness and concern of service personnel.⁵⁰

This intuition is not always easy and convenient to implement and certainly not by using the Pareto principle, also known as 80-20 rule⁵¹. 'Through thick and thin' doing 'whatever it takes' means in practice that it takes enormous ambition in this matter, under certain circumstances even fanatical commitment and sometimes an excessive aspiration to perform, bordering to self-abandonment. Without perfectionistic claims, vital standards cannot be maintained.

These quite extreme characteristics match those of Level-5 managers⁵². They have qualities that some people view as unnecessary exaggeration or even as a "mental defect". A distinctive, but in view of their success unusual, personal modesty adds to the striking characteristics of Level-5.

These features are derived from an economic study, what *permanently outstanding successful* companies have in common and what sets them apart from comparable companies: namely at first a Level-5 leadership as the highest of five levels of leadership qualities⁵³.

Level-5 CEOs are highly intrinsically motivated, as is clear from their descriptions. In addition, there is the following significant differentiation to extrinsic motivation: For people

⁴⁹ Senge, 1999, pages 93-114 and pages 378-390.

⁵⁰ Senge, 1999, page 123.

⁵¹ The Pareto principle states that 80 percent of the effects come from 20 percent of the causes. The temptation to save time and energy is to simply focus on these 20 percent.

⁵² Collins, 2001, pages 12-13.

⁵³ Collins, 2001, pages 39-40.

without Level-5 qualities, "work will always be first and foremost about what they *get* – fame, fortune, adulation, power, whatever – not what they *build*, create, and contribute.⁵⁴"

That the leadership is intrinsically motivated - as a role model for a system -, is of particular importance for the following reason:

An intuitive access to systems requires no special, learnable skills.

From a total of 1,435 companies that counted among the American top companies in the Fortune 500 list for over 30 years, only eleven very successful businesses remained after a multi-stage selection process. These eleven companies – despite their different industries – exhibit such similar and at the same time markedly different behavior from comparable companies of the same industry, with similar size, products, and other similar initial conditions that Collins was able to deduce seven management principles from that comparison.

Amazingly, these management principles match exactly the hierarchy of the most effective leverage points in systems! This is important information, because Collins shared his findings by describing *what* he found – without reasoning *why* these principles are timeless, universal, and successful⁵⁵.

"The probability of finding by chance a group of eleven companies, all of whose members display the primary traits [...] discovered [in the study] while the direct comparisons do not possess those traits [...] is less than 1 in 17 million.⁵⁶"

This means that the systemic ideal actually exists in companies, even if rarely. As an additional avail, the management principles are a guide for practical implementation. On top of that, benchmarks and performance measurements indicate specifically how well those contrasting business approaches pan out: The performance at the stock market of those eleven companies exceeds that of the comparison companies on average by a factor of 6.9 – although the comparison companies are well positioned, too, since they made it into the Fortune 500 list.⁵⁷

Counter-intuition, management errors in the line of systems archetypes, and failure in the face of complexity are not inevitable human predispositions in dealing with systems. Collins' study shows that the intuitive access to systems is actually possible. Corresponding parallels of the management principles and the most effective leverage points are also found in other sources, such as in the works of Peter Drucker⁵⁸, of Peter Senge⁵⁹, and of Frederic Vester⁶⁰.

Likewise, the principle of the feedback loop is traceable in several sources. Collins describes it as "Hedgehog" principle, because it is a simple reflex action and yet a very effective pattern of behavior. In Peter Drucker's work, the feedback loop is referred to as "The Theory of the Business"⁶¹. In both cases it is about:

⁵⁴ Collins, 2001, page 36.

⁵⁵ Collins, 2001, page 5.

⁵⁶ Collins, 2001, page 212.

⁵⁷ Collins, 2001, page 3.

⁵⁸ Drucker, 2006, pages 195-196.

⁵⁹ Senge, 1990, page 344.

⁶⁰ Vester, 2002, pages 53-61.

⁶¹ Drucker, 2006, page 22.

- A result that the entire company is passionate about⁶² and one that enjoys highest esteem by customers alike (the *purpose*).
- The search for maximum possible impact that is suitable as an economic engine and as a code of conduct (the *goal* and object of *monitoring*).
- This best possible contribution being anchored as a cultural peculiarity to deploy a particular strength of the company and use it collectively (the *response mechanism*).

Intrinsic motivation, intuition, and cooperation go hand in hand – as well as extrinsic motivation, counter-intuition, and competition. Entrepreneurial thinking and acting is still rather associated with extrinsic – than correctly with intrinsic – motivation.

Thus two viewpoints of entrepreneurial thinking are pointing in opposite directions. To picture the strength of the contrast: What looks like a highway entrance from one point of view, looks to the other like a solid concrete wall at a dead end – and vice versa.

Yet, the opposing viewpoints – that are inevitably leading to conflicts – are possibly far less responsible for individual burnout problems, than rather the structures which are determined by the guiding principle of the system, because they, in turn, determine the processes that are possible and that are supported.

Just imagine a person swimming in a current. As long as she or he is swimming in the same direction as the current flows, everything is fine. However, even the world's best swimmer trying to swim in a cross current stands no chance and is hopeless.

Systems have a guiding principle to realize a purpose which is their raison d'être. Of course, no behavior can be tolerated in the long run that undermines this guiding principle. I mentioned the compensating feedback loop as a self-regulatory mechanism of systems already in the context of the sociological perspective and as a systems law:

The harder you push the harder the system pushes back!

An entire generation has found an answer to the burnout problem and is now asking: "Why should I commit myself?" This, for sure, is no sign of laziness: 'Generation Y' checks the purpose of the system first – whether any commitment is safe – instead of delivering themselves into hopeless compensating feedback loops. The members of that generation have learned their lesson: they are taking their own responsibility serious to ensure that their employability is maintained and not damaged. It is easy to observe whether there is an alignment in a system by comparing what is said and what is actually done. In the case that saying and doing are consistent: The willingness and commitment of that well-educated generation is high to make their best possible contribution (and that is excluding laziness as a motive). Otherwise, they look for more suitable jobs and in the meantime they satisfy their needs for autonomy, authenticity, competence, self-efficacy, self-esteem, and connectedness outside of work.

Through asking "Who do I want to be in the face of this situation?" and deciding, either for engagement, if there is meaning, or for a noncommittal "by the book" attitude, 'Generation Y' shows conscious awareness and has found solutions that are in their own personal interest. The first course is pleasurable, healthy and economical. The second course is a necessary adaption to standards of behavior that are set by the system – but which usually indicate an organizational burnout.

⁶² Ensuring that the entire company is passionate is supported by recruiting such employees to whom the purpose is valuable, important, meaningful, worthwhile, or honorable (which allows *self-organization*).

Occupational Medicine: "Linking the Internal and the External Condition"

The perspective from an occupational physician's is joining the circle of the internal and external condition, because from this point of view psychological factors play a role, too.

With the "privatization" of individual burnout problems, the focus lies primarily on developing personal "stress cures" aiming at getting control of stress symptoms or at changing the individual's interpretation of events⁶³. Is this really useful, however, when intrinsic motivation – as a necessary starting point for burnout – was already connected with distinct abilities to cope with stress?

Should the stress problem not rather be sought on that side that feels threatened by other's benchmarks of performance and feels insecure due to such competition? Fear is a very dominant emotion that leads to irrational behavior. Contrary to the assertions that economy is emotionless, angst and fear are widespread and tolerated emotions in the world of business and quite accepted as a means of behavioral manipulation.

Senge identifies two driving motives for organizations: negative and positive visions⁶⁴. Negative visions arise from fear and positive from passion. Passion is synonymous to the love of doing. To my settled conviction fear and love constitute the main polarity of emotions, since, for example, hate or jealousy derives from fear.

Motives that originate out of fear are typical for an access to systems that Vester describes as unsystemical⁶⁵ and that is linked with linear thinking and counter-intuitive actions (instead of joint-up thinking and intuitive actions).

"Those who built the good-to-great companies weren't motivated by fear. They weren't driven by fear of what they didn't understand. They weren't driven by fear of looking like a chump. They weren't driven by fear of watching others hit it big while they didn't. They weren't driven by fear of being hammered by the competition.⁶⁶"

Nevertheless, fear of competition is understandable: Since the performance of organizations with an intrinsically motivated guiding principle is surpassing the performance of the control group by an average factor of 6.9^{67} , with a range from 3.4^{68} even up to 18.5^{69} , the performance of employees who contribute to such an outstanding success might as well be high. In any case, employees expressing their creativity and their need for self-efficacy won't withhold their performance.

In addition, intrinsically motivated employees who take responsibility for their actions (as a necessary side-effect of self-efficacy) are less easily manipulated and they question what or who is leading the way.

In the world of business the assumption is widespread that the behavior of homo oeconomicus is still a practical measure of things. From that point of view, however, any different behavior of this extrinsically motivated prototype is as impossible to interpret as any

⁶³ The "solution" since 1990 and earlier: Karasek and Theorell, 1990, pages 83-84.

⁶⁴ Senge, 1990, page 225.

⁶⁵ Vester, 2002, page 101.

⁶⁶ Collins, 2001, page 160.

⁶⁷ Collins, 2001, page 3.

⁶⁸ Collins, 2001, page 7; 2.5 would have been the factor of an equity fund determined by 3M, Boeing, Coca-Cola, General Electric, Hewlett-Packard Intel, Johnson & Johnson, Merck, Motorola, Pepsi, Procter&Gamble, Wal-Mart, and Walt Disney: page 6.

⁶⁹ Collins, 2001, page 7.

other mindset that is contrary to one's own. Anyway, behavior that is not easily categorized seems inscrutable and unpredictable.

Whether one sees a threat to one's own position, or whether the certainty is shaken of having a secure job all kinds of attacks to feelings of safety, security, and sustenance are frightening. It is therefore plausible and understandable that stress and fear are leading to reactions, i.e., to actions that are directed against the source that causes stress.

On the other hand, stress seems but a matter of one's own interpretation of events. However, the problem of subjective perception disappears by introducing an objective dependent variable, namely heart attack⁷⁰: Such criteria as agreed upon by epidemiologists show measurable changes indicating an increased risk of myocardial infarction, whenever at least one of the following three factors is changed to one's detriment:

- By restrictions to one's own scope of having control,
- By being confronted with challenges that ask too little or too much,
- By demands that do not offer at least a 50 percent chance to solve them.

Even if one would like to believe that failing employees are not at all in the economic interest of a company, the problem of staffing mistakes, for example, lies in the fact that an employee cannot meet the requirements – even with the best will. Hiring mistakes cannot be avoided. They occur very often. Only their correction is rather rare and often justified by social consideration.

In the event that a misfitting employee should actually not be stressed, which is unlikely, because boreout means stress, too, this may be good from a personal but not from an economical point of view: it diminishes possible performance. In addition, misfits give rise to social tensions, at least due to the gaps in contribution that must be compensated by colleagues. Such activities keep employees from their own work and, thus, from an important opportunity for regeneration.

This opportunity refers to the anabolic response as one of two possible responses of the body to stressors that ensures regeneration and repair. Amazingly, anabolic regeneration takes place either during the deepest sleep or – according to Frankenhäuser, Lundberg and Forsman $(1980)^{71}$ – during *self-determined* activities, i.e., activities that are not lacking in self-control.

This explains the work-life balance: If self-determined activities are reserved for leisuretime, then we actually need this scope for freedom very urgently to ensure repair and regeneration. However, even if we do pleasant things we get stressed: i.e., whenever it comes to mastering new and challenging situations⁷². Therefore we have positive, regenerative eustress whenever we evolve of our own accord.

It is the other physiological response to stressors, namely the catabolic response that is consuming energy – and releasing cortisol into the bargain⁷³.

Cortisol is a means to make stress more easily tolerated. Surely this is good, but not in the long run: Along with the neurotransmitter glutamate, cortisol causes a destruction of nerve cells. This leads to impairment of brain regions and in extreme and prolonged stress situations

⁷⁰ Karasek and Theorell, 1990, page 79.

⁷¹ Confirmed by Karasek and Theorell, 1990, pages 104-110.

⁷² Karasek and Theorell, 1990, page 104.

⁷³ Karasek and Theorell, 1990, page 105.

even to a reduction of brain substance. The part of the brain that is affected particularly is the memory processing hippocampus⁷⁴.

In addition, cortisol sets a priority which brings the immune and cancer defense to a standstill⁷⁵. The necessary resources cannot be allocated until they are no longer needed urgently to cope with stress. Chronic use of an emergency mechanism is bad, because stress hinders those processes in the body that keep us healthy.

The catabolic response occurs whenever self-control is lacking for want of self-determination, participation, and / or benevolence.

The last point is particularly sensitive, because connectedness and high quality of interpersonal relationships contribute decisively to one's well-being and to a high quality of life. From the perspective of psychosomatic medicine, Bauer makes the following two statements: "Through the shaping of our interpersonal relationships we ourselves contribute decisively to what is biologically happening in us.⁷⁶," "Whenever the quantity and quality of interpersonal relationships are decreasing, the risks of illness will then increase.⁷⁷

It is due to various combinations of decision latitude (i.e., control in terms of task authority and skill discretion), demands, *and social support* in meeting challenges that influence the extent of strain, stress, and risks to health and well-being at the workplace. At the same time these combinations influence productivity, performance, and the motivation for active learning⁷⁸:

Low decision latitude in the tasks, lack of challenges, and low job demands represent **passive job** designs:

The meaning for employees: Passive jobs carry a risk of further augmenting paternalism and for 'learned helplessness'.

The meaning for employers: Such jobs stand for the *least possible productivity* and utilization of potential – including even those skills that are present and not only those that might be developed through challenges.

High decision latitude, while meeting little or no challenges, and moderate demands represent **low strain jobs**:

The meaning for employees: Such jobs meet the ideals of the homo oeconomicus. But due to the lack of challenges, the available skill repertoire is stagnating. For intrinsically motivated employees low strain jobs are associated with a *boreout risk*.

The meaning for employers: Instead of making optimal use of the existing potential in human capital and expanding skills, the skill repertoire is left stagnating and the potential remains untapped and lies idle which signify *losses in productivity*.

Low decision latitude, most challenging situations, and high to overwhelming demands represent **high strain jobs**:

The meaning for employees: Being restricted in one's autonomy, instead of getting social support to succeed in difficult tasks, is associated with a *burnout risk*. A burnout affected person brings to the point what that means in practice: "Doing the right thing and being

⁷⁴ Bauer, 2002, page 32.

⁷⁵ Bauer, 2002, page 120.

⁷⁶ Bauer, 2002, page 11.

⁷⁷ Bauer, 2002, page 13.

⁷⁸ The following combinations are derived from "Healthy Work", a very meticulous reasoning by Robert Karasek, Professor of Industrial and Systems Engineering, and Töres Theorell, physician and Professor for Psychosocial Factors and Health. In the face of increasing psychological problems at workplaces their study from 1990 has unfortunately not yet lost its up-to-datedness.

sanctioned for it." Such experiences unsettle the basic trust in social guidelines for supported and worthwhile or else unsupported and sanctioned behavior. To obtain this basic trust, is part of our paradigms, i.e., our specific ways of valuing and viewing reality. Mechanisms of denial and repression that typically occur in a burnout process sounds like a 'confirmation bias' in the sense of an "inability or refusal to see beyond the current models of thinking"⁷⁹. In that model the world of business is stable, mature, economic, and rational although this certainly applies no more during an organizational burnout.

The meaning for employers: High strain jobs are linked with heavy losses, because stress, fear, conflicts, and power struggles never occur isolated but radiate through interpersonal interactions and often escalate in mutual reactions. The more capacity is bound in this way, the less is available for performance and productivity.

High decision latitude, most challenging situations, and appropriate demands represent **active jobs**:

The meaning for employees: The demands of active jobs form a fair balance of required engagement and granted decision latitude and autonomy. Thus, the employees' own capacities are fully available to satisfy the needs for self-efficacy and further development of competence. The allowed self-control permits a high proportion of self-determined and therefore anabolic regenerative activities.

The meaning for employers: Active jobs are optimal, since they are characterized by the highest possible productivity, the highest possible performance, and the highest possible motivation for active learning.

In an increasingly knowledge-based society, the individually and collectively usable knowledge and wealth of experience to which a company has access might turn out as a goldmine. This, however, depends on the readiness and willingness of employees whether they like to share a personal possession, namely their knowledge and experience.

In the working world of today intrinsically motivated willingness is associated with personal risks. 'Generation Y' has learned this lesson within a few years and it will be accordingly easy for that generation to learn the "correct" handling of sharing knowledge and experience from the role-model of top management.

CONCLUSION

My research offers a "holographic view" out of six specialists' perspectives, integrating internal and external conditions, as well as the phenomenon of an organizational burnout in addition to the individual burnout. That view challenges contradictions and inconsistencies related to burnout that are obviously arising from different mindsets. To exemplify the problem:

According to an article about the motivation of German board members, an urge for reputation, prestige, recognition, attention, importance, and appreciation through others is discernible as a new trend and that is even surpassing the urge for money (on the way to "self-actualization" as indicated by an illustration)⁸⁰.

⁷⁹ Wikipedia: "Paradigm". http://en.wikipedia.org/wiki/Paradigm.

⁸⁰ Confusing self-actualization with showmanship.

http://www.springerprofessional.de/der-trieb-nach-bedeutung/4614780.html.

Mindsets of that kind might explain why 75 empirical studies in more than 120,000 companies and over 100 publications could not change the belief that top-management bonus payments have a more significant impact than 0.64 percent on the performance of enterprises⁸¹.

Psychology:

Burnout problems do not arise due to the initially present intrinsic motivation but due to the inhibition of that motivation. Extrinsic motivation cannot compensate a crowding-out of intrinsic motivation but even enhances that effect and might be better avoided than encouraged for personal *and* for economical reasons.

Sociology:

A progressive value orientation in direction to self-actualization⁸² is evident owing to the monitoring by the World Values Survey. A process that occurs unconsciously and that is shared worldwide is, without any doubt, indicating a pattern in the development of humans. Due to the "privatization of burnout problems" the process is now turned into one of conscious choice and that, in turn, will augment it.

Cybernetics:

The viability of systems depends on maintaining the guiding principle to which the system owes its existence and that forms its complexity. Building a unity is mandatory in order to bring strengths into play that are focused to create *external* benefits as the one and only durable purpose of any system worthwhile to reward. Effects to the contrary are demonstrated by an organizational burnout.

Systems analysis:

'Shifting the burden' of responsibility to burnout affected persons had consequences as predictable as those of other systems archetypes: An entire generation has been made acutely aware of the responsibility to maintain their own employability since commitment is associated with personal risks in surroundings that are incompatible with intrinsically motivated behavior due to the systems-law of compensating feedback.

Economics:

Members of outstandingly successful companies share characteristics that lack in comparable companies. The derived management principles are precisely in accord with the most effective leverage points in systems! An intuitive (and not counter-intuitive) access to systems is possible through highly intrinsically motivated CEOs. The outstanding successful performance is due to the efficacy of a purposely established feedback loop.

Occupational medicine:

Since well-being, health, and anabolic regeneration are controlled by job designs – as well as productivity, performance, and the motivation for active learning – the same applies to the detriment: Negative consequences to employees as well as heavy losses to employers should give rise to a very particular attendance of job designs.

"Our traditional hierarchical organizations are not designed to provide for people's higher order needs, self-respect and self-actualization. The ferment in management will continue until organizations begin to address these needs, for all employees." *Bill O'Brien* cited in 1990!⁸³

Up to now these needs have not been addressed. Will we ever start doing it?

⁸¹ Rost and Osterloh, 2007, page 1.

⁸² Of course that kind of 'self' that refers to the same internal source where intrinsic motivation is coming from.

⁸³ President of Hanover Insurance, cited in Senge, 1990, page 140.

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Chapter 6

MEDICAL HEADS AND HEAD NURSES BETWEEN MANAGERIALISM AND PROFESSIONALISM: A NECESSARY DOUBLE-BIND?

Véronique Haberey-Knuessi¹ and Jean-Luc Heeb²

¹Haute Ecole de Santé Arc – Neuchâtel, Switzerland ²Haute Ecole Fribourgeoise de Travail Social – Givisiez, Switzerland

ABSTRACT

A research has been undertaken in order to examine relationships between new management methods and their impact on stress and double-bind situations among medical heads and head nurses.

Induced by economic pressures on the one hand, and a changing social world on the other hand, stress at the workplace is an increasing phenomenon. Medical heads and head nurses are subject to many changes affecting their practice.

Because of their responsibility for achieving the objectives assigned by the institution in terms of performance and profitability, they find themselves increasingly caught in paradoxical situations. These situations may be sources of stress.

As the closer link between stress, managerialism, and professionalism remains quite unexplored, this study addresses this issue in the perspective of double-bind situations. It also aims to examine strategies that medical heads and head nurses develop in order to deal with these situations.

INTRODUCTION

In recent decades, burnout has become a major mental health issue related to professional activity, with undesirable consequences ranging from the individual and interpersonal to the organizational level. Factors associated with burnout are both individual and environmental. At the individual level, low self-esteem, passive coping strategies, or unrealistic expectancies contribute to burnout, while workload, lack of autonomy, insufficient rewards, non-supportive interactions with colleagues, insufficient fairness, and value contradiction have been

identified as major causes pointing to discrepancies between the individual and his work environment (Maslach, Schaufeli and Leiter, 2001). While research concentrated primarily on individual factors like professional experience or skills, and organization-related factors such as work schedules, job demands, working overtime, or wages, the perception of professionals experiencing contradictory injunctions in the work setting has been little examined. However, managerialism with its correlates of efficiency, standardization, and market-orientation may conflict with professionalism and its non-profit ethos.

Professionals in health institutions may be particularly challenged by the conflicting orientations of organizational efficiency and professional exigencies. This discrepancy between the individual's values and the functioning of the organization has been pregnantly described by Maslach and Leiter with regard to burnout as "the index of the dislocation between what people are and what they have to do. It represents an erosion in values, dignity, spirit, and will... putting people in a downward spiral from which it's hard to recover" (1997, 17). Thus, the present contribution aims to examine how medical heads and head nurses face possible contradictions between managerial regulation and profession-centered regulation of their work, elaborating on the double bind theory. Two issues will be considered, based on qualitative data from professionals from five hospitals in Western Switzerland. Primarily, perceptive discrepancies between managerial and professional injunctions and their underlying dimensions will be identified. Secondarily, attention will be paid to the way professionals deal with these discrepancies.

BURNOUT

In Europe, occupational diseases and particularly stress have increased significantly in recent years. Musculoskeletal disorders (MSD) still represent 75% of occupational diseases, but we now know that they are often related to stress, and considered as biological indicators.

Behind the phenomenon of stress is an economic challenge. The direct costs of care for health problems and absenteeism, added to indirect costs of lost productivity in institutions and enterprises, are extremely high (Stephens & Joubert, 2001).

The current enthusiasm over the problem of burnout is related to an alarming increase in this phenomenon, which is considered to be a real public health problem by the WHO (World Health Organization, 1999). Certainly the way one considers work is changing. A form of self fulfillment is expected at work. But work conditions are also drastically changing. Working conditions are significantly deteriorating with economic pressures and are leading to a sharp increase in stress. However, stress is not affecting the same people as before. Indeed, managers, through their strategic position in the institution, have become even greater victims of stress (ANACT, 2009). Often enclosed in double-bind situations, they undergo internal and external tensions, which produce extremely negative effects.

WHO forecasts are not optimistic. Depression (often associated with stress at work) is considered to be the future first leading cause of work disability in 2020, whereas it is currently the fourth leading cause (Delaye & Boudrandi, 2010). A recent investigation by the European Agency for Safety and Health at Work found that 30% of all workers recently declared unfit for work in the Netherlands, were due to psychological problems (EU-OSHA, 2014).

For the 15 Member States of the European Community, the cost of stress is estimated at 20 billion euros per year, or 10% of the total amount allocated to health care. Stress is considered to be responsible for 50-60% of working days which are lost (Mesters & Peters, 2008). In France, the cost of stress is estimated at 45 billion euros (Thurin & Baumann, 2003). In Switzerland, according to the Health Survey (2012), exposure to psychosocial risks has exceeded physical risk: 41% of respondents say they have experienced strong psychological stress at work, and five times as many symptoms of depression are found among people with a high stress quota. In Germany, stress represents a serious threat too. A 2012 report by the Federal Ministry of Labor and Social Affairs (BMAS, 2013) shows that almost one in two Germans experiences stress and one in five Germans suffer from psychological problems related to stress at work. Absenteeism correlated to this phenomenon increased by about 33% between 2007 and 2011. But amongst staff, managers may be particularly at risk. The last survey of the National Agency for the Improvement of Working Conditions mentions that over 40% of French people say they are stressed at work, and this rate is 60% for professional managers (ANACT, 2009).

MANAGERS, A FAVORITE TARGET FOR STRESS

The growth of this stress phenomenon is certainly linked with changing working conditions, which force workers to face new challenges. Hospitals are no exception to this reality, as they have been subjected to major restructuring trends for many years. In the European context, economic pressures, and the desire to see a reduction in the public debt, have led to the implementation of a new management design for the health sector. In this context, and in order to reduce costs and increase the performance of health care institutions, both in the public and private sector, major reforms have been put in place.

Managers occupy a pivotal position, with, on one hand, supervisors themselves subjected to significant economic and performance pressures, and, on the other, teams with critical requirements. They must constantly juggle between different cultures and values. Managers are, without doubt, the part of the population most concerned by new forms of management.

This is why they are particularly affected by restructuring programs and new management processes giving them more responsibility. Managers stand at the confluence of a hierarchy with the requirements of a liberal management system, and a team, itself very often overwhelmed by the workload. They are therefore obliged to perform their duties whilst being in a state of tension between the forms of management they wish to promote and the contingencies of the situation they have to face.

This is all happening in a climate that is tending to deteriorate and lose its collegial dimension. Teams are often tired, unmotivated, and discouraged by an increasing amount of procedures and paperwork. However, objectives can only be achieved with the support and mobilization of teams. It means that managers will need to expend large amounts of energy on building team relationships and enhancing relationships within the teams. Considered a strategic part of the process, they are held accountable for achieving the goals of the institution, and are also accountable their team's adherence to decisions or strategies adopted by the hierarchy. Nevertheless, objectives are sometimes difficult to reach. Missions are often complex, and required outcomes are of a high level yet with little time available to achieve

them. The Presst-Next survey (2004) pointed to difficulties experienced by executives in attempting to implement institutional strategy, because they sometimes encounter conflicting injunctions, ethical dilemmas, or even conflicts of loyalty.

It is important to remember that health care managers are generally deeply invested on a human level. They initially chose their profession with an "ideal" of caring, and altruism is still important for them, even when they are moving into positions of management. The inability to work in accordance with this first aspiration can be particularly stressful for head nurses, for example. Indeed their position already generates, by its very nature, a certain number of difficulties.

Managers are subjected to an important personal commitment. According to Clot et al. (2010), the goal of profitability is now presented as correlated with personal growth, seeking to win managers over to the sole cause of their institution. Expected performance, including project management, encouraged by professional ambition, becomes a constitutive part of the fundamental affirmation of their identity. Affect and emotions are brought into play, and stress seems to be the 'normal' counterpart of the role and responsibilities assigned to them, and the phenomenon is therefore largely trivialized. New patterns of work organization require increasingly multi-dimensional skills. They no longer refer only to the technical sphere, but also to personal and psychological dimensions, which involve personality and thereby generate a constant tension which, combined with other factors, can quickly turn into stress and burnout.

Managers should be a kind of 'transmission belt' between hierarchy and teams, between technical work and institutional strategy, but their actual role is more that of a 'buffer', caught between two different approaches which are too contradictory to be brought together.

MANAGERIALISM, PROFESSIONALISM, AND HOSPITAL REFORMS

Reforms conducted in the public sector since the '80s have markedly affected the practices of health professionals and challenged their self-concept in most Western countries. New public management strategies underpinning these reforms break with the management rules of the public sector (Hood, 1991). Tenants of new public management argue that public administrations are not efficient when allotting resources and need therefore to be ruled in the same way as private, profit-oriented services. Characteristics of the new public management are to be seen in the transposition of market principles to the public sector with its correlates such as customer-orientation, competition between companies, or shareholder value maximization. Since the main concern of new public management is an economic one, targeting increased efficiency, it bears the potential of dramatic consequences when it is substituted for traditional forms of management based on the professional status.

This is particularly the case in health systems, where market-orientation is likely to contradict the professional's ethos, which is directed to the care of patients. As pointed out by O'Malley (2009, 8), "the authority of experts is determined not by their own professional criteria, but by the play of the market." Fostering new public management principles in hospitals thus means not only substituting a new management form for an old one, but also contesting the validity of the profession to determine health care's goals and how they are to be achieved. The locus of authority shifts from professionals to managers. From the point of

view of the professionals, loyalty to the profession may be discrepant with loyalty to the hospital management.

Professional's value conflicts can best be understood with regard to managerialism, which refers to the ideology of a society ruled by management – rather than to the sole techniques of management – and embraces economic, political and social fields in the contemporary Western world (Enteman, 1993). Managerialism emphasizes the governance structures of organizations i.e., the subordination of inter-individual relationships to the rationality of market-oriented efficiency, rather than their productive function.

Foucault's concept of self-government adequately captures the essence of managerialism, as it outlines its localization at the intersection between domination and technologies of self (2010). Far from being a neutral, value-free arrangement of relationships, managerialism should be seen as an effective discourse that acts on the individual's behavior. Managerialism prompts individuals to conform to the organization's goals not through external constraints but by interiorizing these constraints. Individuals govern themselves in that they are expected to continuously evaluate the adequacy of their own behavior.

Hence, managerialism constitutes a regulatory form of organizational functioning which is highly dependent on the degree to which individuals incorporate market-oriented principles in their behaviors. As the organization's goals are no longer based on profession-centered considerations but pursue a goal of efficiency, i.e., maximizing the ratio of benefits to costs, evaluation of activities moves from the professionals to "organizational forms of regulations" (Evetts, 2006, 528). Indeed, regulation by an increasing number of procedures and techniques of controlling that account for the professionals' activities has been described by Power as the emergence of an "Audit Society" (1997). Power argues that Western societies, due to an exacerbated perception of risks, are currently characterized by a level of formalized accounting activities that has never been reached before. Audits, but also certifications, accreditations, and evaluations, convey a simplistic, quantitative view of quality, which is merely based on a restricted number of observable indicators. Quality appears then as what is measured by the indicators - rather than quality defining the indicators. As a result, a profession-based regulation is progressively disabled and replaced by a strictly managerial evaluation of activities. The relevancy of an activity depends on its accountability within the frame of managerialism.

More than 20 years ago, Robert Castel pointed out a new form of prevention, based on risk calculation, which subordinates medical care to managerial considerations (1991). The practitioner is more and more confined to the role of the manager's auxiliary, whom he is expected to provide with standardized data about diagnosis and treatment to fulfill administrative procedures. Practitioners no longer control the data they produce during their activity, but are controlled by the managers who use these data. Due to standardization, knowledge about patients at management level, and clinical issues such as treatment and care of a single patient are dissociated. The substantial credit afforded to the management function in health institutions rises conflicts with self-regulation by professionals, and new public management has been analyzed as a mainly negative attempt to reduce the supposed uncertainty of professional autonomy (Schimank, 2005).

Beside the rhetoric of inefficiency, unaccountability, and pursuit of personal interests that is supposed to legitimate new public management (Dean, 2003), the reduction in professionals' power operates in the field of health institutions by the substitution of faith in self-regulation by a variety of management (and manager-defined) instruments like

guidelines, agreements on objectives, certification systems, control mechanisms and audits. While, at a strictly functional level, exogenous control by management takes the place of endogenous regulation by professionals, the content of such regulation has moved towards the reduction of complexity in the perspective of risk calculation. The widespread use of quantitative indicators contributes to making the professionals' activities ascertainable to management. They can be interpreted as the way managerialism looks at professionalism – a minimal, intersubjective, instrumental understanding, where non-professionals meet professionals. Since institutions conceive their activity in such managerial terms, the complexity of the professionals' work may be overlooked. This is especially the case when considering the singularity of patient relationships, diagnosis and care. Bureaucratic and formal categories become substitutes for the practitioners' hardly traceable and reproducible competency.

PRAGMATIC PARADOX AND DOUBLE-BIND

While the contradiction between a managerial, instrumental rationality and a professionbased, ethically supported rationality has widely been discussed at policy level, including managerialism's undermining of efforts to develop professionalism, little is known about the perception of these conflicting demands by the actors of the health systems themselves. Following Weber's distinction about social action, do the organizational conditions in hospitals result in a contradictory situation where professionals feel torn between an instrumental rationality to achieve a calculated purpose and a value-oriented rationality, independently of any cost-benefit calculations and referring for instance to ethics? Contradictions per se do not necessarily appear to be associated with detrimental consequences at the individual level (Tracy, 2004). Thus, health problems like anxiety and stress may not arise when professionals face a contradictory situation, which suggests that the perception of the situation and the coping strategies employed play a central role. For instance, when dealing with a contradiction, various responses like reframing, selecting, neutralizing, withdrawing, or metacommunication are possible (Watzlawick, Beavin and Jackon, 1967, Imawitsu et al., 2001). However, contradictions are likely to impair health when they cannot be escaped.

The connection between contradiction – understood in its practical sense as a *pragmatic paradox* arising from interactions – and impossibility of leaving the contradictory situation results in a double bind (Bateson, 1972, 1979; Watzlawick, 1967). Double bind refers to distressing communication when a person receives conflicting messages and cannot solve the contradiction. Its characteristics – or *essential ingredients* as Watzlawick puts it – for the person who experiences it are a) a communication situation where there is involvement in a repeated, intense relationship; b) a first, most often negative message as an injunction to behave in a certain way; c) a second message, containing an injunction that negates the first message; d) confinement in the contradictory situation preventing any cognitive or physical escape from the conflict.

From a theoretical point of view, considering medical heads and head nurses to be prone to double bind is not conclusive. While the organizational conditions of hospitals suggest that characteristics a), b) and c) apply, characteristic d) is less obvious. As regards communication

- characteristic a) – medical heads and head nurses appear to be doubly involved in recurrent interactions with both the hospital management and their staff. Due to the formal context of work and the hierarchical structure of hospitals, communication can be seen as widely routinized and following well-established patterns. As these patterns reflect rather stable differences of power and authority related to the organizational structure, they should be considered as long-lasting and thus shaping to a large extent the communication process.

The pragmatic paradox – characteristics b) and c) – is created by the contradictory injunctions of management imperatives of efficiency and ethical exigencies of care. Due to their pivotal position, medical heads and head nurses need to fulfill both managerial and stafforiented requirements. As an example, they may be compelled to simultaneously engage in cost-reduction projects whilst ensuring that sufficient resources are available for their staff to provide adequate care. Exogenous managerial injunctions and endogenous professional injunctions are likely to negate each other.

Finally, escaping the contradictory situation physically seems to be limited due to the professional's dependence on the hospital in terms of paid work and limited possibility of finding other sources of income, including change of occupation. Cognitively, however, there are a variety of strategies for reducing the dissonance between the conflicting injunctions, ranging from the transformation of certain perceived aspects of the contradiction – for instance focusing on one injunction – to the dissolution of the dilemma by metacommunication. As medical heads and head nurses generally have a long professional experience and strong educational resources, they can be thought to develop effective cognitive strategies and, thus, to be less at risk when facing a dilemma than beginners or less educated professionals.

METHOD

Empirical data came from a study conducted in 2011-2013 in five hospitals in Frenchspeaking Western Switzerland – two local hospitals (less than 300 beds), two regional hospitals (from 300 to 1000) and a university hospital (more than 1000 beds). Data used in the present contribution were obtained from medical heads and head nurses who agreed to participate in focus groups on a voluntary basis. 12 focus groups were conducted over the five hospitals and comprised 108 participants altogether. The focus groups took place in the hospitals and time for participation was included in participants' hours of work. Participants were provided with detailed information about the study's scope before they were asked for their agreement to participate. The study was supported by the Swiss National Science Foundation (grant 13DPD6_134764) and obtained the approval of the ethical committee of the University of Lausanne.

Participants in the focus groups were two-thirds head nurses and one third medical heads. Respondents were 61 women and 47 men aged between 25 and 57 years old. Most of them already had several years' professional experience (between 7 and 27 years). All head nurses had themselves been nurses for a number of years.

Since the focus of the study was on the medical heads' and head nurses' understanding of the conflict between managerialism and professionalism in their work, the present contribution pertains to the field of interpretive sociology. Its central concerns are the

perception of the reality by the actors and the meaning they attribute to their behavior. Focus group interviews were recorded and then transcribed as a summary text per focus. The texts from the different focus groups were then analyzed in three successive stages of reading – literally, reflexively, and interpretatively – in order to achieve categorization (Crabtree and Miller, 1999).

RESULTS

Perceptive Discrepancies between Managerial and Professional Injunctions

The medical heads and head nurses who participated in the focus groups reported a variety of pragmatic paradoxes that revealed contradictions between managerial and professional injunctions. Thematically, these paradoxes address loyalty, uncertainty, team cohesion, values, standardization, responsibility, stress management, recognition, sense, and autonomy. The paradoxes can be classified within a two-dimensional typology distinguishing the nature of regulation – either practical or symbolic – and the locus of regulation – contingent upon the individual or the organization – where the double-bind is likely to occur. Pragmatic paradoxes with an individual locus encompass stress management and autonomy, while uncertainty, team cohesion, and standardization refer to the organizational locus. Symbolically, individual-located paradoxes are related to responsibility, meaning, and values, those with an organizational locus to loyalty and recognition.

Loyalty

Amongst the managers included in our survey, many declared themselves to be regularly struggling with loyalty conflicts, as they are both "a spokesman for the hierarchy" and at the same time should be supporting their teams. These two functions are sometimes difficult to reconcile, especially when the information given further accentuates work load, for example when a new staff reduction is announced or new forms of work organization that generate more work. Managers must manage the discontent and criticism from the group, whilst themselves feeling uncomfortable about the guidelines or policies issued by management. Very often they understand and sympathize with how people feel, "Every day we live with the suffering of people in their professions, we know what this (new measure) will involve, and we also have to live it with them."

It is a painful experience for everyone, but especially for health managers who have to face the group. Leaders' attitudes may be very different. Thus, one nurse manager explained that she favors transparency with her team. She explains to the staff that she does not agree with the decisions imposed, but has no choice but to implement them. This allows her to benefit from the support of her team. However, she does not feel in harmony with her line-managers. Another senior manager, on the other hand, refuses to enter into this process. According to him, the team does not need to know his opinion. He simply passes on the decisions, and explains their consequences and how they will be implemented. He nevertheless feels uncomfortable with his team and explained that he fears the aftermath of sessions where sensitive measures are announced. Generally such decisions have significant impact and employee reactions can be very harsh.

Uncertainty

By definition, managers guide and direct their teams with a clear vision of goals. But they are hampered in their mission by the uncertainty that often prevails about the future. They would like to reassure their teams and help them to feel less stressed. But, for example, in relation to the possible closure of a hospital service, they are themselves left out of decisions and, as some managers told us, "even the leaders do not know what will happen." It is a "painful experience, because managers do not know any more than their teams, but are regarded by them as people who know more but will not tell."

The consequence is sometimes a loss of meaning for caregivers, who see themselves as "pawns on a chess board that are moved as required." They then tend to reduce their personal investment in their jobs. It is difficult to create new motivation when exhaustion is also becoming increasingly oppressive.

Team Cohesion

A key task for leaders is to manage absences, which can become a huge burden if increasing and recurrent, particularly when there is practically no replacement pool. Managers must regularly juggle to ensure that teams are in a configuration that makes it possible to perform their work. Despite their best efforts, requests for replacements are generally unsuccessful, since a cost reduction policy is in force. Managers do not have any means of fighting organizational injustice. Some of them do not hesitate to perform care activities themselves to replace absent staff, but at the same time they are neglecting their own work which they will have to catch up on later – often they feel obliged to take it home.

In practice, managers are asked to be a unifying source for their teams. They must motivate, encourage and develop their teams. This is why many of them still like to be involved in patient care and in direct contact with their team: "We gain in credibility." However, at the same time an increasing number of tasks keep them apart from their teams, absorbing them in cross-functional projects within the institution and confining them to purely administrative tasks performed in the office. Managers thus undergo a double-bind with, on the one hand, the needs of the team, and, on the other, the tasks required by the hierarchy in terms of projects and activities that take them away. Thus they feel their activities constantly oscillate "between coercion and duty."

Values

When it comes to values, managers see significant tensions between, on the one hand, the professional values that first led them to choose careers where they would work with human beings and now guide them in their relationships with colleagues, and, secondly, the kind of relations that are imposed by the system. It is not so much management that managers criticize but its effects on the team and on group dynamics. For them, "the fact that their function is even closer to management is not a problem as long as the values are retained." But when the function requires spending more time on "establishing procedures, attending a number of meetings every day or managing more and more administrative problems," rather than being able to help and support their team, managers no longer agree. Time and space to talk within teams are becoming increasingly rare, so that problems cannot really be discussed, and therefore access to solving strategies is hampered.

In addition, several managers found the performance directive particularly hard as it meant excluding more vulnerable, slower or less effective workers. When faced with a logic of performance, managers found themselves unable to follow their objectives and support such staff with their difficulties. This is a source of "pain in the team and a feeling of guilt." In fact, as one nurse explains, "we are asked to take care of patients and of our team, but in reality and with the resources that are given to us, we are forced to neglect both".

Nurses and medical heads experienced significant tension between the desire to perform quality work, according to their ideal of patient care, and their inability to do so due to lack of time and resources. They have to deal with a form of "prevented work" (Clot & Lhuillier, 2010) that generates a lot of frustration. Thus, many managers express their discontent at being unable to perform quality work, and being forced to be satisfied with achieving a certain level of safety. They feel as though they are "putting bandages on a broken leg," and say that they are "torn between the dictates of productivity and quality." The idea of being no more than a firefighter was also used to express the problem of time and timing, which is a recurring theme amongst stressors experienced by managers. The urgency, and the immediate reaction that is always expected, weigh heavily on the lives of medical heads and head nurses: "everything must be done in the short term, we have to do things more and more quickly. "This constant pressure, especially in the short term, is accompanied by a more or less implicit injunction to be constantly available, and generates difficulty in managing mental workload in the long term. According to interviewees, managers are sick more frequently, a phenomenon that was practically non-existent for a few years.

Standardization

The system tends towards standardization of practices and homogenization of activity. With a focus on efficiency, activities must become as similar as possible and follow the same procedures. But it therefore does not really take into account the human element that characterizes these activities. A large part of "the human side gets lost," patients are objectified in favor of a highly technological way of thinking. Complexity of care seems to escape to higher authorities, who make management decisions in hospital but who are not dealing with reality.

In almost all the interviews we conducted, managers said they felt they spent too much time firefighting. They regret that instead of being able to do something to prevent the fire, they are expected to try and put it out once it has started. Confronted with new forms of organization and lean management of beds and staff, managers are under a constant obligation to prioritize their activities and the activities of their teams.

Responsibility

All the managers in our survey recognized that the amount of responsibility accorded to them is constantly increasing, in tandem with the expectations of the hierarchy, while their degree of autonomy decreases regularly. They declared that they have very little opportunity to say anything, even in terms of proposals: "middle managers are muzzled." They therefore have little power and are unable to act on their problems directly, even though they are often on the front line, because their position at the center of the activity prevents them from noticing organizational dysfunctions. So there is a major tension between demands and constraints imposed. Constraints are so difficult to manage that during the interview one of the nurse managers explained that he had just handed in his letter of resignation. Many doctors have already left hospitals to work in private clinics for the same reason.

The lack of power is also related to a large inertia in the system. Hospitals are grouped into several centers. The overall organization is then much heavier and has multiple layers of decision, meaning every decision takes an extremely long time to be made. Dilution of responsibilities leads to a significant waiting phase in any implementation of actions. Managers thus experience new tensions between the immediate response that must be given and the inability to get answers and quick decisions from superiors.

Resources

This lack of empowerment is even more difficult to deal with as problems and lack of meaning tend to multiply in situations of ongoing and incomplete restructuring. For example, managers dispose of very few resources to accomplish their tasks, but on the other hand, they witness huge waste owing to lack of organization. Some of them criticize mismanagement of equipment, lack of coordination between departments and the pharmacy, lack of any overall strategy in the institution, and so on. The difficulties they encounter in their activities are then all the more onerous.

Stress Management

Charged with new responsibilities, managers are also called upon to manage stress and find resources to cope. Stress remains largely a taboo subject and is considered to be part of the job. However, often under pressure from all sides, they are not given opportunities to develop resources. Sometimes forced to take work home, to be constantly available, to replace absent staff and always act as a stopgap, it is difficult to develop effective strategies for handling stress. Any social support they might receive from their families is also weakened by the pace of work required, the very short breaks, and the physical and nervous exhaustion that they experience, especially when they get home. One of the managers also admitted that this pressure was probably the main cause of his divorce.

In fact the responsibility that rests on their shoulders is twofold: held liable if they fail in their goals, they are also held liable if they succeed but are not able to distance themselves and hence fall prey to stress.

Recognition

Finally, increasing demands for accountability are all the heavier as they are not accompanied by recognition. Several managers deplored the lack of feedback on their activities: "In fact, we only get feedback when something goes wrong, otherwise it is only silence." Managers can accept this situation as long as their teams recognize their efforts. However, their legitimacy in the eyes of their teams only lasts for a certain time. "If difficulties with the work persist, frustration will appear against managers" and they then feel a great sense of loneliness.

As one doctor explains, "being a middle manager is like running a marathon: it takes practice to be able to hold on over time and to be able to juggle with all these contradictory injunctions."

Barthes (2010) names three "structural guidance" for the future function of managers which are: daily management and administrative work, support of team dynamics and projects, and support and production of meaning.

Sense

Although very relevant, this reflection nevertheless raises the question of its compatibility with the kind of new management established in recent years in our care institutions. The question is, how to be meaningful in a world where the gap is always bigger between real work and prescribed work, and where Taylorist task fragmentation is increasingly replacing the holistic dimension because of high workload and depletion of resources in conjunction with budget cuts. Whilst they should be able to create meaning in a staff disenchanted by such developments, managers are forced to move even farther away from the actual caregivers. Their time is absorbed by transverse functions, which also absorb all their energy and are often completely opaque to teams. Managers say they most often feel like a stopgap, as they are working on lean programs and always in a hurry. In these conditions, how can we design a work management style that can be both relevant and effective over time? How can we ensure a fair and manageable distribution of tasks that does not lead to the depletion of teams? Tensions induced by the daily struggle are generating stress for managers.

This stress is correlated with institutional objectives that have to be achieved through various specific projects. The problem is knowing how to ensure good project management in a situation where, in most institutions, any form of power is manipulated and controlled to some extent.

Autonomy

Autonomy, as understood in our contemporary society, goes hand in hand with an injunction to commit to achieving maximum profitability. Managers are encouraged to take on increasing responsibility, and are forced to adopt new working methods imposed by management, with the aim of generating total commitment on the part of managers, whilst at the same time being told that the management style is participatory. This responsibility encourages individual involvement. Carers are considered to be actors responsible for everything they do, but they are also responsible for the way they manage their work and consequently for their own stress. In this way, stress can be considered a personal problem of mismanagement of emotions, thus exonerating the institution of any malfunction, such malfunctions being possibly pathogenic.

Given the risk of loss of meaning that sometimes accompanies the malfunction of certain care units, managers can find meaning in the role of "defender of the team." They can then take a stand that enables staff to maintain or gain additional resources. Such a commitment reconnects them with their initial desire to provide care and support caregivers.

Professionals' Strategies to Deal with These Discrepancies

Managers develop coherent strategies in order to lessen the effects of the tensions they undergo.

This research brought out a certain number of examples. It can be individual strategies such as a special attention to family life and social networks, or other activities.

But some managers do not hesitate to employ more radical methods and deliberately withdraw to protect themselves, as they refuse, for example, to switch their phone on when they are not at work. Some of them systematically erase all emails during their holidays without looking at them, or even make a selection and do not go to all the meetings they are expected to attend.

The collective strategies implemented are particularly rich and interesting. Metacommunication is one of the most popular. Because formal spaces to exchange ideas within teams, such as nursing meetings, are reduced to a minimum, head nurses developed new spaces for informal speech. Nursing units where head nurses are likely to feel less anxious or stressed, are indeed those which encourage relationships with the team members through informal coffee breaks, or short, but regular, recreation periods.

These exchanges have, on the one hand, a significant impact on the quality of relations between the medical heads and head nurses and the team, but on the other, they also make it possible to build a foundation of shared values. These values, in turn, will encourage motivation and be invested in the professional activity. It is then easier for the head nurse to increase people's engagement in projects. And, at the same time, he or she will enjoy forms of recognition that are central to his or her self-confidence and job satisfaction.

Some collective strategies can be more combative. Thus, in order to avoid tensions, many managers do not hesitate to use cheating with the hierarchy, by developing two work schedules. For example, one schedule is supposed to correspond with the expectations of the hierarchy, whereas the other is very much in touch with the reality of the nursing unit and reflects the actual nursing staff available.

One of the managers explained that he had already had to go "to the limit of lies" to be able to grant team members more resources. However, when working conditions are particularly difficult, more negative strategies appear, such as withdrawal. Head nurses or medical heads will then act only as a go-between, engaging only slightly with either the team or the hierarchy. It may be seen, at first glance, as a form of indifference, but is actually a form of self-protection that is more or less conscious. Finally, absenteeism, which is a relatively recent phenomenon among hospital managers, is also a way of escaping tensions that are too difficult to manage in the long term. This is consistent with developments in staff turnover, which is also increasing significantly.

CONCLUSION

The market-oriented reforms that the public sector has undergone in past decades has deeply changed the work conditions of health professionals. A major issue is the conflicting orientation of managerialism and professionalism as the regulatory principles of work conditions, putting the professionals in a dilemma as to how to reconcile the demand for efficiency and ethical exigencies. Due to their pivotal position in the hospital hierarchy, medical heads and head nurses are torn between these two forms of regulation, as they are committed both to the hospital management and to their team. Indeed, they face a number of pragmatic paradoxes when interacting socially within the hospital. These paradoxes regard

either the practical (e.g., stress management or standardization) or symbolic conditions of work (e.g., sense or recognition). They may be located either at the individual level (stress management or sense) or at the organizational level (standardization or recognition).

However, despite these multiple pragmatic paradoxes they experience in their daily work, medical heads and head nurses did not consider that they were not able to handle the contradictions between the managerialism-oriented and the professionalism-guided regulations. Effective coping strategies such as planning, reframing, and acceptance were mentioned, preventing the professionals from the debilitating consequences of a double-bind. To a large extent, medical heads and head nurses identify the contradictions between managerialism and professionalism and frame the sources of conflicts in a value conflict at the organizational level. Contradictory injunctions are seen as inherent to the nature of reform in hospitals, rather than as proof of the inadequacy of the individual with respect to his professional environment. Thus, medical heads and head nurses chiefly mention functional – i.e., effective and health supportive – coping strategies such as active coping, while dysfunctional – i.e., ineffective and potentially harmful – strategies like withdrawal, denial, blame, or substance misuse (see Muller and Spitz, 2003). Though medical heads and head nurses assess their jobs as being highly demanding and stressful, functional coping strategies appear to protect them from detrimental consequences from stress like burnout.

A study examining the prevalence of burnout in the same five hospitals, including the participants in the focus groups, showed a low and similar degree of burnout – especially a low level of emotional exhaustion and depersonalization – in both medical heads and head nurses (Heeb and Haberey-Knuessi, 2014). To conclude, adequate coping strategies allow medical heads and head nurses to escape the trap of a double-bind. Interestingly, professionals with a head function seem to be less prone to burnout than professionals with no such function (Lee and Henderson, 1996, Heeb and Haberey-Knuessi, 2014). While resource differences – be they in education, professional education, or skills – and an effective selection process – by the hospitals or the individual himself – may partly explain the rather favorable situation of the former, learning from their coping strategies to empower the latter should be considered as a way of reducing the risk of burnout across the whole team.

Whether local managers or intermediate executives, these people are exposed to various pressures because of their structural position. Managers, interacting with other professionals or with patients, are faced with multiple stressors: the constraints of multidisciplinary teamwork, work overload, increasing complexity of their task, information flow, intensified demands for constant excellence, lack of promotion prospects and social recognition, difficulties in meeting the demands of users, and so on. Medical heads and head nurses are not in an easy position. They have left the reassuring framework of the group to confront the loneliness of management.

In general, we can see that a work organization system impacts negatively on the health of employees, when it tends to focus on effectiveness and efficiency in the distribution of tasks rather than on collegiality and shared responsibility in teams.

Institutions are encouraged to allow teams and medical heads and head nurses or to spend time together. These exchanges will be a good ground for collegial relationships and will promote both the well-being of each person and harmony within the team. Both medical heads and head nurses will then better manage tensions and paradoxes, feeling supported and recognized. While it is certainly difficult to give managers resources that the institution does

not have, it is nevertheless easy to promote some forms of recognition and appreciation that will encourage them in their activities.

But work must also be done upstream. Whilst in training, students must learn how to position themselves when faced with contingencies at work. Training in reflexivity will help students to become aware of their limits and develop strategies to better manage situations. Or, in very difficult circumstances, they will be able to put a stop to it. This reflective posture, coupled with accurate and comprehensive knowledge about the phenomena of stress and burnout, is to be promoted in students. It will be very useful both before symptoms appear and in recognizing and anticipating them.

This goes hand in hand with the emphasis that should be placed on the importance of self-care. Self-care is not to be considered in a self-centered perspective, but in a dimension of self-preservation and preservation of one's mental integrity. It is essential that managers recognize their own needs and limitations, so that they can implement ways of strengthening their coping mechanisms.

Finally, it is also during training that the problem of stress and double constraints must be considered from a collective perspective. Caregivers should be aware of this problem and of the importance of countering it with a collective, global response. The common belief that stress is a personal problem related to poor management strategy has to be deconstructed, as this belief does not take into account problems external to the individual, such as institutional ones. Such problems require primarily an institutional response. In this perspective, collective positioning becomes a central factor.

The identification of difficulties in this population in relation to stress and burnout, confirms the importance of examining these phenomena in order to guide future action strategies. Certainly some degree of stress is a constitutive part of managers' professional practice, as it is a logical consequence of their personal involvement and investment in the role. However, there should not be too much stress, and individuals should not feel guilty or perceive stress as a personal failure. Although stress can have positive effects for a limited time, it becomes extremely harmful to the individual as well as to the institution, when it persists in the long term. There is therefore an urgent need for work to improve the conditions of professional practice experienced by this population.

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Chapter 7

BURNOUT AND IMPAIRED COGNITIVE PERFORMANCE: REVIEW OF EVIDENCE, UNDERLYING PROCESSES AND FUTURE DIRECTIONS

Arno van Dam^{1*}, Ger P. J. Keijsers², Paul A. T. M. Eling³ and Eni S. Becker⁴

 ¹GGZ-Westelijk Noord Brabant, Institute for Mental Health, Bergen op Zoom, the Netherlands;
Tilburg University, Tranzo Department, Tilburg, the Netherlands
²Maastricht University, Department of clinical psychology, Radboud University Nijmegen, Behavioural Science Institute, Nijmegen, the Netherlands
³Donders Institute for Brain, Cognition and Behaviour, Radboud University Nijmegen, Nijmegen, the Netherlands
⁴Radboud University Nijmegen, Behavioural Science Institute, Nijmegen, the Netherlands

ABSTRACT

In recent years, there has been an increasing interest in the question whether job performance of burnout employees is impaired. Reduced job competence is one of the main features in most definitions of burnout and several studies suggest that the performance of burnout employees is indeed poorer compared to that of healthy employees. One of the factors contributing to reduced job competence may be an impaired cognitive functioning. Many employees suffering from burnout report memory problems and difficulties with concentration. This paper reviews the evidence for impaired cognitive performance in burnout and addresses whether the results provide support for the various psychopathological processes that could underlie these cognitive impairments. A number of studies, but not all, showed that the performance of people suffering from burnout on neuropsychological tests is indeed inferior to that of healthy controls. Although it is not yet clear which psychopathological processes underlie these cognitive impairments, our findings suggest that impaired cognitive performance in

^{*} Email: a.vandam@ggzwnb.nl.

burnout may stem from a structural condition which cannot be easily reversed. Finally we propose future directions for research on cognitive performance in burnout and conclude that further research is needed to investigate whether different subgroups of burnout patients can be distinguished and whether the subgroups offer a different prognosis toward recovery of burnout symptoms and cognitive impairments.

INTRODUCTION

In the literature, burnout is sometimes regarded as a mental state in more or less healthy individuals, whereas in other studies burnout is regarded as a clinical syndrome in patients. This difference in approach to the burnout concept seems to be related to the field in which burnout is studied. Within the field of organizational psychology, burnout is often regarded as a dimensional phenomenon. Relations between the degree of burnout and performance in a non-clinical working population are frequently studied. The most commonly used questionnaire to determine the degree of burnout is the Maslach Burnout Inventory (MBI, Maslach, Jackson & Leiter, 1996). The MBI is used in more than ninety percent of all studies on burnout (Schaufeli & Enzmann, 1998). The MBI comprises three scales: Emotional Exhaustion, Mental detachment, and Competence. Although the reliability and validity of the MBI are good, the MBI has also been criticized (Schaufeli & Enzmann, 1998). The MBI was developed inductively through a factor analysis of items that were supposed to be related to burnout. Therefore the items might be somewhat arbitrary and may not cover the whole burnout concept (Schaufeli, 2007).

In clinical psychology burnout is mostly regarded as a discrete variable: a person meets the burnout criteria or not. Clinical burnout is defined as a stress-related syndrome characterized by exhaustion, occupational detachment and reduced personal accomplishment. It is generally believed that burnout results from prolonged periods (years) of stress and from an inability to reach personal goals. Burnout patients frequently report reduced job satisfaction, physical complaints (especially fatigue) and impaired cognitive performance (Maslach, Schaufeli, & Leiter, 2001; Schaufeli & Enzmann, 1998; Schmidt, Neubach, & Heuer, 2007; Taris, 2006).

Burnout is not included in the DSM-IV and ICD-10 classification systems. Since burnout may have a chronic course and as many people seek treatment for this syndrome, it is not surprising that psychiatrists and clinical psychologists have a keen interest in methods to diagnose burnout. Using the DSM-IV, burnout can be classified as an undifferentiated somatoform disorder with medically unexplained persistent (> 6 months) fatigue as the predominant symptom along with restraints on daily functioning (Hoogduin, Schaap, & Methorst, 2001). The reported fatigue must be attributed by the patient to work-related factors. In the ICD-10, burnout is mentioned but no diagnostic criteria are listed. The diagnosis of neurasthenia, with the addition that it is work-related, is therefore better suited to classify burnout (Hoogduin et al., 2001). The diagnostic criteria for neurasthenia include persistent fatigue and at least two of the following symptoms: muscle pain or joint pain, dizziness, tension headaches, insomnia, difficulty relaxing, stomach or intestinal problems and increased irritability. Hoogduin et al. (2001) also add that those afflicted must experience cynicism or a feeling of mental numbness and/or that their performance level has decreased.

In addition, the duration of symptoms must be longer than one year and related to working conditions and may not be due to an anxiety disorder or major depression.

Burnout symptoms and depressive symptoms seem to be interrelated to a certain degree (Schaufeli & Enzmann, 1998), but several studies found that the phenomenological overlap between burnout and major depressive disorder appeared to be rather small (Glass & McKnight, 1996; Leiter & Durup, 1994; Schaufeli, Bakker, Hoogduin, Schaap, & Kladler, 2001; Toker, Shirom, Shapire, Berliner & Melamed, 2005). Burnout patients are willing to perform tasks but are passive and indecisive because fatigue discourages them from expending effort, whereas depressed patients avoid effort because they do not feel like it. Burnout patients usually experience stronger emotions such as anger than depressed patients. Furthermore, they report difficulties falling asleep as opposed to waking up early like depressed patients. Burnout patients also do not report irrational guilt, suicidality, and weight loss as in depressive patients (Hoogduin, Schaap, & Methorst, 2001).

Burnout patients can be distinguished from patients with an adjustment disorder because burnout is the result of a long process. The diagnosis of an adjustment disorder can only be made when symptoms develop within three months in response to an identifiable stressor.

The definition of burnout is very similar to that of chronic fatigue syndrome with regard to fatigue and restraints on daily functioning. Burnout, however, can be distinguished from chronic fatigue syndrome by the attribution of fatigue to work instead of somatic factors (Hoogduin et al., 2001; Huibers et al., 2003).

BURNOUT AND PERFORMANCE

Reduced job-performance is an important consequence of burnout, both from the perspective of the patient and the employer. From the patient's perspective, reduced performance may result in an inability to fulfil the demands of one's job which may in turn result in stress, diminished self-esteem, depressed mood and possibly more fatigue. From the perspective of an employer, reduced performance may result in reduced production or a decrease in the quality of the delivered work.

Reduced perceived job-competence is one of the main features of the burnout syndrome, but surprisingly few studies have investigated the relationship between severity of burnout (including perceived job-competence) and actual job-performance. Moreover, most studies on the burnout-performance relationship are based on self-report data. These subjective judgments may not necessarily reflect objective performance. Taris (2006) reviewed the literature on burnout and objective performance and concluded that severity of burnout and level of performance appear to be related, but that firm conclusions are difficult to draw due to conceptual and methodological limitations of studies. One of the methodological problems mentioned by Taris (2006) is that in most studies the measures of objective job-performance were not optimal. For example, ratings of one's performance by a supervisor or by colleagues were used, which are subjective to some extent (Bakker, Demerouti, & Verbeke, 2004). Another problem mentioned by Taris is that the measures of performance used in many studies may also be influenced by factors other than reduced performance. For instance, measures such as the number of admissions of psychiatric patients to a hospital by members of an assertive outreach team (Priebe et al., 2004) or the death rate among patients of

particular hospital units (Keijsers, Schaufeli, LeBlanc, Zwerts, & Miranda, 1995) may depend on other factors than reduced performance of the employees alone, for instance the availability of hospitals in the region. Taris suggested that theoretical assumptions concerning the relationship between burnout level and job-performance should be specified more clearly in future research.

COGNITIVE PERFORMANCE IN BURNOUT

Theoretically a specific feature relevant for evaluating the relationship between burnout and job-performance may be the cognitive impairment that is associated with burnout. Since 2005 several studies on objective cognitive performance in burnout have been published using neuropsychological tests to measure cognitive performance (Diestel, Cosmar, & Schmidt, 2013; Kleinsorge,, Diestel, Scheil, & Niven, 2014; Öhman, Nordin, Bergdahl, Slunga Birgander, & Stigsdotter Neely, 2007; Oosterholt, Van der Linden, Maes, Verbraak, & Kompier, 2012/2014; Österberg, Karlson, & Hansen, 2009; Sandström et al., 2005; Sandström et al., 2011; Van der Linden et al., 2005). Deligkaris, Panagopoulou, Montgomery, & Masoura (2014) reviewed the literature on cognitive performance in burnout and concluded that burnout patients perform poorer on cognitive tasks than healthy controls.

In most studies (Deligkaris et al., 2014), the cognitive impairments observed in burnout patients seem to especially affect the more complex, higher cognitive processes, such as executive functioning rather than the more simple cognitive processes, such as responding to a target. Since executive control is essential for performance on tasks that require planning, control, evaluation, adaptation and problem solving, these impairments may well result in an overall impaired job-performance. However not all studies confirmed this decline in higher cognitive processes (Oosterholt et al., 2014; Österberg et al., 2009). These studies were more indicative of a more general impairment in cognitive processes, resulting in slower responses. One study even showed that burnout in a non-clinical sample was related to better performance on tasks that measured executive functioning (Castaneda et al., 2011). We should note that this study used a non-clinical sample of young individuals, in which the more severe symptoms of burnout were likely to be underrepresented. Burnout patients are often described as highly ambitious and perfectionistic (Schaufeli & Enzmann, 1998). These traits may have encouraged these non-clinical, but perhaps burnout-prone individuals to invest more effort in the task compared to less ambitious participants, resulting in better task performance.

Besides that there are contradictory findings regarding the exact nature of cognitive deficits in burnout, most studies also suffer from limitations making it difficult to draw firm conclusions. Different and sometimes poorly specified diagnostic procedures and instruments have been used to establish clinical burnout. Also, the possible effects of comorbidity such as major depression and anxiety disorders have not always been adequately addressed. Deligkaris and colleagues (2014) suggest that future studies should take into account the level of burnout (its severity and whether it is clinical or non-clinical), and also measure neuropsychological, biochemical and psychological measures, in order to shed more light on the underlying processes of cognitive performance in burnout.

PROCESSES UNDERLYING REDUCED COGNITIVE PERFORMANCE IN BURNOUT

If burnout patients show reduced performance levels on cognitive tasks associated with (effortful) executive functioning, several processes may be invoked to explain these differences.

First, burnout patients may suffer from cognitive impairments due to stress-related physiological changes (Boksem & Tops, 2008; Oosterholt et al., 2012). There is ample evidence that sustained stress, mediated by chronically elevated levels of glucocorticoids, can have detrimental effects on neuronal structures involved in cognitive functioning, such as the hippocampus and the prefrontal cortex (Arnsten, 2009; Lupien & Lepage, 2001; Marin et al., 2011; McEwen, 2005). However, several studies, examining specifically burnout patients, found biochemical differences between burnout patients and healthy controls, whereas other studies did not find such differences (Mommersteeg, Heijnen, Verbraak, & Van Doornen, 2006; Österberg, Karlson, & Hansen, 2009). Therefore, other explanations have to been taken into account as well.

Second, several authors suggest that individual differences in the *appraisal* of fatigue may be responsible for reduced performance in individuals that suffer from long-term fatigue (Afari & Buchwald, 2003; Deluca, 2005; Knoop, Prins, Moss-Morris, & Bleijenberg, 2010; Prins, Van der Meer, & Bleijenberg, 2006). Appraisal in this case refers to an individual's interpretation of stimuli, situations or symptoms. Fatigue, for example, may be appraised by an individual as a signal that an activity is uninteresting or that energy resources are getting depleted (Meijman, 1991). Because fatigue in burnout patients is often associated with an imbalance between effort and rewards (Van Vegchel, De Jonge, Bosma, & Schaufeli, 2005), it may be possible that burnout patients do not expect that expending effort on a task will be rewarding and therefore are less inclined to fully participate in a task. Cognitive processes, such as focusing on fatigue and catastrophizing cognitions associated with fatigue are regarded as important factors for developing and maintaining chronic fatigue (Afari & Buchwald, 2003; Deluca, 2005; Knoop et al., 2010; Prins et al., 2006). It may also be possible that these cognitive processes also play a role in burnout and lead to a reduction in the willingness to spend effort at a task.

A third explanation for reduced cognitive performance in burnout may be that burnout patients adapt their performance strategy. In the literature on fatigue in healthy individuals, it has been shown that fatigued individuals adapt their performance strategy in order to regulate the mobilization of mental effort (Hockey, 1997, 2011). Strategic adjustments can be achieved, for instance, by allowing failures for secondary goals. For instance, an individual may selectively neglect low-priority task components (e.g., the speed or accuracy of responses) or he may neglect subsidiary activities, or shift to simpler response strategies with lesser demands on working memory. Because fatigue is a central characteristic of the burnout syndrome, one may expect that burnout patients will also start to routinely select less demanding performance strategies. Reduced cognitive performance in burnout patients may therefore also result from strategy shifts due to a patient's estimation of reduced availability of resources and he may consequently be less motivated to invest effort in the task rather than from cognitive impairments alone. Although clinical observations suggest that burnout patients apply different strategies to solve problems compared to healthy controls (Sandström,

2010), to our knowledge our study (Van Dam, Eling, Keijsers & Becker, 2013) is the only experimental study that has been performed with respect to the adaption of performance strategies in burnout patients.

A fourth explanation for reduced cognitive performance in burnout patients may be that burnout patients are less motivated to expend effort. In the literature on burnout, motivational problems are regarded as a distinctive feature of the burnout syndrome (Boksem & Tops, 2008; Schaufeli & Taris, 2005). Reduced motivation to spend effort may result in inferior task performance. It appears from literature, however, that the role of motivation is not clear and may be regarded as either a transient attitude or a stable state (Jochems; Mulder, van Dam, & Duivenvoorden, 2011; Van Dam & Mulder, 2008). Motivation in this context is often viewed as an attitude toward a certain task based on the perceived balance of required effort for task performance and the potential rewards of correct task performance (Ajzen, 1991). According to this conception, changing the balance between efforts and rewards will increase or decrease the motivation to expend effort and subsequently influence task performance. Several authors suggest that burnout patients may be motivated by changing the effort-reward balance (Halbesleben & Bowler, 2007; Rubino, Luksyte, Jansen Perry, & Volpone, 2009). Other authors, however, assume that a reduced motivation can become a more structural state (Boksem & Tops, 2008). They suggest that overriding fatigue for prolonged periods of time comes at a price in the form of stress which can lead to physiological changes in the dopaminergic/motivational system. These physiological changes are assumed to be fundamental to disorders that are characterized by long-term fatigue, as in burnout. According to this model, reduced motivation cannot be reversed in the short term by motivational interventions.

In summary, there are several processes that may contribute to reduced cognitive performance in burnout. It is not known to what extent the appraisal of fatigue, reduced motivation to expend effort and the strategic adaptation of task performance play a role in performance decrements associated with burnout. The studies described in this chapter are intended to provide additional insight into the role of fatigue appraisal, the adaptation of performance strategies and motivational problems that play a role in reduced cognitive performance in burnout.

STUDIES ON UNDERLYING PROCESSES

We will present six studies designed to provide insight into the processes associated with reduced cognitive performance in burnout (Van Dam, 2013). In the previous paragraph we posed the question of whether there is a distinctive psychopathological process in burnout which can account for specific burnout symptoms such as fatigue, detachment and reduced cognitive performance.

In tune with the second line of reasoning, we wanted to investigate whether a specific appraisal of fatigue in relation to performance could contribute to reduced cognitive performance in burnout. As a first step, we searched the literature and found a variety of conceptually different approaches related to the appraisal of fatigue (Van Dam, Keijsers, Eling, & Becker, 2011a). These approaches were categorized into two theoretical frameworks: (1) an adaptation-oriented framework, which concerns the regulation of effort-

expenditure (for example: 'when I am getting tired, it means I do not enjoy what I am doing at that moment'), and (2) an emotion-related framework, which concerns the regulation of emotion (for example: "when I am tired and I keep on making an effort, it only gets worse"). Before investigating whether burnout patients appraise their fatigue in a specific way, we wanted to know whether adaptation-oriented appraisal and emotion-related appraisal existed as separate dimensions in a healthy population. A list of statements derived from the various conceptual frameworks was presented to healthy individuals who were asked to rate their agreement. A principal component analysis of the survey data revealed that fatigue can indeed be appraised in an adaptation-oriented way as well as in an emotion-related way. In addition, we found a third factor: "social rejection because of fatigue". Our results showed that only emotion-related appraisal was related to general level of fatigue appraisal and anxiety or depression. Worrying and focusing on fatigue is apparently related to the experience of fatigue, whereas attributing fatigue to the unrewarding properties of a task and 'fear for social rejection' are not.

Then we performed a study aimed at investigating whether fatigue is experienced differently in burnout patients than in healthy controls or in patients suffering from another psychiatric disorder (Van Dam, Keijsers, Verbraak, Eling, & Becker, in press.). We presented 73 burnout patients, 57 patients with an anxiety disorder, and 67 depressed patients with the rating scale for the appraisal of fatigue-performance relationship described in van Dam et al., 2011a. We also assessed level of fatigue, level of depression, and severity of anxiety symptoms. Additionally, we compared the findings with those of the 127 healthy controls described in van Dam et al., 2011a. The level of fatigue reported by burnout patients, although significantly higher than that of healthy participants, did not differ from that of the other patient groups. The appraisal of fatigue also did not differ among the patient groups. Therefore, level of fatigue and appraisal of fatigue may be less central for the understanding of the specific pathological processes associated with burnout as is often assumed.

In the literature with respect to the strategic adaptation of task performance, it is repeatedly demonstrated that healthy individuals adapt their performance strategy when they are fatigued. Strategic adjustment occurs for instance, when failures for secondary goals are allowed. Thus, someone may selectively neglect low-priority task components (e.g., the speed or accuracy of responses), or neglect subsidiary activities, or shift to simpler response strategies with lesser demands on working memory. There are no previous studies that investigated whether such adaptations are also employed by burnout patients who suffer from long-term fatigue. Should burnout patients employ these strategic adaptations to task performance, it would explain why burnout is accompanied by compromised executive functioning and not with difficulties with more automatic cognitive processes (Van der Linden, Keijsers, Eling, & Van Schaijk, 2005; Oosterholt et al., 2012). We presented 40 burnout patients recruited from mental health centers in the southwest region of the Netherlands, and 40 healthy controls with a task they could either execute by adopting an effective, but high-effort strategy or by applying a less effective low-effort strategy (Van Dam, Eling, Keijsers & Becker, 2013). Significantly more burnout patients (33%) compared to healthy controls (8%) employed a low-effort strategy, even though the majority of the burnout patients (67%) employed a high-effort strategy. The burnout patients who had employed a low-effort strategy, failed to maintain their performance-level and experienced

relatively high strain. Using low-effort strategies, therefore, does not seem to be an adaptive way of coping with fatigue and does not explain reduced cognitive performance in burnout. Instead, the results of this study are indicative of sustaining, cognitive impairments (in at least a part of the burnout patients) rather than for fatigue-related strategy-shifts of performance.

An alternative explanation for our findings in the study on strategic adaptation of task performance may be that the burnout patients who employed a low-effort strategy were not motivated to invest more effort in the task. This was investigated in the following way (Van Dam, Keijsers, Eling, & Becker, 2011b). We examined the effect of a motivational intervention on cognitive performance. We presented the 40 burnout patients and 40 matched healthy controls of the previous study (Van Dam et al., 2013) with a complex attention task. As expected, in a first block of trials the performance of the burnout patients was poorer than those of healthy controls. Subsequently, we provided the participants with fake positive feedback about their performance and announced that we would financially reward those who performed best in a subsequent block of trials. Contrary to the healthy controls, the burnout patients did not improve their performance and experienced more aversion to invest further effort. The study demonstrated that impaired cognitive performance in burnout patients could not be reversed by our motivational intervention. These findings are consistent with the views of several authors who suggest that the reduced motivation due to chronic stress cannot be reversed in the short term because the inability to respond to rewards has a biochemical basis (Boksem & Tops, 2008; Marin et al., 2011).

Another possibility could be that positive feedback and financial rewards did not successfully counteract patient's belief that performance cannot be improved. Therefore, we tried to bypass cognitions about performance by motivating healthy controls and burnout patients in an implicit way by priming participants with either success or failure primes prior to task performance (Van Dam, Keijsers, Verbraak, Eling, & Becker, 2012a). Sixty-three burnout patients and 67 healthy controls were included in the study. As expected, healthy controls primed with success-primes outperformed healthy controls primed with failureprimes. However, burnout patients primed with success-primes did not perform better on the cognitive task than burnout patients primed with failure-primes which indicates that success priming failed to motivate burnout patients to improve their performance. Instead, our results suggest that success primes in our sample led to a further decrease in performance level in some of our burnout patients. Like the previous described study (Van Dam et al., 2011b), the results from this study added support to the findings that it was not possible to enhance the performance level of burnout patients on an attention task with a motivational intervention. Moreover this study showed that this non-responsiveness is not due to cognitions about fatigue and performance, indicating that reduced cognitive performance in burnout may stem from a more structural condition.

THE COURSE OF COGNITIVE IMPAIRMENTS IN BURNOUT

Relatively little is known about the course of symptoms and impaired cognitive performance in patients suffering from burnout. Several studies investigating the natural course of burnout found that recovery from burnout symptoms is rather poor, when no specific treatment programmes are offered (Janssen, 2004; Leone, 2008). For example,

Janssen and Nijhuis (2004) showed that increased exhaustion in fatigued employees remained relatively stable over the course of one year, and Leone et al. (2006) found that 57% of severely fatigued employees on sick leave were still severely fatigued four years after baseline measurement. In contrast, a review of 25 studies on the effects of psychological treatments for burnout patients showed a significant reduction in burnout symptoms after one to six months of psychological treatment (Awa, Plaumann, & Walter, 2010). Nevertheless, even with the support of psychological treatment, symptoms continue to persist (Blonk, Brenninkmeijer, Lagerveld, & Houtman, 2006; Oosterholt et al., 2012; Sonnenschein et al., 2008; Stenlund et al., 2009). To date, there are only two studies (Oosterholt et al., 2012; Van Dam, Keijsers, Eling, & Becker, 2012b) that have specifically investigated the course of impaired cognitive functioning in patients suffering from burnout. In the first study, Oosterholt et al. (2012) found that 10 weeks of psychological treatment resulted in reduced burnout symptoms and an increased level of improved general health; however, cognitive impairments did not diminish. It is surprising that impaired cognitive functioning in burnout patients has not been studied more extensively. From an employer's perspective, cognitive performance is perhaps most critically associated with an employee's ability to meet the demands of the job (Schaufeli & Enzmann, 1998; Taris, 2006). Furthermore, with respect to work reintegration, it is highly relevant to know whether impaired cognitive performance, often observed in burnout patients, improves over time.

Van Dam et. al. (2012b) describe the course of burnout symptoms and cognitive impairments over a period of two years. We followed the burnout patients and healthy controls, that had participated in the study described in Van Dam et. al. (2011b) and repeated the measurements two years later. In the course of two years' time, the burnout patients, who had all received psychological treatment, had improved considerably in terms of burnout symptoms and cognitive performance. The pre-post effect sizes for symptom reduction were large; cognitive performance improved, and responsiveness to motivational interventions had returned to normal. Most patients (85%) did no longer met the criteria of burnout or any other psychiatric disorder. Despite these improvements, burnout patients still experienced more exhaustion, more general fatigue, more depressive symptoms, and more general psychopathology in comparison to healthy controls and compared to norm groups. The same pattern was observed for cognitive performance: performance improved, but remained below normal levels compared to healthy controls. Perceived job competence, involvement in work, and responsiveness to rewards seemed to have returned to normal levels again. Our results demonstrate that recovery from burnout is possible, but some remaining symptoms may still be present after two years and for a minority of the burnout patients most symptoms are still present.

CONCLUSION

The studies presented in this paper found that the performance-level of burnout patients on attention tasks was lower than that of the healthy controls. These findings are in line with those of other studies on cognitive performance in burnout patients exhibiting impaired cognitive performance on complex cognitive tasks (Öhman, Nordin, Bergdahl, Slunga Birgander, & Stigsdotter Neely, 2007; Oosterholt, Van der Linden, Maes, Verbraak, &

Kompier, 2011; Österberg, Karlson, & Hansen, 2009; Sandström, Rhodin, Lundberg, Olsson, & Nyberg, 2005; Sandström et al., 2011; Van der Linden, Keijsers, Eling, & Van Schaijk, 2005). Moreover, the results of the longitudinal study (van Dam et al., 2012b) indicate that although the severity of these cognitive impairments decreases over time, these impairments may still be present after two years. In addition to investigating the severity and course of impaired cognitive performance in burnout patients by using valid, objective instruments, we were also interested in processes that may underlie these impairments. We investigated whether (1) appraisal of fatigue, (2) strategic adaptation of task-performance, and (3) reduced motivation to expend effort might play a role in the impaired cognitive performance in burnout. Our findings suggest that none of these processes appear to play role in reduced cognitive performance in burnout. What do these findings imply for distinctive psychopathological process in burnout?

In contrast to healthy, fatigued individuals who spend less effort at tasks (Matthews et al., 2000), burnout patients in our studies reported high levels of effort. Although the levels of effort are subjectively reported and possibly influenced by the strain experienced during task performance, they do indicate that the burnout patients did not disengage from the pursuit of task goals. We also observed that the vast majority of burnout patients who were asked to participate in our studies and do their best, agreed to do so, despite their high levels of fatigue. Our conclusion is that in contrast to healthy fatigued individuals, burnout patients do not appear to be particularly reluctant to expend high levels of effort. Our findings concerning strategic adaptation of cognitive tasks point in the same direction: the majority of the burnout patients employed a high-effort strategy.

The combination of the use of high-effort strategies and the non-responsiveness to motivational intervention in burnout patients suggests that burnout patients may be motivated but unable to improve their performance. The low-effort strategies characteristically employed by the burnout patients in our study did not serve to reduce strain. The low-effort strategy employed by the burnout patients therefore does not seem to be an adaptive way of coping with fatigue. Instead, it may be argued that the low-effort strategy employed by some burnout patients may be related to the phenomenon of 'learned helplessness' (Seligman, 1975). Learned helplessness refers to a state in which a person believes he has no control over the situation and, therefore, does not try to cope with the situation any longer and experiences high levels of stress (Sapolsky, 1994). The minority of the burnout patients who employed a low-effort strategy in the study described in Van Dam et al., 2013 showed similar characteristics. They experienced high levels of distress and actually did not seem to try to perform the simple tasks. This state also resembles to some extent the chronic motivational problems of burnout patients that are chronically non-responsive to rewards.

The suggestion that learned helplessness may play a role in reduced cognitive performance in a small number of burnout patients, is also supported by our findings as noted in Van Dam et al., 2012a. These findings suggest that the strongest prime effects in healthy controls occurred after failure primes and the strongest effects in burnout patients, although in the opposite direction, occurred after success primes. These findings appear in line with the observations of Brenninkmeijer, Van Yperen, and Buunk (2001), suggesting that burnout patients exhibit implicit associations with failure. Healthy controls on the other hand, seem to

exhibit implicit associations with success and show a positive self-judgment bias (Dunn, Stefanovitch, Buchan, Lawrence, & Dalgleish, 2009; Schmidt & Mast, 2010).

In addition to our finding that burnout patients report high levels of effort spent at tasks and they do not seem to adapt their performance strategy in a helpful way as observed in healthy fatigued individuals, we found that the level of fatigue and the appraisal of fatigue in burnout patients did not differ from those reported by patients with major depression or with anxiety disorders. Therefore the level of fatigue and the appraisal of fatigue may also not be central to the understanding of the pathological processes specifically associated with burnout. Instead, all of the results of the studies described in this thesis indicate that reduced cognitive performance in burnout is not a primary consequence of coping with fatigue. Since burnout is regarded as a stress-related syndrome and several studies have shown that that chronic stress may result in impaired cognitive functioning (Marin et al., 2011), it may be that stress-related cognitive impairments are a main symptom of burnout. Trying to maintain the level of performance despite cognitive impairments requires increased levels of effort and will result in an increase in fatigue. Therefore, it may be that reduced cognitive performance is not the result of fatigue but that fatigue is the result of stress-related cognitive impairments.

In conclusion, our findings suggest that impaired cognitive performance in burnout may stem from a structural condition which cannot be easily reversed by changing cognitions, or by coping or by motivational interventions. Our findings seem to support a biochemical explanation for cognitive impairments in burnout as proposed by several authors (Boksem & Tops, 2008; Oosterholt et al., 2011; Österberg et al., 2009; Sandström et al., 2011).

FUTURE DIRECTIONS

Although the studies presented in this paper provide more insight into the processes related to cognitive performance of burnout patients, they also raised new questions. The suggestion that fatigue in burnout may be the result of continued attempts to maintain acceptable or high performance levels despite cognitive impairments, raises the question whether cognitive impairments form the core symptom of burnout and whether they should be considered a distinctive feature of burnout as compared to other disorders. Additional research on impaired cognitive functioning and on compromised motivational processes, appears warranted.

Another future area of research in burnout patients may be the role of implicit cognitions. Research performed during the previous ten years indicates that many specific implicit cognitions play a role in various psychological disorders (Johnson, Benas, & Gibb, 2011; Stieger & Burger, 2010). Our findings (Van Dam et al., 2012a) suggest that burnout patients may have implicit failure cognitions, remarkably comparable to the concept of learned helplessness. Knowledge of implicit cognitive processes in burnout may provide clues for treatment and reintegration to work.

Several authors have suggested that burnout patients do not form a homogeneous group and that there are subtypes (Demerouti, Verbeke & Bakker, 2005; Tops et. al., 2007), or that the symptomatology of burnout may be different for different stages of the burnout syndrome (Edelwich & Brodsky, 1980; Golembiewski & Munzenrider, 1988; Golembiewski & Boss, 1991). Tops et al. (2007) distinguish two subtypes of burnout patients on the basis of

psychophysiological differences. A group with increased prolactine levels showed high levels of task engagement as opposed to a group with low prolactine levels who showed low task engagement. Our findings, especially in our studies described in Van Dam et al., 2012b and Van Dam et al., 2013, support the idea that there may be subgroups. Perhaps, the differences in task strategy described in Van Dam et al., 2013 4 are related to psychophysiological differences as observed by Tops et al. (2007).

The existence of subgroups of burnout patients may also explain why 75% of the burnout patients described in Van Dam et al., 2012b recovered from burnout to a large extent and 25% did not improve. Several authors suggest that the high levels of stress associated with burnout, may lead to permanent brain changes (Boksem & Tops, 2008, Oosterholt et al., 2011). Perhaps only a segment of the burnout patients suffer from these changes or there may be different types of physiological changes as reported by tops et al. (2007). Another explanation is that burnout patients who did not recover suffered from a disturbed sleep pattern. Sonnenschein et al. (2008) found that, after a six month period in which burnout patients were treated with cognitive behavioural therapy, full recovery from burnout symptoms and return to work were related to the quality of sleep. Burnout patients who suffered from sleep difficulties exhibited less of a reduction in symptoms and work resumption. Further research is needed to investigate whether different subgroups of burnout patients can be distinguished and whether the subgroups offer a different prognosis toward recovery of burnout symptoms and cognitive impairments.

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Chapter 8

BURNOUT SYNDROME, SELECTED PSYCHOLOGICAL VARIABLES, AND RISK FACTORS OF CARDIOVASCULAR DISEASES

Vladimír Kebza^{1,*} and Iva Šolcová^{2,†}

¹Czech University of Life Sciences, Department of Psychology, Prague, Czech Republic ²Institute of Psychology, Czech Academy of Sciences, Prague, Czech Republic

ABSTRACT

The chapter describes the design, realization, and results of a prospectively designed two-wave study, the goal of which was to verify the potential connections between burnout, selected psychosocial characteristics and the main known risks of cardiovascular diseases in a sample of economically active Czech men and women.

Part of the project was an intervention oriented to lower the incidence of risk factors of cardiovascular diseases and burnout syndrome. The next aim of the project was to prove the influence of education in subjects on a reduction in the risks of cardiovascular diseases (and burnout). The sample (78 persons, 64 women, 14 men; mean age 48.4; SD 11.6; minimum age 22, maximum age 67) was constructed by addressing Czech and foreign firms, companies, and institutions. The changes in biochemical variables due to the intervention, and the decrease of total cholesterol and LDL cholesterol can be considered as a very positive finding. The changes in psychological variables can also be considered as favourable: A set of risk characteristics decreased and the level of perceived social support that represents the protective factor increased. The results imply that the lipids concentration and its metabolism are relatively very sensitive to personality and psychosocial characteristics that can be generally considered as a risk to health. The particular variables came out as predictors less often than factors that represented several variables.

^{*}Vladimír Kebza: Czech University of Life Sciences, Department of Psychology, Kamýcká 129, Prague 6, Czech Republic, e-mail: kebza@pef.czu.cz.

[†] Iva Šolcová: Institute of Psychology, Czech Academy of Sciences, Hybernská 8, Prague 1, Czech Republic, email: solcova@psu.cas.cz.

PROBLEM

Burnout syndrome emerges especially in certain professional groups as a result of a combination of factors including mainly chronic stress, as well as a marked drop in motivation, interest in work and sense of satisfaction (Kebza, Šolcová, 1998, 2008). It has not only been an interesting and relatively serious psychological problem, but, as it impacts on both the quality of life and health of people suffering from this syndrome, it also represents an important health issue.

As early as the 1980s, professional literature all over the world began to show possible connections between burnout and the levels of cardiovascular disease (CVD) risk factors, CVD being the most common cause of death worldwide. In this context, one has to realise that up to 80% of premature cardiovascular deaths are identified as preventable (WHO, 2009). One of the first works examining these issues, a cross-sectional study implemented in a sample of North-American teachers (N=181), found a statistically significant relation between burnout syndrome (BS) and both subjective and medically diagnosed symptoms of CVD (Belcastro, 1982).

This and other findings (Appels, Otten, 1992; Melamed, Kushnir, Shirom, 1992; Melamed et al., 2006; Shirom, 2007) indicate a very likely relationship between burnout syndrome and acute myocardial infarction, ischaemic heart disease, cerebral apoplexy and sudden cardiac death. The absolute majority of cases lead to the assumption that burnout syndrome is more likely to precede CVD rather than emerge as a result of them. In a crosssectional study from Sweden, women with diagnosed coronary disease (N=97) showed a higher level of exhaustion than matched healthy women (Hallman et al., 2003). Another prospective study from Finland carried out in a sample of 3895 employees of Finnish industrial enterprises brought findings about the relationship between diagnosed burnout syndrome and increasing disease risk (Toppinen-Tanner et al., 2005). In another extensive Finnish study carried out in a set of 3368 male and female professionals (Ahola, 2007), the following values of weighted prevalence of CVD by burnout syndrome levels were found: in a subset of 2438 participants (1228 men and 1210 women) without symptoms of burnout, the weighted prevalence of CVD of 14.3% was found both in the whole subset and in men and women separately. In a subset of 849 people (422 men and 427 women) with a medium level of burnout there was a prevalence of 19.5% (21.2% in men and 17.7% in women). In the subset involving 81 people (33 men and 48 women) with a high level of burnout, the weighted prevalence was 27.6% (36.4% in men and 21.1% in women). In one of the most recent studies researching this issue, a longitudinal Japanese study carried out in a sample of 442 male managers working at a middle management position in Japanese companies based in Japan, researchers examined the impact of BS on the emergence of atherosclerosis, using the Japanese version of MBI - GS. In the basic examination, participants were divided into healthy and those with diagnosed burnout syndrome of various levels. After 4 - 5 years, 383 of these managers were examined again to identify and compare the different changes in their WHR, BMI, blood pressure, the total as well as the HDL and LDL cholesterol levels and the level of triglycerides in healthy vs. burnt-out individuals. The results showed that changes in the WHR, weight and BMI were statistically significantly higher in the burnout syndrome group. The odds ratio value of the BS group (2.80) for hypercholesterolemia was calculated with statistic significance after adjustment with respect to the age of examined persons.

The authors of the study conclude by stating that burnout, resulting e.g., from chronic stress, can be related to risk factors for atherosclerotic disease (Kitaoka-Higashiguchi et al., 2009).

The potential way that might influence the association between burnout and disease risk is, according to the majority of field studies, the negative impact of burnout on the hypothalamus - hypophysis - adrenal cortex (HPA) axis leading to the secretion of cortisol and other stress hormones as well as other variables involved. In a sample of administration workers with high burnout scores, Melamed et al. (1999) found high cortisol levels during the workday in contrast with individuals with a low burnout score. Persons with a high burnout score also reported a higher level of tension during work time, higher irritability in their free time, sleep disorders and waking up without feeling refreshed after a night's sleep. The authors conclude by stating that burnout seems to be connected with increased arousal of the body and with increased cortisol secretion. However, with respect to the latest studies and a meta-analysis that has been carried out, Melamed and his colleagues are more prone to maintain the second theory explaining the development of CVD in relation to burnout, which says that burnout impairs cortisol secretion, thus affecting the functioning of the immune system, especially the inflammatory agents responsible for cardiovascular, cerebrovascular and other diseases (Shirom, 2007). Inconsistent and sometimes contradictory results seem to be explainable by methodological factors (for more details, see Kebza, Šolcová, 2008). There is general agreement about negative impact on the HPA axis.

In a longitudinal Dutch study examining a sample of 3877 economically active men who underwent a medical check-up, it was proven that burnout symptoms predicted medically diagnosed acute myocardial infarction in a follow-up survey after 4 years (Appels, Shouten, 1991). Using their data, the authors suggested another possible way of negative impact of burnout on CVD, namely via lipid metabolism. In another study examining a sample of 104 healthy men, Melamed, Kushnir and Shirom (1992) found a relation between the burnout syndrome score and the level of somatic complaints, cholesterol, glucose, triglycerides and uric acid, which can be interpreted as another possible interrelation between burnout syndrome, psychosocial variables and CVD. The possibility of "lipid way" was further developed by A. Shirom et al. (1997), who were testing the relationship between burnout, total cholesterol level and triglycerides. A third way of looking at this relation is by using behaviour and personality typology constructs (for more details, see Šolcová, Kebza, 2006).

RESEARCH AIMS

We decided to verify the validity of the last mentioned aspects in an empiric survey carried out in a set of the Czech adult population. Being aware of the well-known problem of testing cortisol levels, of which we, as have others, made certain in our previous empiric studies (Šolcová, 2007), we decided to take advantage of the relatively reliable biochemical diagnostics that makes it possible to use a sample of venous blood to tell both the total cholesterol level and the level of its fractions (HDL and LDL cholesterol), triglycerides in relation to blood pressure values, dietary habits and psychological variables (more details below). For the purposes of the present study, let us explain here the role of lipids in the body and their connection to CVD-related risks.

The relationship between respective lipid fractions (HDL and LDL cholesterol) is determined mainly by the mutual ratio between fat and proteins. Lipoproteins are particles consisting of proteins binding fat or cholesterol during blood circulation. The mutual ratio between fat and proteins determines the density of particles, which is the ground for the division into LDL (Low Density Lipoproteins) and HDL (High Density Lipoproteins) fractions. A high concentration of LDL cholesterol leads to fat sedimenting in vascular walls, reducing the ability of veins to transform oxygenated blood in blood circulation and therefore increasing the risk of atherosclerosis and CVD. High-density lipoprotein complex called HLD cholesterol, on the other hand, facilitates the consumption of cholesterol in metabolism, balancing the potential harmful effect of LDL and the total cholesterol and, as a result, reducing health risks. The problem often is that the values of the two cholesterol fractions are related to the value of total cholesterol: a drop in total cholesterol to reference values as a result of intervention, which is generally desirable, often leads to an undesirable drop of HDL cholesterol. That is why maximum permissible values are set as reference values in total cholesterol (up to 5 mmol/l) and LDL cholesterol (up to 3 mmol/l), whereas in HDL cholesterol minimum desirable values are set (over 1.0 mmol/l for men and over 1.3 mmol/l for women). Triglycerides (triacylglycerols) are compounds of glycerol with higher fat acids. In the human body they are found mainly in fat tissue and serve as an energy reserve. They are, however, also part of natural fats and oils. Their high concentration in blood is also considered a risk factor for the development of CVD (although with some ambiguity). The established values are under certain circumstances subject to short-time changes (increased levels after illness or as a result of alcohol consumption, which we strived to eliminate in our study by providing detailed instructions before blood taking). Consuming small amounts of alcohol can also increase the HDL cholesterol value, which can be desirable, but all health factors have to be considered, including the energetic value of the alcoholic drink. So the main problem as far as CVD risk is concerned is the combination of high consumption of energy stemming from a diet high in animal fat, "stress eating" and a lack of exercise.

The present study presents part of the outcomes of a prospectively designed survey, which aims to verify potential relations between burnout and the main known CVD risks in a sample of economically active Czech men and women. To these ends, we have used data from personal and family anamnesis, identifying the levels of cholesterol and its fractions as well as triglyceride levels, finding out dietary habits, smoking frequency and blood pressure levels. A battery of methods was used that identifies the level of psychosocial CVD risks (type of behaviour, irritability, hostility, tension, frustration, sensitivity to life events, interpersonal sensitivity, type D personality, burnout syndrome) as well as more general health risks (negative affectivity, daily events, life events, hardiness and perceived social support).

The project also included complex intervention aiming to reduce the risk of CVD and burnout syndrome. Another aim was the effort to prove the positive impact of educating research participants in the area of reducing CVD risks (and burnout syndrome) as proven by similar studies abroad, such as the Stanford Five-City Project (Farquhar et al., 1990), but also in the Czech Republic as part of a joint Czech-American project "Program for Reduction of Cardiovascular and Cerebrovascular Disease in the Czech Republic", implemented with the support of the US-AID (Agency for International Development) grant in 1992-1995, also known under the shorter name Zdravá Dubeč /Healthy Dubeč/ (Komárek et al., 1995; Albright et al., 2000).

THE METHODOLOGY

The sample of participants was obtained by addressing both Czech and international companies, enterprises and institutions, which had previously taken advantage of collaborating with the National Institute of Public Health and other medical institutions to implement prevention programmes aimed at the promotion and protection of the health of their employees. In 2006, at the beginning of the project implementation, we collected a sample of 100 participants and we have extended the sample to 162 participants, but the number of persons from whom we got complete data for the final survey was 78 (64 women, 14 men, average age 48.4;SD 11.6; min. age 22, max. age 67).

All of these were subjectively healthy people without CVD symptoms who had participated in all stages of the project from the very beginning.

Here are the main reasons for the above-mentioned development in the numbers of participants:

- 1. Within the field of health care, the Ministry of Health of the Czech Republic cut the budget for health promotion activities in 2008 to 0 CZK, which prevented health institutes from carrying out any activities in this area. Some employees of health promotion departments in these institutes were discharged as a result of this situation, some have gone over into the National Institute of Public Health (NIPH) without any budget allocated for their wages or activities.
- 2. This truly destructive act in the area of health promotion in the Czech Republic also affected the Health Institute in Prague, whose department of health promotion and monitoring had been participating in the implementation of our project. The final stage of the project including empiric investigation therefore had to be carried out at a different place. Within the given circumstances we decided to organise the necessary examinations at the NIPH and the analysis of the taken blood samples in the neighbouring Faculty Hospital of Královské Vinohrady.
- 3. A new organisational structure was introduced into the NIPH in 2008 with no respect to the unique position of the NIPH in the Czech Republic as a member of the worldwide network of National Institutes of Public Health. The new structure mechanically mirrored that of Regional Hygienic Stations. This led to the breaking of years-long collaboration and partnerships both within the NIPH and in relation to other institutions dealing with public health such as other Health Institute departments, universities, academic institutes, etc. These changes have significantly impaired the preparations and the course of our survey.
- 4. The final, empiric stage of the project was negatively affected by the world economic crisis, as participating companies and institutions began to take cost-saving measures. Some of these tended to prevent employees from participating in the project or refrained from further participation completely.

We describe these problems here to point out what effects the above-mentioned ministry decision has had on research and prevention work in the Czech Republic.

Research Procedures

Survey of participants took place in the first (2006) and last (2008) year of the project. Standard procedures were used: fasting blood tests and the basic anthropometric and medical (internal) examination between 7.30 and 8.00 a.m., followed up by psychological examination carried out after a light snack. The overall length of the examination was about three and a half hours.

Psychological Tools

As far as psychological questionnaires are concerned, the following methods (in their Czech versions) were used:

- 1. An extended Bortner scale (Horváth et al., 1983) including 22 items for the identification of types of behaviour, evaluated on a visual analogue scale 25 mm long; items are organised and grouped into 6 scales irritability, tension, hostility, interpersonal sensitivity, sensitivity to life events, frustration. The total score type A behaviour was counted both from this 22-item scale (A1) and from the original 10-item Bortner scale (A2).
- 2. Survey of Recent Life Experience (SRLE; Kohn, Macdonald, 1992) is a structured interview that uses 51 items assessed on a 4-point scale to find out the impact of daily events (hassles) during the past 30 days.
- 3. Personal Views Survey (PVS: Kobasa, 1985) is a questionnaire examining the hardiness level via 50 items assessed on a 4-point scale (Šolcová, Kebza, 1996).
- 4. Social Readjustment Rating Scale (Holmes, Rahe, 1967) an inventory of 43 items using a point scale to express the score of life events during the last 12 months.
- 5. Perceived Social Support Scale (PSSS; Blumenthal et al., 1987) a questionnaire using 12 basic and 4 complementary items assessed on a 7-point scale to find out the level of perceived social support.
- 6. Shirom–Melamed-Burnout-Measure a questionnaire using 14 items assessed on a 7-point scale to find out the level of burnout syndrome (Shirom, Melamed, 2006).
- Denollet's questionnaire designed to identify type D personality (DS 14; Denollet, 2005); D means "distressed". It is a combination of two personality characteristics, the proneness to experiencing negative emotions and at the same time proneness to social inhibition of these emotions, operationalised in 14 items assessed on a 5-point scale (for more details, see Šolcová, Kebza, 2006).
- Scales for the Measuring of Irritability and Anger /Škály na meranie hnevlivosti a nahnevanosti/ (ŠHAN, forma X 2; Psychodiagnostika Bratislava, 1990). This questionnaire involving 15 basic items assessed on a 4-point scale and 1 complementary item assessed on a 7-point scale is used to identify the level of negative affectivity.

With the exception of the Bortner scale, in which separate subscales were used in addition to both raw scores, we worked with raw scores in all questionnaires.

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Physiological and Biochemical Indicators

Blood pressure was measured in accordance with the methodology used within the WHO-MONICA (MONItoring of trends and determinants in CArdiovascular Disease, 1988). The taken sample of venous blood was used to identify the levels of total cholesterol, HDL and LDL cholesterol and triglycerides.

Intervention

Intervention activities were commenced as early as the first year of the project in collaboration with the Health Institute employees in Prague (3 doctors, 1 nutrition specialist and 1 nurse). They were conceived broadly to cover the areas of diet and exercise, focusing on achieving a reasonable balance between the intake and expenditure of energy, reducing the amount of fat (especially in the form of "red" meat, i.e., pork and beef (including smoked meat goods), fat dairy products and saturated fatty acids, reducing the amount of salt and increasing the consumption of white meat (poultry, fish) as well as fruits and vegetables. Another area of intervention included the issue of addictions with special respect to the prevention / giving up of smoking.

Last but not least, intervention in the area of coping with load and stress focused on training in relaxation methods, coping with stress, reducing tension, irritability, hostility, frustration, moderating the occurrence of difficult life events and promoting social support. In individual and collective meetings, the outcomes of implemented intervention activities were evaluated and a further course of intervention in 2008 was outlined. Participants in the study were also informed about the development of both potential and real personal risk levels. They were also provided with guidelines and recommendations (including printed materials regarding each intervention area) to help them reduce or eliminate those risks in future.

Statistic Processing⁸⁴

In the present study biological variables are dependent, whereas psychological variables are independent.

We have used the paired t-test to assess the impact of intervention on respective variables. Due to the high number of psychological variables, we carried out factor analyses of input data, output data and the difference between the two in order to achieve better clarity of the data.

Linear regression analysis has been used to relate the biological indicators gathered in final examinations to the values of factor scores both for input psychological values and the "output" ones (i.e., those obtained after the intervention).

⁸⁴The authors would like to thank Zdeněk Roth for suggesting the optimum statistic procedures and analyses.

RESULTS

Impact of Intervention on the Development of CVD Risk Factors

Paired t-test has been used to test the differences between values obtained before and after intervention. Input values were subtracted from output ones. This means if the average value of difference (as stated in the following chart) is negative, the respective variable had gone down. If the average value is positive, the respective variable had gone up by the time of the final examination. Changes in biochemical and physiological indicators are shown in Table 1, changes in psychological variables are shown in Table 2.

Variable	Frequency	Average	S.D.	р	Significance
Total	78	-0.129	0.35	0.0015	**
cholesterol	10	0.12)	0.55	0.0010	
HDL	78	-0.045	0.25	0.1233	n.s.
LDL	77	-0.089	0.31	0.0154	*
Triglycerides	78	-0.004	0.129	0.7929	n.s.
SBP	78	-0.705	8.29	0.4551	n.s.
DBP	78	0.936	4.68	0.0813	n.s.

Table 1. Changes in biochemical indicators and their statistical significance

HDL = high density lipoproteins cholesterol, LDL = low density lipoproteins cholesterol, STK = systolic blood pressure, DTK = diastolic blood pressure $*^{*}p < 0.01$, $*^{p} < 0.05$.

Variable	Frequency	Average	S.D.	р	Significance
A1	78	-1.846	3.63	0.0001	**
A2	78	-1.692	6.99	0.0357	*
IRR	78	-0.051	9.92	0.9637	n.s.
TEN	78	-1.710	5.21	0.0049	**
HOS	78	-1.508	3.21	0.0001	**
IPS	78	0.744	11.04	0.5537	n.s.
EVS	78	-1.337	3.00	0.0002	**
FRU	78	-1.603	4.64	0.0031	**
S M	78	0.179	13.48	0.9067	n.s.
DS14	78	0.244	6.83	0.7536	n.s.
SRLE	78	-10.013	21.08	0.0001	**
PVS	78	1.103	5.12	0.0611	n.s.
ŠHAN	78	-2.564	3.20	0.0001	**
PSSS	78	1.846	2.88	0.0001	**
LE	78	-42.538	85.37	0.0001	**

Table 2. Changes in psychological variables and their statistical significance

A1 = the total score of Bortner scale out of22 items, A2=total score of Bortner scale out of 10 items, IRR = irritability, TEN = tension, HOS = hostility, IPS = interpersonal sensitivity, EVS = sensitivity to life events, FRU = frustration, SM = burnout syndrome, DS14 = type D personality, SRLE = daily events during the last month, PVS = hardiness, ŠHAN = negative affectivity, PSSS = perceived level of social support, LE = life events during last 12 months; **p<0.01, *p<0.05.

Within the monitored biochemical variables, there was a decrease in total cholesterol and LDL cholesterol. There were no statistically significant changes in HDL cholesterol, triglycerides or both blood pressure values (Table 1).

Within monitored psychological variables, there was a statistically significant decrease in A1 and A2 scale values, representing type A behaviour levels, as well as levels of tension, frustration and hostility, sensitivity to both daily events (SRLE) and life events (LE) and negative affectivity (ŠHAN). There was a statistically significant increase in the perceived level of social support (PSSS). No statistically significant changes were found in irritability, interpersonal sensitivity, burnout syndrome level (Shirom-Melamed scale), D type personality or the level of hardiness (PVS questionnaire).

Factor Analysis

The results of factor analysis (Principal component method, Varimax rotation, Kaiser normalisation) are shown in Tables 3, 4 and 5.Input data is marked by respective abbreviations, in the output data "1" is added as the last character. Differences between the input and output value have the letters "df" in front of the abbreviation for differentiation. Differences are calculated as differences between the final and input value (end-input).

The factor analyses have divided psychological variables into three input and four "output" factors. The input 3-factor solution explained 73.1% of the total variance; the 4-factor solution explained 71.9% of the total variance.

	Factors					
	1	2	3			
A1	.189	.135	.898			
A2	.050	.076	.863			
IRR	.075	.802	.095			
TEN	.044	.901	.031			
HOS	.236	.722	.211			
IPS	.103	.592	.399			
EVS	.239	.700	421			
FRU	.336	.634	518			
S_M	.848	.181	.039			
DS14	.817	.289	.108			
SRLE	.788	.203	055			
PVS	898	076	011			
SHAN	.922	.084	.083			
PSSS	858	239	112			
LE	.757	049	.005			

Table 3. Factor analysis: Initial psychological variables

Factor loading higher than 0.7 is marked in bold. Loading > 0.3 < 0.7 is marked in italics.

Variables		Fac	etors	
variables	1	2	3	4
A11	.231	.012	.904	.093
A21	.124	090	.882	.158
IRR1	064	.452	.499	249
TEN1	052	.805	.248	.116
HOS1	.187	.661	.359	.314
IPS1	.037	.089	.122	.886
EVS1	.219	.796	333	.045
FRU1	.300	.801	232	124
S_M1	.742	.147	010	.305
DS141	.726	.118	.058	.199
SRLE1	.782	.171	.017	134
PVS1	832	053	117	006
SHAN1	.880	031	.149	.017
PSSS1	829	140	168	115
LE1	.706	.062	025	260

Table 4. Factor analysis: Final psychological variables

Factor loading higher than 0.7 is marked in bold. Loading > 0.3 < 0.7 is marked in italics.

The first input factor is saturated by variables representing a composite variable that can be labelled as *General Health Risks* factor (the level of life events, social support, negative affectivity, hardiness, daily events, type D personality and burnout syndrome). The second input factor is saturated by variables of the Bortner scale, the composition of which substantially nears the so-called "AHA Syndrome" (Anger-Hostility-Aggression as conceived by Spielberger), i.e., the level of significance assigned to experienced life events, hostility, tension, frustration and irritability. The third input factor involves A1 and A2 scores, which express the essence of Type A Behaviour. In the 4-factor solution in the final examination, the Bortner scale has been broken down into 3 factors, which was done by separating interpersonal sensitivity from the AHA factor to create a separate factor of its own. The General Health Risks factorhas remained the same, which attests the reliability of the factor solution and also for the fact that we had selected variables that represent health risks mainly in mutual combinations. The Type A Behaviour factor has remained the same in the output 4factor solution. The factor analysis of differences brought a 5-factor solution, which explained 61.11% of the total variance (Table 5). The relevant correlation matrixes can be requested from the authors of this study. The factor solution indicates that changes in A type behaviour scores create a common factor.

Changes in variables that represent the factor of general health risks are partly grouped into a similarly organised factor. Changes in levels of hardiness, perceived social support and burnout syndrome separated from it: hardiness and perceived social support are personality characteristics valid on a long-term basis, and, as can be seen in Table 2, there have been no significant changes in these variables.

In the factor created by changes in personality characteristics loaded also a change in the level of frustration. Changes in the level of irritability and perception of life events have the highest loading in the same factor.

Variables			Factors		
variables	1	2	3	4	5
dfA1	.035	.912	016	.100	025
dfA2	053	.924	.005	.064	.023
dfIRR	201	177	.282	095	.683
dfTEN	.138	252	.765	.291	030
dfHOS	.466	.148	.669	.023	048
dfIPS	065	.099	.606	068	.171
dfEVS	.162	.149	.005	.247	.598
dfFRU	.163	272	.465	.500	.180
dfS_M	.307	.035	204	.490	.173
dfDS14	.518	016	161	.129	.457
dfSRLE	.658	041	.122	.027	.478
dfPVS	055	.030	.045	.686	.099
dfSHAN	.843	004	.163	125	056
dfPSSS	020	167	143	676	.071
dfLE	.704	023	.084	.202	065

 Table 5. Factor analysis: Changes in psychological variables (beginning-end)

Factor loadings higher than 0.7 are marked in bold. Loadings > 0.3 < 0.7 are marked in italics.

Linear Regression Analysis

The next step was to find any interrelations between *biochemical variables determined at the final examination* and psychological variables determined in the *input* and *output* examination, respectively.

The results of factor analyses have been used as input data for linear regression analyses. This method has then been used to relate the *biological indicators determined in the final examination* to (1) the "input" psychological values, and (2) the "output" psychological values. Factor scores were calculated by the method of regression estimates.

These analyses were carried out by stepwise regression analyses, the first step including all factor scores among predictors, the next steps reducing the number of predictors by eliminating those least significant, and the final statistic set including only those with found levels of significance p < 0.10. This method could be used in this case, because there is no danger of co-linearity of predictors due to the fact that factor scores are not correlated.

Where statistically significant dependence on a factor was found, additional regression analysis was made for those variables, for which the relevant statistically significant factor had high saturation.

In such cases the stepwise method was used again, this time however starting only with the average of the variable complemented by the predictor with the highest significance (p<0.05). In the next step it was again the most significant out of the remaining ones, but with the same condition for its *p*.

Relation of Output Biological Indicators to Input Psychological Factors and Variables

Linear Regression for Variables That Have Changed

Results for total cholesterol (M = 5.09; SD = 0.63) and LDL cholesterol (M = 2.99, SD = 0.65) found during the entrance examination are shown in Table 6. The predictor of both biochemical quantities is the *general health risks* factor found at initial examination.

Linear Regression for Variables That Have Not Changed

The predictors of HDL cholesterol (M = 1.58, SD = 0.37) established during the final examination include the *general health risks* input factor (negative relation) and the input factor called "*AHA syndrome*". The *general health risks* input factor is the predictor of triglycerides (M = 1.15, SD = 0.59). The input factor called "*AHA syndrome*" is the predictor of diastolic blood pressure (M = 80.5, SD = 6.14). The results are displayed in Table 6.

Further analysis of the above results has shown that negative affectivity (ŠHAN) is a predictor of total cholesterol within the *general health risks* factor. Irritability and burnout syndrome are predictors of HDL cholesterol level (negative relationship) while hostility is a predictor of diastolic blood pressure (see Table 7).

Relations of Output Biological Indicators to Output Psychological Factors and Variables

If we relate the final biological values to the input psychological factors, then we can state that in total cholesterol no statistically significant predictor has been found. The *General Health Risks* factor (negative relation) and *Type A Behaviour* factor turned out to be statistically significant predictors for HDL (M = 1.58, SD = 0.37) – see Table 8.

Variable		В	SE	Stand. coeff. Beta	t	Signif.	95% Co interva	95% Confidence interval for B	
							Lower	Upper	
							Bound	Bound	
Total	Factor 1	0.139	0.072	0.218	1.946	0.05	-0003	0.282	
cholesterol	constant	5.090	0.071		71.619	0.0001	4.948	5.231	
LDL	Factor 1	0.123	0.074	0.189	1.674	0.09	-0.023	0.270	
cholesterol	constant	2.999	0.073		40.931	0.0001	2.853	3.145	
	Factor 1	-0.071	0.042	-0.188	-1.709	0.09	-0.154	0.012	
cholostarol	Factor 2	0.091	0.042	0.239	2.172	0.03	0.007	0.174	
cholesteror	constant	1.586	0.041		38.276	0.0001	1.503	1.668	
Trightoprides	Factor 1	0.123	0.067	0.206	1.837	0.07	-0.010	0.257	
ingrycendes	constant	1.159	0.067		17.394	0.0001	1.026	1.292	
Diastolic	Factor 2	1.399	0.686	0.228	2.039	0.04	0.032	2.765	
pressure	constant	80.577	0.682		118.209	0.0001	79.219	81.935	

Table 6. Results of linear regression for the final biological indicators: input factors 1-3

B = regression coefficient, SE = standard error.

Variable		В	SE	Stand. coeff. Beta	t	Signif.	95% Confidence interval for B	
							Lower	Upper
							Bound	Bound
Totalcholest	ŠHAN	0.013	0.006	0.262	2.368	0.020	0.002	0.024
erol	constant	4.578	0.227		20.151	0.0001	4.126	5.031
	irritability	0.016	0.005	0.332	3.053	0.003	0.006	0.026
HDL cholesterol	Burnout syndrome	-0.005	0.002	-0.297	-2.730	0.008	-0.008	-0.001
	constant	1.163	0.090		18.565.000	1.494	1.853	
Diastolic	hostility	0.128	0.056	0.252	2.269	0.026	0.016	0.240
pressure	constant	80.303	0.688		116.700	0.0001	78.933	81.674

Table 7. Linear regression for final biological values: input psychological variables

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Table 8. Re	esults of linear reg	gression for fina	al biological ind	licators: output	t factors 1-3
			a storogroup me	new or other parts	

Variable		в	SE	Stand. coeff. Beta	t	Signif.	95% Confidence interval for B	
							Lower	Upper
							Bound	Bound
	Factor 1	-0.070	0.041	-0.186	-1.703	0.093	-0.153	0.012
cholostarol	Factor 3	0.102	0.041	0.270	2.471	0.016	0.020	0.185
cholesteror	constant	1.586	0.041		38.592	0.0001	1.504	1.668
Diastolic	Factor 2	1.478	0.684	0.241	2.162	0.034	0.116	2.840
blood pressure	constant	80.577	0.679		118.589	0.0001	79.224	81.930

Diastolic blood pressure (M = 80.5, SD = 6.14) is predicated by the "AHA Syndrome" output factor. In a more detailed analysis of the above results, tension from the Bortner scale (B = 0.235, reliability interval > 0.029 < 0.440, p = 0.026) was found to be a predictor of diastolic blood pressure.

DISCUSSION

The Impact of Intervention

As far as changes in biological variables are concerned, the reduction in total cholesterol and LDL cholesterol can be seen as a very positive finding. Similarly, changes in psychological variables can be considered positive, as a number of risk characteristics have decreased while perceived social support, which is a protective factor, has increased. Examples from literature show that perceived social support is accessible to intervention (for more details, see Šolcová, Kebza, 1999).

Changes found in the type of behaviour and its components confirm the findings of many authors that claim behaviour to be relatively well accessible to psychological intervention (see for example Jenni, Wollersheim, 1979; Thoresen, Telch, Eagleston, 1981). In the case of burnout syndrome, its stability in time, which had been pointed out by A. Shirom (2005), has been confirmed. Of course we would be happy to ascribe the established positive changes to the impact of complex intervention only, but in some of them (e.g., daily or life events) this cannot be stated without doubt if we examine the context critically – the dynamics of life are influenced by a great number of variables that are impossible to control.

The factor analysis brought three meaningful factors. Comparable results obtained in its repeated implementation in the end of investigation suggest a stability of solution in two factors; the third factor has only changed slightly, as one variable has detached from it.

The relations of biological measurements determined in the final examination to the psychological variables brought some interesting original results:

The input factor of General Health Risks has proven to be an important predictor for total cholesterol (among respective variables, negative affectivity has played a role here), HDL cholesterol (both input and output factor of general health risks were predictors for HDL cholesterol in negative relation), LDL cholesterol and triglycerides. Our results indicate that the concentration of lipids and their metabolism is relatively highly sensitive to personality and psychosocial characteristics which are considered as generally threatening for health. Psychosocial affectability of lipid metabolism has only rarely been documented in literature: Knox et al. (1996) described a positive relation between hostility and triglycerides in their sample of 5115 young Americans. They also showed a relationship between plasma lipids and the social economic status represented by the achieved education level of the participant. Education has turned out to influence cholesterol level in a desirable way (a drop in total cholesterol, LDL cholesterol and triglycerides in relation to education) with the exception of Afro-American men, in whom lipid concentrations worsened with higher education. Anderson, Reid and Jennings (1992) showed in their sample of 5700 persons examined within an Australian screening cardiovascular programme that men who owned a dog or cat had significantly lower levels of cholesterol and triglycerides (and systolic blood pressure) than matched men who did not own any pets.

In women, the positive effect of owning pets on triglyceride levels (and SBP) showed in the age group above 40. Kang et al. (2004) described the impact of control over working conditions (decision latitude according to Karasek, 1979) on the total cholesterol and triglyceride levels in negative relation. Helminen et al. (1999) did not find in their sample of middle-aged men any relation between negative life events and lipids in plasma. However, positive life events were a predictor of reduction in total and LDL cholesterol. The authors arrived at the odds ratio of 5 : 2 between the drop in total and LDL cholesterol in men who mentioned positive life events versus those who mentioned no such events. Melamed (2006) dealt with the relation between life events, emotional reactivity and the level of lipids in plasma. How in plasma. He found a relation with emotional reactivity, namely a negative one with HDL and a positive one with LDL and total cholesterol/HDL ratio.

The input factor that reminded us of the *AHA Syndrome* according to Spielberger was a predictor of HDL cholesterol (with irritability having major share) and diastolic blood pressure. Closer analysis has shown that on the Bortner scale mainly hostility was responsible for this. The level of diastolic blood pressure was also predicted by the output variant of this factor (mainly through the impact of tension from the Bortner scale).

These results are in accordance with the general awareness of how type A behaviour, especially its most "toxic" components, may affect not only DBP, but in our case also the concentration of one part of lipids.

The output factor of *Type A Behaviour* was the predictor of HDL cholesterol. The fact that the total score expressing type A behaviour did not turn out to be a predictor in more variables is supported by the statements of many authors who claim that we are dealing here with a complex construct involving many aspects and layers. This is what led us, just as many other researchers, to the conclusion that it is more beneficial to work with single components.

All the above statistically significant relations illustrate well the impact of those psychological variables that are thought to represent health risks (both specific and non-specific) on the levels of all biochemical indicators used in our research. The burnout syndrome, whose relation with biological indicators was also the subject of this study, has appeared to predict HDL cholesterol (negative relation). Koertge et al. (2003) reached the same conclusion, working with a similar concept of vital exhaustion (VE, for more details about relationship to burnout syndrome and VE, see Kebza, Šolcová, 2008).

In their study, HDL cholesterol was in negative relation to VE. Shirom et al. (1997) described the relationship between burnout and total cholesterol. The separate cholesterol fractions were not investigated in this study.

It can be said that respective variables have worked as predictors less often than factors that represented several variables. This finding of ours is in accordance with the results of another study that dealt with the predictability of cardiovascular risk in healthy persons using psychological tools. It has become clear that separate single methods predict CVD risks only very roughly. On the other hand, a joint index containing results of several methods predicted CVD risk very well, especially in men over 35 years of age (Šolcová, Kebza, 2008).

As far as the limits of the study are concerned, it is clear that the results of our study may be influenced by a number of circumstances, most of which have been mentioned above: difficulties in recruiting participants in the final year, the inability to control the development of the participants' lifestyles, and possible fear on part of participants that their work perspective may be threatened in light of the established results.

A relative disadvantage was represented by the fact that the sample contained healthy persons only without obvious pathologies. Another limitation comes from the fact that women prevail in the research sample.

CONCLUSION

In conclusion we can say that the central hypothesis on the interrelation between burnout syndrome, selected psychological and social variables as well as psycho-physiological and biochemical variables within the study of CVD risk factors has partly been confirmed.

However, its validity is limited to only certain combinations of surveyed variables and influenced by the scope and characteristics of the sample of persons participating in both examinations. The possibility of reducing CVD risks by means of complex intervention has been confirmed relatively very well, though only in part.

NOTE

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Chapter 9

WORK-FAMILY INTERFACE, WORK RELATIONS AND BURNOUT IN SCHOOL TEACHERS: A STUDY ON A GROUP OF SUBJECTS FROM ITALIAN PRIMARY SCHOOLS

Pedditzi Maria Luisa *

Department of Pedagogy, Psychology and Philosophy, University of Cagliari, Cagliari, Italy

ABSTRACT

Background. Several studies suggest that teachers are affected by burnout. Recent studies show that the teacher's personal image, with respect to the work-family interface, can be a source of psycho-social stress and contribute to burnout. Other studies emphasize that satisfaction in the relationship with both students and parents is a protective factor.

Objectives. This study aims at exploring the incidence of burnout among teachers in primary schools and at describing the characteristics of the syndrome, taking into account their age, their marital status and whether they have children or not.

A further objective of this study is to identify, among the principal sources of teachers' occupational stress, those that better predict the occurrence of burnout. Among these stress predictors, we considered the work-family interface, the relationship with colleagues and the level of satisfaction in the teacher's relationship with both students and parents.

Method. 500 teachers from the cities of Turin, Rome, Bari and Cagliari completed the Maslach Burnout Inventory and an adaptation of the Organizational Stress Indicator (Cooper, Sloan & Williams, 1988). All of these teachers were employed in primary schools. The data were analysed using multiple linear regression and variance analysis.

Results. 26.8% of the teachers surveyed presented high levels of emotional exhaustion, 29.8% had the highest scores of depersonalization; 28% had a low level of personal accomplishment. 7.6% of the teachers were in burnout. This study shows that

^{*} Assistant Professor of Developmental and Educational Psychology at University of Cagliari. E-mail: pedditzi@unica.it.

teachers' age affects emotional exhaustion and personal accomplishment. The workfamily interface, the level of dissatisfaction in the relations with students and their parents, and the relationship with colleagues are all predictors of emotional exhaustion.

Conclusion. The results of this study highlight the need for burnout prevention, aimed at improving teachers' relations with colleagues, students and their parents.

Keywords: stress, burnout, teachers

1. INTRODUCTION

The literature on teachers' burnout has been examining possible determinants of the syndrome, looking closer at multiple variables (socio-demographical, organizational, relational, individual) as its main predictors. According to the three-dimensional model of burnout provided by Maslach (1982, 2003), the syndrome, characterized by emotional exhaustion, depersonalization and reduced personal accomplishment may occur in professionals working in direct contact with those people. Emotional exhaustion results in a feeling of weariness, fatigue and loss of energy due to the job itself; depersonalization is expressed through the loss of positive feelings towards the recipients, with an attitude of closure and estrangement; and reduced personal accomplishment is connected to the sense of occupational dissatisfaction and personal failure. The syndrome reveals a high psycho-social and relational aspect, and Maslach and Leiter (1997) underscore that it is comprehensible only if related to the situational sources of occupational stress and interpersonal relations in working contexts. As a matter of fact, in a further model of burnout (Leiter & Maslach, 2005), Leiter and Maslach (2005) highlight the need to extend the study of the syndrome from the individual to the whole organizing structure, identifying some areas of the working life (Leiter & Maslach, 2003) as potential sources of stress: pressure at work; limited reward; lack of social integration; no equity; conflicting values and lack of control by the worker. According to the JD-R, Job Demands-Resources model (Bakker, Ten Brummelhuis, Prins & van der Heijden, 2011; Demerouti, Bakker, Nachreiner & Schaufeli, 2001; Demerouti & Bakker, 2011; Schaufeli, Taris & Van Rhenen, 2008; Schaufeli, Bakker, 2004), burnout arises when excessive occupational demands challenge limited individual resources. The model clearly shows how these demands increase emotional exhaustion, while the occupational resources become antagonists of depersonalization and disinvestment from one's own work (Bakker, Demerouti, Taris, Schaufeli & Schreurs, 2003; Schaufeli, Taris, Van Rhenen, 2008). Further studies aimed at analysing burnout specifically in the context of helping professions have been applied to the MBI and the Maslach's model as well (Maslach, 1982, 2003), in order to compare the results with a wide international literature related to other professions. As for teacher burnout, the MBI-ES, Maslach Burnout Inventory- Educators Survey version (Sirigatti & Stefanile, 1993), allows a specific analysis of the syndrome in an educational context. Moreover, the Maslach Burnout Inventory-ES makes the analysis of teachers' burnout possible, taking into account a very important dimension such as depersonalization¹,

¹ The dimension of depersonalization in the first model (Maslach, 1992), specifically descriptive of deteriorating relations in helping professions, in its adaption to every occupational field has been remodelled into the more general dimension of "disaffection" from work. Several late studies on the dimensionality of the Maslach Burnout Inventory, in its version for school teachers, support the three factor structure of the MBI-ES

which is not only a simple disinvestment from work but also an attitude towards the recipients, i.e., towards the students, that threatens the process of teaching-learning dramatically. According to the burnout model, this syndrome is specific to helping professions and derives from a stressful occupational condition the individual has not been able or did not manage to respond to properly as a consequence of chronic occupational stress. As Maslach and Leiter (1997) will further highlight, psychological strain has an important role of mediation between the impact of the demands at work (stress) and the results connected to it. In analysing the effects of possible sources of stress in an occupational context, the descriptive model suggested by Copper and his colleagues (Cooper, Sloan & Williams, 1988; Sutherland & Cooper, 1988) is useful to analyse the stress factors related to burnout. Among the main sources of worker's stress, the model identifies: objective sources intrinsic to the work, sources related to the role of organization, career development, relations at work, structure and organizational atmosphere, and work-family interface. The workfamily interface (Cooper, Sloan & Williams, 1988; Sutherland & Cooper, 1988; Cooper & Cartwright, 1994; Hultell & Gustavsson, 2011), specifically the conflict between family and work demands (Chan, Lai, Ko & Boey, 2000; Innstrand, Langballe, Espnes, Falkum & Aasland, 2008), has been studied in connection to teachers' stress. Galinsky, Bond and Friedman (1993) show that a remarkable percentage (40%) of working parents experience some problems when combining occupational and family demands. Overtime, work span and occupational pressures are considered strong predictors of stress due to the family-work interface (Bakker & Geurts, 2004; Demerouti, Bakker & Bulters, 2004; Grzywacz & Marks, 2000; Voydanoff, 2002). A negative interference of the family-work conflict can lead to serious consequences, such as depression, psychosomatic diseases, and reduced marital satisfaction (Allen, Herst, Bruck & Sutton, 2000; Eby, Casper, Lockwood, Bordeaux & Brinley, 2005; Bakker, Ten Brummelhuis, Prins & van der Heijden, 2011).

A study on the family-work conflict conducted on a sample of teachers from different school levels (Cinamon & Rich, 2005) has highlighted a high influence of the latter, of the working experience and of the time spent at work. Teachers in higher school levels show the same peaks of family-work conflict as teachers in primary or nursery schools. As for years of experience, or seniority, on the contrary, novice teachers (with 1-5 years' experience) record higher levels of family-work conflict if compared to senior teachers; as a matter of fact, the latter show a lower conflict, probably due to increased work experience and to their children's age (Cinamon & Rich, 2005). This research, however, reveals that teachers cannot be considered as a monolithic block for the family-work conflict; there are some differences according to the importance they give to both roles (occupation and family). Teachers included in this category also get higher scores in the work-family and family-work conflict compared to colleagues who give their family and their work different levels of importance (Cinamon & Rich, 2005). Other studies tend to remind that work and family are in constant conflict and underline the possible benefits of a double role instead (for instance, Barnett & Hyde, 2001; ten Brummelhuis & Bakker, 2012). These enriching models (for instance, Barnett & Hyde, 2001; Greenhaus & Powell, 2006) provide a clearer picture of the positive link between occupational and family domains. Recent studies (Greenhaus & Powell, 2006; Wayne, Grzywacz, Carlson & Kacmar, 2007) have emphasised how increasing resources,

⁽Kokkinos, 2006; Nicotra, Pedditzi & Grassi, 2011; Pedditzi, Grassi & Nicotra, 2012) and show that the depersonalization range is essential while studying teacher burnout, particularly for psychological features that lead to cynicism and relational depersonalization (Simbula & Guglielmi, 2010).

such as skills, social support and self-confidence, can explain why the experiences in one role can improve the quality of life in another. And this to the detriment of the theories focused on the role (Pleck, 1977), according to which workers have limited resources, such as time and energy, to devote to different roles.

Ten Brummelhuis and Bakker (2012) underline that personal resources (affective, psychological, intellectual, etc.) and contextual ones (social support, autonomy, etc.) can mediate between occupational and family demands. In the case of teachers, Bakker, Demereuti, Hakanen, Xanthopoulou (2007) highlight that their resources can moderate the negative effect of stress due to students' bad behaviour and improve their professional commitment accordingly.

There are also several psycho-social factors contributing to the occurrence and development of teacher burnout (Maslach & Leiter, 1997; Santinello, 2007) involving either the personal and subjective sphere or the relational and organizational one. As for the sociodemographic variables, such as the age of occurrence, some studies on teachers show that burnout more frequently occurs during the first working years (Maslach & Leiter, 1997; Santinello, 2007), as a consequence of disillusionment; others, on the contrary, underline a higher vulnerability to burnout occurring as seniority increases, due to limited energies and resources to devote to working activities (Mearns & Cain, 2003). As for the relational variables among the sources of teacher burnout, different studies consider the lack of cooperation with the students' parents, associated with a lack of interest for their children's educational development (Skaalvik & Skaalvik, 2007); relations with problematic students and the teacher's inability to face their turbulent, hyperactive, dangerous and undisciplined behaviours; demotivation to study; scarce cooperation in the achievement of educational goals and overcrowded classrooms (Di Pietro & Rampazzo, 1997; Francescato, Putton & Capaldo, 1994; Pinelli, Pelosi & Goldoni, 1999). To this purpose, several studies concentrate on the implications that burnout can have on the educational level and on the process of school learning (Pas, Bradshaw, Hershfeldt, Leaf, 2010; Pedditzi, 2005; Spilt, Koomen & Thijs, 2011).

Even in the family context, the image the teacher has of himself tends to be affected by the family-work conflict² and the workload (often brought back home) that can be associated to other personal needs and marital conflicts. Some studies aimed at analysing the relationship between the family-work interface and burnout (Montgomery, Panagopolou & Benos, 2006) highlight that the former is able to mediate both the relationship between the emotional demands at work and emotional exhaustion, and the one between these emotional demands and depersonalization. However, a study conducted on a sample of doctors (Montgomery, Panagopolou & Benos, 2006) revealed that the family-work interface alone is not able to mediate the relationship between occupational demands and depersonalization (Montgomery, Panagopolou & Benos, 2006). In agreement with these studies on the psychological aspects of teacher burnout, a further study aims to analyse the influence that the family-work interface can have on burnout, considering the teachers' ages and the interpersonal relations in the work context. Within the latter, the relations with colleagues will be taken into account together with student and parent relations, since they represent the main source of help requests in this professional category. Therefore, the theoretical premises of this study are:

² In 2009-2010, in Italian primary schools, female teachers represented 96.1%, as opposed to 3.9% male teachers; as for lower secondary schools, female teachers were 78.1%, while male teachers 21.9% (synthetized data from MIUR, state schools in 2009-2010).

Cooper, Sloan and Williams' model of occupational stress (1988), which allows the identification of several psycho-social dimensions among the principal factors responsible for this kind of stress; the family-work interface and the interpersonal relations in the workplace; the three-dimensional model of burnout by Maslach and co-workers (Sirigatti & Stefanile, 1993), which, in the educators' version, allows the analysis of the problematic aspects in relations with students, i.e., closure, cynicism, indifference and conflicts between students and teachers. This model is being widely used in the national and international literature at the moment, focusing on alleviating professional burnout, while others mainly deal with organizational determinants. Moreover, it has proved better than later ones at a national level because it provides more opportunities to compare the data with the international literature.

2. METHOD

Objectives

This study aims at exploring the incidence of burnout among teachers from primary schools and describing the characteristics of the syndrome, taking into account the teachers' age, their marital status and whether or not they have children. A further objective is to identify among the main sources of the teachers' stress those that are better predictors of burnout. Among these, the family-work interface, relations with colleagues and the level of satisfaction in the teachers' relations with both students and parents are considered.

Procedure

500 teachers from primary schools in the cities of Turin, Rome, Bari and Cagliari have taken part in the study, filling in the questionnaire on burnout and stress sources. Schools have formally authorized the research through their headmasters, with the utmost respect for privacy. The anonymous questionnaire was individual and autonomous. Data have been processed in an aggregate form.

Measures

For the burnout assessment: the MBI–ES questionnaire, Maslach Burnout Inventory – Educators Survey (Sirigatti & Stefanile, 1993), composed of 22 items that can be evaluated according to a 6- point frequency scale (from 0 = never to 6 = every day). The MBI scales evaluate three dimensions:

- Emotional Exhaustion (EE), highlighting a chronic condition of tension, weakness and fatigue;
- Depersonalization (DP), measuring a cold and impersonal response to recipients;
- Personal Accomplishment (PA), evaluating the conditions related to one's own competence and will to succeed.

This version of MBI-ES allows a specific study on teacher burnout and is supported by several studies aimed at confirming its structure into three factors (Kokkinos, 2006; Nicotra, Pedditzi & Grassi, 2011; Pedditzi, Grassi & Nicotra, 2012). Stress due to the family-work interface and to the relations with other people has been analysed through Cooper, Sloan and Williams' questionnaire on stress sources (1988), in the Italian adaptation by Sirigatti and Stefanile (2002) and, specifically, through the FI scale, which evaluates the family-work interface (9 items) and the FR scale, which evaluates the relations with the other people (10 items). Both scales can be answered with scores from 1 to 6 (from 1 = it is not a strong source of tension to 6 = it is a source of tension). Examples of the items in the FI scale -family-work are: "bring the work back home" (item 7) and "inability to stop working when at home" (item 13). Examples of items in the FR scale - Relations with the other people are: "taking part in meetings" (item 17) and "lack of social support by colleagues" (item 18). In order to evaluate the satisfaction in the relations with students, the items of a previously adapted questionnaire on stress sources by Cooper, Sloan and Williams (1988) have been used for the context of schools (Pedditzi, 2008), aimed at measuring the level of teacher satisfaction with both students and parents relations (4 items, alpha by Cronbach= .684).

Participants

The sample includes 500 state schoolteachers³ working in primary schools. 22.2% comes from Cagliari (n=111), 26.6% from Turin (n=133), 30.4% from Rome (n=152) and 20.8% from Bari (n=104). In the whole sample, 91% of the teachers are female⁴ and 9% are male. 60.6% of the teachers are married (N=303) and 39.4% (N=197) are single. 66% of the teachers have children (N=330) and 34% do not (N=170). Among married teachers (N=303), 75.6% have children and 24.4% have none. Among unmarried teachers (N=197), 51.3% have children (N=101) and 48.7% have none (N=96). The teachers range in age from 22 to 66 years old. The teachers' average age is 43.9, with a standard deviation of 8.9. Seniority is included between 1 and 38 years (average=17.7; ds=8.9). The sample is a conventional one and has been identified on the basis of the teachers' availability to fill in the administered questionnaires.

Data Analysis

The preliminary analysis of the data has taken place, taking into account the inner coherence of the scales through the calculation of the Alpha coefficient by Cronbach. In accordance with the principal objective of the study, that is, analyzing the burnout

³ During the school year 2009/2010 primary schools recorded a female presence of 96.1% and a male one of 3.9%; in lower secondary schools the female presence was 78.1% and the male one 21.9% (MIUR, 2010). In the school year 2009/2010 the teachers' average age on the whole was closer to 50 years old. With reference to the school level, in 2009-2010 69% of the school institutions were in the primary educational level, while 31% in the secondary one (MIUR, 2010).

⁴ The distribution of the sample into genders highlights a prevalence of teachers of a female gender and mirrors the general trend of this variable in Italian schools.

characteristics in the sample of teachers from primary schools, the main parametric indexes of the EE, DP and PA scales have been calculated together with the percentages related to the three slots (low, medium and high), in line with the regulatory values suggested by the MBI test for the professional category. The cases of overt burnout, characterized by high scores of emotional exhaustion and depersonalization and, consequently, by low levels of personal accomplishment have been further considered, and its main characteristics have been described with reference to the following variables: age, marital status, presence of children and origin.

To assess the second objective, that is, to evaluate the influence of age, marital status and children on teacher burnout, two analyses of the variance have been carried out separately, on the basis of group homogeneity and numerosity. Therefore a random sample has been considered and balanced for the above categories (N=480). A first multi-way analysis of variance, with a mixed 2x3 factorial design assessing the influence of having children (yes=330; no=170) and of the teachers' age (22-36 years old=119; 37-51 years old=232; 52-66 years old=129) on emotional exhaustion, has been conducted.

Furthermore, the same multi-way design has been used to study the influence of the aforementioned independent variables on depersonalization first and on personal accomplishment later. A second level of analysis has been carried out to assess the influence of marital status (married= 303; non married=197) and age (22-36 years old=119; 37-51 years old=232; 52-66 years old=129) on emotional exhaustion and, at a later stage, on depersonalization and personal achievment. In line with the third objective of the study, among the main sources of teachers' stress (family-work interface, relations with colleagues and students), those considered as possible predictors of burnout have been analyzed using the analysis of multiple linear regression (4) (*enter* method), applied to the variables that are criteria of emotional exhaustion, depersonalization and personal achievment, considered individually (2). All the statistical analysis has been conducted with a level of significativity sig<.05.

Analysis of the Internal Consistency of the Scales

The indexes of internal consistency of the scales related to stress sources are the following:

- 1. Family-work interface (9 items): Cronbach's alpha = .637.
- 2. Relations with colleagues (10 items): Cronbach's alpha = .658.
- 3. Satisfaction in relations with both students and parents (4 items). Cronbach's alpha = .684.

The indexes of internal consistency of the scales related to burnout are the following:

- 1. Emotional Exhaustion (9 items): Cronbach's alpha = .857.
- 2. Depersonalization (5 items): Cronbach's alpha = .662.
- 3. Personal Accomplishment (8 items): Cronbach's alpha = .776.

3. RESULTS

Burnout in the General Sample (N=500)

In the total sample, the following central trend and dispersion indexes are highlighted (Table 1).

Burnout scales	Mean	S.D.
Emotional Exhaustion	19.03	11.25
Depersonalization	3.55	4.79
Personal Accomplishment	37.54	7.91

Table 1. Descriptive statistics of burnout in teachers

The average values related to the three burnout variables (emotional exhaustion, depersonalization and personal accomplishment), compared to the reference values of the Italian normative sample, correspond to the average burnout category (Sirigatti & Stefanile, 1993). 26.8% of the teachers (N=134) demonstrate a high level of emotional exhaustion; 29.8% (N=149) have a high level of depersonalization and 28% (N=140) show a low level of professional personal accomplishment (Table 2).

Table 2. Levels of emotional exhaustion, depersonalization and personal accomplishment in teachers

EE	F	%	DP	F	%	RP	F	%
Low (0-13)	175	35	Low (0-1)	171	34.2	Low (0-33)	140	28
Average (14-23)	191	38.2	Average (2-3)	180	36	Average (34-39)	201	40.2
High (24 or	134	26.8	High (4 or	149	29.8	High (40 or	159	31.8
higher)			higher)			higher)		
Total	500	100.0	Total	500	100.0	Total	500	100.0

7.6% of the primary school teachers in this study (N=40) are experiencing burnout, racking up the highest scores of emotional exhaustion and depersonalization, and concurrently the lowest scores of personal accomplishment. The analysis conducted with this subsample of teachers in burnout highlights that the age ranges from 29 to 60, with an average of 42.45 and a standard deviation of 8.10.

57.5% are married (N=23) and 42.5% are not (N=17); 60% have children (N=24) while 40% do not (N=16).

Results of the Analysis of Variance

Influence of Children and Age on Emotional Exhaustion

The analysis of variance conducted to assess the effect of variables related to "children" (yes=320; no=160) and "age" (22-36 years=119; 37-51 years=232; 52-66 years=129) on

Emotional Exhaustion shows significant results (F=2.35; df= 5; p<.05) recorded as follows (Table 3).

Age	Ν	Mean	SD	Df	F	sig
Group 1 (22-36)	119	15.93 ^a	9.34			
Group 2 (37-51)	232	19.16 ^b	10.35	2	3.89	.021
Group 3 (52-66)	129	18.16 ^{ab}	10.91			

Table 3. One-way anova: effect of age on emotional exhaustion

A main effect of the variable age on emotional exhaustion is highlighted (F=3.78; df=2; p<.05). Younger teachers, belonging to the first group (22-36 years old), present lower levels of emotional exhaustion (M=15.93; SD=9.34) compared to the teachers in the following (37-51 years old) group (M=19.16; SD=10.35). On the other hand, teachers in the third group are in an intermediate position compared to the others (M=18.16; SD=10.91). No principal effects for the "children" or interaction variables are reported.

Influence of Children or Age on Personal Accomplishment

The analysis of variance related to personal accomplishment shows significant results (F=2.29; df= 5; sig<.05) recorded as follows (Table 4).

Table 4.	One-way	anova:	effect o	of age on	personal	l accompli	shment
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Age	Ν	%	Mean	SD	df	F	Sig
Group 1 (22-36)	119	24.8	38.11 ^{ab}	7.79			
Group 2 (37-51)	232	48.3	37.11 ^a	7.50	2	4.00	.019
Group 3 (52-66)	129	26.9	39.39 ^b	7.80			

A significant effect of the independent variable "age" has been identified (F=4.00; df=2; sig<.05) on personal accomplishment. Teachers in the second age group (37 and 51 years old) report a much lower average in personal accomplishment than teachers in the third group (52-66 years old). Teachers belonging to the first group (22-36) are in an intermediate position compared to the others. No principal effects for the "children" or interaction variables are reported.

Non Significant Results

No principal or interaction effects are reported for the variable age and presence of children (F= .57; df=5; sig>.05 = n.s.) on depersonalization in the teachers considered. No principal effects of "marital status" or age are reported on emotional exhaustion (F=1.93; df= 5; p>.05, n.s.), on depersonalization (F=1.32; df= 5; p>.05, n.s.) and on personal accomplishment (F=1.73; df= 5; p>.05, n.s.).

Results of Multiple Linear Regression Analysis

Predictors of Emotional Exhaustion

The results of multiple linear regression analysis, conducted to assess whether the familywork interface, interpersonal relations and satisfaction in the relations with both students and parents are predictors of emotional exhaustion in primary school teachers are reported in the following table (Table 5).

Dimension	В	Т	Sig.
Family-work interface	.291	6.661	.000
Relations with other people	.156	3.484	.001
Relations with students and parents	247	-6.106	.000
Fit of the model	R=.513	$R^2 = .263$	R ² corrected=.258
The model	N=500	$F_{(3)} = 58.934$	Sig=.000

Table 5. Multiple Linear Regression - Criterion: Emotional Exhaustion

The three predictors considered can collectively explain the 25.8% variance, with an error probability lower than .01. The main factor that informs the variation of the analysed criterion is the family-work interface (β =0.291), followed by satisfaction in the relation with both students and parents (β = -0.247), and in the relations with other people (β = 0.156).

Predictors of Depersonalisation

The results of the multiple linear regression analysis, conducted using the three quoted predictors (family-work interface, relationship with colleagues and students) with reference to depersonalisation, are the following (Table 6).

Dimension	В	Т	Sig.
Family-work interface	.010	0.23	.819
Relation with other people	.265	5.73	.000
Relation with students and parents	307	-7.35	.000
Fit of the model	R=.465	$R^2 = .216$	R ² corrected=.212
Fit of the model	N=500	$F_{(3)} = 45.63$	Sig=.000

Table 6. Multiple Linear Regression - Criterion: Depersonalization

The predictors influencing the variations of "depersonalisation" are: satisfaction in the relation with both students and parents (β = 0.307) and satisfaction in the relations with colleagues (β =.265). The family-work interface, on the contrary, does not seem to be important.

Predictors of Personal Accomplishment

The predictors of personal accomplishment are reported in Table 7.

Dimension	В	Т	Sig.
Family-work interface	010	226	.821
Relation with other people	127	-2.738	.006
Relation with students and parents	.397	9.476	.000
Fit of the model	R=.455	$R^2 = .207$	R ² corrected=.202
	N=500	$F_{(3)} = 43.20$	Sig=.000

Table 7. Multiple Linear Regression - Criterion: Personal Accomplishment

The predictors influencing the variations of "personal accomplishment" are satisfaction in the relations with students and parents (β = 0.397) and with colleagues (β =-.127). The family-work interface, on the contrary, does not seem to be important.

4. DISCUSSION

The results of the present study confirm the presence of burnout among the primary school teachers interviewed: 7.6% of the interviewees result in an open phase (N=40) and the percentage of teachers presenting high levels of emotional exhaustion (26.8%), depersonalization (29.8%) and reduced personal accomplishment (28%) is also remarkable. As for how age influences teacher burnout, teachers belonging to the intermediate age group (37-51 years old) are mostly affected by high levels of emotional exhaustion and by lower levels of personal accomplishment. These results would be in line with the literature tending to emphasise a stronger vulnerability to burnout by those workers who, after a first phase of active professional investment, characterised by the ideal of being able to help others, later tend to burn out and experiment the highest levels of frustration and disillusionment (Santinello, 2007). Teachers in the third age group, on the contrary, despite emotional exhaustion, seem to experience higher levels of personal accomplishment, probably associated to the end of their career and approaching retirement, as well as to a wider experience in the management of the criticalities connected to the relations with school-age children (Maslach & Leiter, 1997; Santinello, 2007, Cinamon & Rich, 2005). The results of this research also highlight that having children in itself does not affect teacher burnout, either with principal effects or interactive ones. However, it should be considered that the birth-rate in Italy is at an historical low, with an average of 1.42 children per woman in 2012 (Rapporto Istat 2014) and that the teaching profession in Italy is highly feminized, probably because it allows teachers time to juggle work and family responsibilities⁵. It should be further considered that age and children are strictly connected to the possibility of having a fixed job

⁵ The working hours considered in the national collective labour contract are added to the non remunerated ones, equally necessary for teaching efficiently, that is for correcting homework, preparing lessons and for all those didactic activities involving teachers out of school, at home.

and that occasional workers in Italian schools are about 15%⁶. The literature on the topic underlines that the variable "children" can become a source of stress if the number of hours spent at work every day and the social support received are taken into account (Cinamon & Rich, 2005). As for the predictors of burnout, only relations at work and relations with both students and parents become predictors of its three dimensions, i.e., of emotional exhaustion, depersonalization and reduced personal professional achievement. The family-work interface can only affect emotional exhaustion (but not depersonalization) and reduced personal accomplishment due to burnout. This further highlights that the burnout syndrome has a relational nature and that, especially among teachers, it is associated with the typical factors of helping professions and, in particular, to dissatisfaction in the relationship with both students and parents seems to be the most significant predictor of depersonalization, that is the dimension of burnout mostly representing the teachers' attitude to closure in the educational relationship.

CONCLUSION

The results of this study, limited to the considered sample⁷, shed light on burnout in teachers from primary schools and on possible strategies to prevent it, above all considering the main sources of professional stress as a consequence of psycho-social and scholastic factors. Burnout is actually present in the teachers surveyed, and, though attested on general average levels, it requires care and monitoring in order to avoid exacerbating the situation. Several cases in the sample are at risk of depersonalization and can have a negative impact, in particular on the teacher-student relation and on the teaching-learning process (Pedditzi, 2005, Spilt, Koomen, Thijs, 2011). The initiatives to prevent the problem with the teachers surveyed require specific attention: the family-work interface can affect the teachers' level of emotional exhaustion and contribute, with the other sources of stress, to the occurrence of burnout; relations with colleagues, students and parents may have a deep impact on a very high percentage of variance in the analysis of regression models, considered both for depersonalization and personal accomplishment. This is expressed in preventing measures that tend to increase awareness and comprehension of the possible sources of stress connected to the family/work interface but also, and above all, the comprehension of how the relations in working contexts can contribute to depersonalization and to a reduced sense of personal achievement. Learning new ways of managing one's work, considering a deeper awareness of the possible resources connected to social relations in schools, can significantly contribute to prevent burnout and improve the relationship with students and colleagues. On the other hand, keeping the problems connected to the relations with both students and parents under control becomes essential not only for higher teachers' benefits, but also for the improvement of the didactic relationship and the teaching-learning process. Depersonalization can actually take the features of estrangement from a situation characterized by high anxiety and

⁶ The statistics released by the Ministry on 10th October 2011 reveal that the number of occasional workers has been consistently high for at least ten years. In 2000/2001 they were 117,084 out of a total of 815,892, equal to 14.4 per cent of the staff. In 2010 they were 14.86 percent, or 115.753 out of a total of 778.736.

⁷ The study is not representative of the Italian situation or of the whole professional category of primary school or secondary school teachers in Italy.

disappointment, leading teachers to become closed off in their relations with students, often resulting in cynicism and devaluation. The need for new psychological, pedagogical and didactic skills and tools, allowing a profitable management of one's own work at school, has already been emphasized. As a matter of fact, teachers should receive proper psychological preparation to face any problematic situation occurring in the teaching-learning relationship. The future target is to investigate other possible sources of teachers' stress, which, as emphasised by the literature, are several and diversified, taking into account their specific contexts, in order to analyse their features and understand how they can lead to burnout.

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Chapter 10

BURNOUT IN INTENSIVE CARE: What Can Account on Differences between Doctors and Nurses in the Same Settings? A Multicentre Descriptive Study

Carla Teixeira^{*1}, Orquídea Ribeiro², António M. Fonseca³ and Ana S. Carvalho⁴

¹Santo Antonio Hospital, Hospital Center of Porto, Department of Anaesthesia, Intensive Care and Emergency, Porto, Portugal Catholic University of Portugal, Porto, Portugal ²Faculty of Medicine, University of Porto, Services of Biostatistics and Medical Informatics, Porto, Portugal ³Centre for Studies in Human Development, Catholic University of Portugal, Porto, Portugal ⁴Institute of Bioethics, Catholic University of Portugal, Porto, Portugal

ABSTRACT

There is the perception that professionals working in Intensive Care Units (ICUs) are particularly exposed to stress which can lead to burnout. Previous studies have shown differences in burnout levels among nurses and physicians working in ICUs. The aim of this study is to identify and explore the differences in burnout levels between physicians and nurses working in the same Intensive Care (IC) settings in Portugal, and to hypothesize what can account on these differences. A cross-sectional study was conducted, in ten ICUs in the Region of Northern Portugal, using self-reporting questionnaires for the evaluation of the frequency and intensity of burnout syndrome: Maslach Burnout Inventory (MBI), socio-demographic, academic and professional factors, as well as work experiences. Statistical analysis was performed using SPSS ® v.18.0. From a total of 461 eligible intensive care personnel, 218 physicians and 82 nurses participated in the study; 33% of nurses and 25% of physicians exhibited high

^{*} carlatx@gmail.com

burnout levels (considering both the professionals in burnout and in high risk of burnout). Distribution of subdimensions of burnout by occupational category indicated higher levels of emotional exhaustion in nurses (p=0.019), higher depersonalization and higher personal and professional completion in physicians. Using MBI, differences were identified in burnout levels and burnout subdimensions between nurses and physicians working in Portuguese ICUs. Nurses exhibited higher levels of emotional exhaustion, while depersonalization and personal and professional achievement were higher among physicians. The factors that can account on this are both related to socio-demographic variables and work experiences as well. Strategies need to be adopted by these teams in order to prevent burnout.

LIST OF ABBREVIATIONS

ICU: Intensive Care Unit; ICU: Intensive Care Unit; ICUs: Intensive Care Units; MBI: Maslach Burnout Inventory; BOS: Burnout Syndrome; SAPS II: Simplified Acute Physiology Score II; OR: Odds Ratios; CI: Confidence Intervals; QOL: Quality of Life; EE: Emotional Exhaustion; DEP: Depersonalization; PPA: Personal and Professional Accomplishment. GEPEB: *Grupo de Estudos e Pesquisa em Estresse e Burnout* [Stress and Burnout Study Group];

ISICEM: International Symposium on Intensive Care and Emergency Medicine

INTRODUCTION

Burnout syndrome (BOS) among health professionals was first described in the 1970s by Freudenberger. Delbrouck [1] characterizes this phenomenon as "[...] a state of fatigue or frustration motivated by dedication to a cause, a lifestyle or a relationship that did not meet expectations", and corresponds to an inability to cope with emotional stress at work or an excessive expenditure of energy accompanied by a feeling of failure and exhaustion [2–4].

According to Maslach and Leitter burnout can be defined in its multidimensionality: emotional exhaustion (EE), depersonalization (DEP) and lack of personal and professional completion (PPA) [3]. It has a great impact in mental and physical health and can also generate organizational consequences such as conflicts [5].

Hospitals are stressful places of employment due to the increased complexity and demands of most job descriptions. The unpredictable changes in daily work routines, unrealistic expectations from patients and their families, and common encounters with ethical and end of life issues are some of the most stressful experiences for healthcare professionals. Intensive Care (IC) staff is repeatedly exposed to traumatic situations and demanding events, which can result in stress and burnout symptoms. In fact the provision of IC may lead to health care provider's physical, psychological and emotional exhaustion, which may develop
to burnout. Burnout is particularly frequent among doctors [6] and nurses [7] in the setting of critical care.

Since the welfare of caregivers can interfere with the quality of care and the satisfaction of patients [8, 9], caring for caregivers might be important [10].

The recent literature shows the growing interest in the matter: stress and burnout are widely studied among practitioners and nurses of different specialties [9, 11–14]; however, burnout has been only recently studied extensively in the ICU setting [6, 7]. In one multicenter French study of 2.392 nurses [7], BOS was classified as severe in 33% of participants, and predictive factors included age, organizational factors, communication problems with hierarchy (head nurse, doctors), a high number of end-of life decisions and caring for dying patients. Protective factors against BOS included participation in ICU research groups and good working relations. A similar study among doctors [6] reported a prevalence of severe BOS of 46.5%, and the predictive factors identified in this study were a heavy workload or conflicts with colleagues and/or nurses, whereas good relations with the caregiving team were a protective factor. The study by Verdon and colleagues [15] published in the Intensive Care Medicine also emphasis the significance of the burnout problem in ICU teams.

In previous studies conducted by a Portuguese research team [16] risk factors associated with burnout were identified in a sample compounded by ICU nurses and doctors. A multivariate analysis was performed in order to evaluate the independent relationship between burnout and some of these factors. Using multivariate analysis gender was identified as being a risk factor, where female status together with conflicts and withholding / withdrawing treatments increase the risk of burnout. Conversely, working for another service of the same health care institution acted as a protective factor. Nevertheless, even though age and some ICU characteristics were related to burnout in univariate analysis, the same does not apply in multivariate analysis.

Previous studies have shown differences in burnout levels among nurses and physicians. However we notice the lack of specific studies enrolling at the same time nurses and physicians from the same ICUs [6, 7].

Assuming that there are different burnout levels among physicians and nurses, and also considering that these differences affect burnout's subdimensions we hypothesized that these could be related to socio demographic factors, professional role and workplace experiences. Therefore, we performed a multicenter study in order to investigate which are the differences on burnout levels and dimensions between doctors and nurses working in the same ICUs and what can account on that.

The results of this study were partially presented at the International Symposium on Intensive Care and Emergency Medicine (ISICEM), Brussels, Belgium, March 2011 [17].

AIMS OF THE PRESENTED STUDY

The purpose of this manuscript is twofold. First it is to identify the levels of burnout of physicians and nurses working in Portuguese ICUs and the differences in burnout dimensions between the two groups. Second, it is to hypothesize which factors can account on these differences.

METHODS

A multicenter study was performed. All caregivers who agreed to participate received a questionnaire in a sealed envelope to be completed and returned anonymously to the lead investigator.

Data collection included: socio-demographic data of the study population; experiences in the workplace; Maslach Burnout Inventory - General Survey (Portuguese Version for Investigation of Fonseca, Carvalho, Campos, Vieira & Alves 2006); Classification of Benevides-Pereira [18] and of the *Grupo de Estudos e Pesquisa em Estresse e Burnout* (*GEPEB*) [Stress and Burnout Study Group] was used in order to define burnout's subdimensions levels [19].

In the descriptive analysis of the sample, summary statistics were applied as appropriate. The categorical variables were described through absolute frequencies (n) and relative (%) ones. Continuous variables were described using the median, 25th percentile and 75th percentile, since their distribution is asymmetric. A Chi-square independence test was used to examine the association between categorical variables. When the expected frequency in any cell of the contingency table analysis on the association of two categorical variables was less than 5, we used the Fisher's exact test. The Mann-Whitney or Kruskal-Wallis test was used, depending on whether the number of independent groups is two or more than 2, to test hypotheses concerning continuous variables, since their distribution is asymmetric. To determine risk factors associated with the existence of burnout, logistic regression was used to determine odds ratios (OR) and confidence intervals (CI) at 95%. A significance level of 0.05 was used for all hypothesis tests. multivariate analysis was performed to evaluate the independent relationship between burnout and some factors studied. The analysis was performed using the statistical analysis program SPSS ® v.18.0.

RESULTS

The sample of this study was recruited among 461 nurses and physicians working in 10 Northern Portuguese ICUs. 300 (65%) healthcare workers responded, being the majority nurses [218 (73%) nurses, 82 (27%) physicians].

Median age [interquartile range] was 30 [27-36] in nurses and 38 [31-48] in physicians. The median of the years of professional practice in that ICU was 4, being the interquartile range for nurses [1-13] and for physicians [3-9]. While the years of experience in IC is similar for the two professional groups, the average age and years of professional experience is higher among physicians, with statistical significance.

In terms of sociodemographic attributes there were more women between nurses than physicians. Nurses also appeared to be younger (median age of 30 years) and to have a fewer number of minor children. These differences also were statistically significant. In terms of academic characteristics of study participants the lack of postgraduate training between nurses is relevant. Shift work was considerably higher between nurses (95%) when compared with doctors (59%); nevertheless doctors worked more hours during a week (78% worked more than 40 hours per week compared to 6% of nurses) (Table 1).

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	Profession						
	Total		Phy	sicians	Nurse	es	p
	(n=3	(n=300)		(n=82-27%)		.8 – 73%)	r
1. Gender							
Female	195	(65)	43	(52)	152	(70)	0.005*
Male	105	(35)	39	(48)	66	(30)	
2. Age, med (P25-P75)	32	(28-39)	38	(31-48)	30	(27-36)	<0.001§
3. Minor children							
No	192	(64)	42	(51)	150	(69)	0.004*
Yes	107	(36)	40	(49)	67	(31)	
4. Academic Qualification							
Bachelor / Graduation	280	(94)	74	(90)	206	(95)	0.107**
Master degree / PhD	18	(6)	8	(10)	10	(5)	
5. Post-graduate training in Intensive Care							
No	215	(75)	43	(52)	172	(83)	< 0.001*
Yes	73	(25)	39	(48)	34	(17)	
6. Shift work					l		
No	45	(15)	34	(41)	11	(5)	< 0.001*
Yes	254	(85)	48	(59)	206	(95)	
7. Number hours work / week							
35 - 40 hours	224	(75)	18	(22)	206	(94)	<0,001*
>40 hours	76	(25)	64	(78)	12	(6)	
8. Years of professional practice, med (P25-P75)	8	(4-15)	13	(5-23)	8	(4-13)	<0.001§
9. Years of professional practice in that service, med (P25-P75)	4	(2-10)	4	(1-13)	4	(3-9)	0.314§

Table 1. Sociodemographic and professional characterization of physicians and nurses working in Northern Portuguese ICUs

Med-median; P-Percentil; *Independence chi-square Test; ** Fisher Exact Test; § Mann-Whitney Test.

Considering the experiences lived by nurses and physicians during their daily practice in the week before questionnaire fulfillment it is relevant to mention the following points: nurses had more clearances than physicians, the number of diseased patients was higher between doctors and there was no difference regarding the number of holydays. The existence of conflicts was significant (20%) and similar between both professional groups (20% for nurses and 22% for physicians). At last the need to make ethical decisions was higher between physicians (34%) when compared to nurses (6%) (Table 2).

As mentioned previously, burnout levels were determined through Maslach Burnout Inventory (MBI). Differences between nurses and physicians were identified in all its three components, however this only reached statistical significance in the Emotional Exhaustion dimension (p = 0.019).

Table 2. Experiences lived by physicians and nurses working in Northern Portuguese ICUs in the week before questionnaire fulfillment

	Profession						
	Tota (n=3	nl 600)	Physicians (n=82 - 27%)		Nurses (n=218 - 73%)		p
In the week before the questionnaire completion:							
Did night shifts							
No	55		20	(25)	35	(17)	0.163*
Yes	227	(80)	61	(75)	166	(83)	
Number of night shifts, med (P25-P75)	2	(1-2)	1	(0-2)	2	(1-2)	0.004§
Did extra shifts							
No	173	(63)	24	(31)	149	(76)	<0.001*
Yes	100	(37)	53	(69)	47	(24)	
Number of extra shifts, med (P25-P75)	0	(0-1)	1	(0-2)	0	(0-0)	<0.001§
Service clearance							
No	92	(33)	57	(72)	35	(17)	<0.001*
Yes	189	(67)	22	(28)	167	(83)	
Number of clearance, med (P25-P75)	1	(0-2)	0	(0-1)	1	(1-2)	<0.001§
Was on holidays							
No	248	(93)	69	(95)	179	(93)	0.787**
Yes	18	(7)	4	(5)	14	(7)	
Patients died							
No	124	(46)	26	(34)	98	(51)	0.013*
Yes	144	(54)	50	(66)	94	(49)	
Number of patients who died, med (P25-P75)	1	(0-2)	1	(0-2)	0	(0-2)	0.011§
Existence of serious conflict / discussion/disagreement with someone, n (%)							
No	215	(80)	61	(78)	154	(80)	0.711*
Yes	55	(20)	17	(22)	38	(20)	
Need to make ethical decisions, n (%)							
No	206	(87)	43	(66)	163	(94)	<0.001*
Yes	32	(13)	22	(34)	10	(6)	

* Independence chi-square Test; ** Fisher Exact Test.

Table 3. Differences in burnout between physicians and nurses working in Northern Portuguese ICUs

		High B	urnout			
	ICU Professionals Total (n=267) (%)	No (n=184-69%)	Yes (n=83-31%)	OR	IC 95%	р
Profession						
Physician	73(27)	55(30)	18(22)	1.000	-	0.164*
Nurse	194(73)	129(70)	65(78)	1.540	0.837-2.834	

OR – Univariate Odds Ratio; CI – Confidence Interval.

Med-median; P-Percentil; * Independence chi-square test ** Fisher exact test; § Mann-Whitney test.

Table 4. Burnout levels among physicians and nurses working in Norther	'n
Portuguese ICUs	

		Profession									
	Total	Total I			Physician			Nurses			
	med	(P25-	P75)	med	(P25-	P75)	med	(P25-	P75)	p§	
Maslach Burnout Inventory:	l				l						
- Emotiona Exhaustion	19	(12-	27)	17	(10-	22)	20	(12-	28)	0.019	
- Depersonalization	5	(3-	10)	6	(3-	10)	5	(3-	10)	0.229	
- Personal and Professional Achievement	34	(28-	39)	36	(31-	41)	34	(27-	38)	0.079	

Med-median; P-Percentile; § Mann-Whitney Test.

Table 5. Levels of MBI subdimensions among physicians and nurses working in Northern Portuguese ICUs

	Profession						
	Total		Physi	Physician		se	p^*
	n	(%)	n	(%)	n	(%)	
Maslach Burnout Inventory:							
- Emotional Exhaustion							
Low (<=14)	106	(38)	37	(47)	69	(34)	0.035
Medium (15 a 24)	84	(30)	24	(31)	60	(29)	
High (>=25)	92	(33)	17	(22)	75	(37)	
- Depersonalization							
Low (<=3)	104	(36)	26	(32)	78	(37)	0.680
Medium (4 a 9)	109	(37)	31	(38)	78	(37)	
High (>=10)	78	(27)	24	(30)	54	(26)	
- Personal Accomplishment							
Low (>=40)	65	(23)	23	(30)	42	(21)	0.177
Medium (33 a 39)	97	(35)	28	(36)	69	(35)	
High (<=32)	115	(42)	26	(34)	89	(45)	
-Burnout					l.		
Low Risk	104	(39)	32	(44)	72	(37)	0.556
Moderate Risk	80	(30)	23	(32)	57	(29)	
High Risk	58	(22)	13	(18)	45	(23)	
In Burnout	25	(9)	5	(7)	20	(10)	

*Independence chi-square Test.

Considering the classification of Benevides-Pereira and GEPEB [18, 19], participating physicians and nurses exhibited medium levels of burnout, sustained through medium levels in all its three subdimentions. Nevertheless, when compared with each other, nurses showed higher burnout levels than physicians, although with no statistical significance (p = 0.164) (Table 3). Distributions of burnout's subdimensions levels between physicians and nurses

were the following: emotional exhaustion was higher in nurses; depersonalization was higher in physicians; personal and professional completion was lower in nurses (Tables 4 and 5).

CONCLUSION

This study included ten ICUs within a total of 300 professionals, 73% of them being nurses. From this survey, we concluded that Northern Portuguese intensive care professionals have a medium level of burnout. Nurses are the professional group with higher emotional exhaustion and lower personal and professional accomplishment. These results are similar to those identified by Iglesias et al. [20] in a Spanish sample of 80 critical care nurses. Reader et al. [21], also mentioned the fact that professional caregivers with closer proximity to patients develop higher burnout levels.

Higher levels in emotional exhaustion among nurses when compared with physicians may be explained by some aspects, namely the higher prevalence of women and lower age between nurses, which is sustained by Embriaco et al. [6] and Michalsen et al. [22] who consider gender and age as factors that influences burnout levels. On the other hand, it is also relevant to attend to the emotional constrains and distress that may be caused by nurses' absence in decision making. Further, only 6% of participant nurses referred the need to make ethical decisions when compared to the 34% of physicians. In fact, according to Ho et al. [23], nurses are often excluded from end of life decisions, which is also mentioned by Meltzer et al. [24], who consider that this fact is associated with nurses perceptions regarding futile care affecting them emotionally and contributing to burnout. On its turn, in a study regarding nurses' involvement in ethical decision-making processes, Jensen et al. [25] concluded that, although most of the participant nurses considered that they should be involved, reality was different; in fact, in half of the situations regarding withholding or withdrawing therapy, it did not happen. It is also relevant to mention that, in the present study, the average of professional experience is higher among physicians. This aspect may also determine lower levels of EE due to the ability to cope with stressful situations regarding intensive care settings, which is also pointed by Embriaco et al. [6].

Another factor that may explain higher EE between nurses is shift work. Indeed, in the present study we identified that 95% of nurses worked by shifts compared with only 59% of the participant doctors; otherwise, physicians work more hours per week. Organizational factors, namely workload (working hours per week, number of night shifts, overtime compensation), are also emphasized by Embriaco et al. [6] as being positively related to burnout.

When considering DEP, medium levels were identified among the nurses who participated in the present study. As nurses are engaged in a caring profession, these results appear to be significant mainly due to two aspects: for one hand, nurses learn to care for other human beings which highlights the impact of DEP in the relationship established with patients and their relatives; for another hand, it is crucial that nurses learn to care for themselves at the same time they learn to care for others. This point is also emphasized by Charles [26]. Despite these medium levels of DEP, it is also relevant to note that, in the present study, nurses have lower levels in this burnout dimension when compared to physicians. This fact is possibly explained by the nature of both the professions, where

intimacy and proximity between professionals and patients is more present in nursing than in medicine learning models, whose need for clinical decision making with immediate impact on survival may influence the assumption of a more distant relationship. Moreover, the patient care orientations respectively assumed by nurses and physicians have long been recognized to be inherently different [27]. Although similar DEP levels were found in a French study regarding intensive care physicians [6], we did not find any comparative survey which allows us to sustain this possible explanation. In fact, according to Embriaco et al. [6], burnout is mainly associated to organizational factors.

Another aspect to consider from the present study is that PPA appears to be lower in nurses, which is also highlighted by Iglesias et al. [20] who point out that critical care nurses have heavy workload and limited authority which may diminish their professional satisfaction. Furthermore, Quenot [28] refers that PPA is increased through measures that help to build a meaning for work, namely through intensive communication strategies adopted by health care teams. Nurses' academic attributes, namely the lack of postgraduate training in intensive care, may also contribute to a better understanding of the lower level identified in PPA. In fact, according to Wahlin et al. [29] personal knowledge and skills contribute to nurses' empowerment in work context.

In the present study, we found that both the professional groups pointed conflicts and serious disagreements with someone in the week prior to completing the questionnaire. From a previous research, we identified that the risk of burnout increases when conflicts occur [16]. This is even greater when there is a conflict with other professionals both in nurses and physicians. Conflicts negatively impact patient safety, patient-family-centered care and team welfare and cohesion, conducting to staff burnout and increasing healthcare costs [30]. This is also sustained by Stehle [31], for whom many of the stressors identified concerned working relationships between nurses and doctors. For young Swiss physicians (residents and chief residents), the most important job expectations were good relationships with colleagues [32]. Effective team work and good leadership, management, support and supervision appear to be protective factors that need further enhancement [33]. A recent study by Merlani et al. [34], published in Am. J. Respir. Crit. Care Med. also stresses this importance of team composition. Critical care physicians and nurses have discrepant attitudes about the teamwork experience. Overall, physicians appear more satisfied with physician-nurse collaboration than nurses. Data presented by Thomas and colleagues [35] suggest this different global rating of teamwork may be attributable to several specific issues; relative to physicians, nurses reported that it is difficult to speak up, disagreements are not appropriately resolved, more input into decision-making is needed, and nurse input is not well received. Nursing approach emphasizes a more personal affiliation with patients, which often puts individual nurses in direct conflict with physicians, whose responsibilities may oblige them to assume a more emotionally neutral or technical perspective toward patients) [27]. The consequence of conflicts is stress that exceeds the nurses' psychosocial and emotional resources [36]. Despite these explanations, as mentioned above, in the present study, conflict is effectively a relevant risk factor for burnout, affecting both professional groups similarly.

This study has some limitations. First, the numerical difference between professional groups is significant which encourages us to develop further studies in order to explore related factors of burnout among physicians. Nevertheless, this difference is also illustrative of Portuguese reality considering numerical dispersion between nurses and physicians. The response rate was significant and probably representative, although we still had a rate of 35%

non-respondents. Second, we did not explore the specificities and differences considering burnout risk factors between physicians and nurses. However, a previous study has been developed in order to identify these risk factors both for these two professional groups viewed as integrated into a same multi-professional team. Furthermore, a multicenter study has been conducted, and our sample was large and representative of Portuguese ICUs. Third, we did not consider the influence of leadership among multi-professional team work, neither explored the ethical decision making process, which opens the possibility to explore this aspect in additional studies. At last, the questionnaire did not define conflicts. The not providence of this definition may have introduced some ambiguity in its understanding among participants and this may have contributed to collect data upon perceived conflicts more than real ones. Further studies can be developed in order to profound this comprehension and systematize eventual differences between different sources of conflicts as well as the involvement in ethical decision-making of both professionals.

This study highlights some differences between nurses and physicians considering burnout in ICUs. Although both professional groups showed medium levels of burnout, dissimilarities were found in its subdimensions: nurses exhibited higher levels of emotional exhaustion, with statistical relevance; despite no statistical significance, depersonalization and personal and professional achievement were higher among physicians. The factors that can account on this are both related to socio-demographic variables (such as gender, age, postgraduate training in intensive care) and work experiences as well (namely conflicts and the need to make ethical decisions).

Active preventive strategies and educational programs need to be developed, especially for nurses, in order to overcome these risk factors, to improve teamwork and capacity to manage team conflicts, and to increase professionals' empowerment and ability to cope with stressful situations.

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Chapter 11

COPING STRATEGIES AND BURNOUT: A SURVEY OF SECONDARY SCHOOL TEACHERS

Pedditzi Maria Luisa *

Department of Pedagogy, Psychology and Philosophy, University of Cagliari, Italy

ABSTRACT

Background. In a scholastic environment the educational relationship often exposes teachers to the dangers of burnout. Burnout is a defensive response to conditions of chronic or extreme stress. Various descriptive models of work-related stress indicate the relationship between the condition of stress and the adequacy of coping strategies used by workers. Recent studies indicate that the connection between defensive strategies and two types of burnout (depersonalization and reduced personal accomplishment) is stronger in secondary school teachers than in primary school teachers.

Objectives. This study aims to explore the incidence of burnout among teachers in secondary schools and describes the psycho-social sources of stress and burnout, as well as the coping strategies of teachers, taking into account the education level in Italian schools (middle school students ages 11 to 13 and high school students ages 14 to 19). A further objective of this study is to identify those principal coping strategies that can best predict the occurrence of burnout.

Method. 250 secondary school teachers completed the Maslach Burnout Inventory, the Ways of Coping Questionnaire (Folkman & Lazarus, 1988) and an adaptation to the school environment of the Organizational Stress Indicator (Cooper, Sloan & Williams, 2002). All teachers came from secondary Italian schools (middle school and high school). The data was analyzed using multiple linear regression and an analysis of variance.

Results. 8% of the secondary school teachers experienced burnout. Research shows that high school teachers have the highest levels of burnout and the lowest levels of personal accomplishment. The research data also shows the relationship between the coping strategy known as "escape/avoidance" and job burnout. The dysfunctional coping

^{*} Assistant Professor of Developmental and Educational Psychology at University of Cagliari.; via Is Mirrionis 1, 09123 Cagliari – pedditzi@unica.it

strategies (escape/avoidance, reduced problem-solving plans and little social support) are predictors of emotional exhaustion and depersonalization.

Conclusion. The results of this study highlight the connection between dysfunctional coping strategies and burnout in secondary high school teachers and confirm the need for preventative measures aimed at adaptive coping strategies.

Keywords: burnout, stress, coping, teachers

1. INTRODUCTION

Burnout is the result of stressful work conditions in which the individual did not or could not react adequately. Burnout can be caused by emotional exhaustion, job dissatisfaction and a sense of professional ineffectiveness (Maslach & Leiter 1997; Maslach 2003). Freudenberger (1983) describes a set of symptoms that consist of exhaustion, psychophysical debilitation and job dissatisfaction cause by the failure to reach one's set goals. Burnout may occur in diverse job environments (Maslach & Leiter 1997) and has been particularly studied in the context of helping professions (Maslach, 1982, Maslach, 2003). In this case job dissatisfaction that leads a professional to distance him or herself from work results in the employee shutting himself off and refusing to interact with others, while also refusing to seek help, also known as depersonalization (Maslach, 1982, Maslach, 2003). In teaching environments, the teacher's relationship with students may be put at risk, given the continuous and numerous requests for assistance made on a teacher, which he may not be able to or succeed in answering adequately. Recent research into teacher burnout shows that the phenomenon is still present among teachers and is growing at an alarming level (Farber 2000; Lodolo D'Oria, Pecori, Giraldi, Della Torre et al., 2004; Pedditzi 2005; Zurlo & Pes, 2012; Pedditzi & Nonnis, 2014). Data collected by the Milan Department of Health between January 1992 and December 2003 used to evaluate job suitability for public employees (teachers, clerical workers, health care workers and laborers) revealed that teachers run the risk of developing psychiatric diseases 3 to 4 times more than clerical workers, health care workers and laborers (Lodolo D'Oria, Pecori, Giraldi, Della Torre et al., 2004). A 2007 study conducted on a group of 476 Italian teachers (Zurlo & Pes, 2012) teaching four different grades (preschool, primary school, middle school and high school) shows that 21% of teachers had experienced physical and psychological disorders during the 12-month period preceding the survey (in particular they experienced cardiovascular, muscular-skeletal, dermatological and gastric disorders). 20.2% showed signs of depression, 19.3% signs of somatization and 17% signs of anxiety disorders. 22.7% planned on abandoning teaching careers, 3% used anti-depressants and 2% used sleeping pills.

The stress and discomfort of teachers are the result of multiple factors (social, individual and organizational) that combine to increase the divide between the relative demands of the workplace and the resources available to address them (Pedditzi & Nonnis, 2014). Lazarus and Folkman (1985) and Karasek and Theorell (1990) described the relationship between stress conditions and the adequacy of coping strategies used in the workplace. These problemsolving strategies are the result of a combination of cognitive, emotional and behavioral strategies produced by people in order to deal with stress. Folkman and Lazarus (1988) have detected eight types of strategies:

- Confrontive coping, which describes an aggressive attitude aimed at changing the situation in a hostile and risky manner;
- Distancing, which describes cognitive efforts that tend to minimize significance;
- Self-controlling, which consists in keeping under control one's own feelings and actions;
- Seeking social support, which suggests the person makes an effort to seek out information, material and emotional support.
- Accepting responsibility, when a person recognizes his or her own role in the problem and takes steps toward improving the situation.
- Escape/avoidance, when a person makes fanciful and behavioral efforts to escape or avoid the problem.
- Planful problem-solving, when a person makes a conscious effort to change a situation by taking a deliberate approach to solving particular problems;
- Positive reappraisal, which describes efforts made to nurture positive thinking by emphasizing the aspect of self-development.

Recent research has shown that in stressful situations teachers tend to use maladaptive coping strategies (Guerrero, Gomez, Moreno et al., 2011; Carson, Tsouloupas & Barber, 2012). Gana and Boblique (2000), working off the Ways of Coping Questionnaire (WCQ) by Folkman and Lazarus (1988), have identified three coping strategies for teachers based on:

- search for social support;
- coping centered on the problem;
- avoidance.

Other studies using non-specific coping scales have yielded similar results (Laugaa and Bruchon-Schweitzer, 2005). According to Guerrero, Gomez, Moreno et al. opinion (2011), the most frequent strategies used by teachers are: seeking social support, planful problem solving and positive reappraisal. They also verified that high levels of stress are connected to the escape/avoidance strategy and that teachers who are the least professionally satisfied are also the ones most "burned out". Laugaa, Rascle and Bruchon-Schweitzer (2008) have furthermore detected that "coping centered on the problem" and the "need to communicate coping" are two strategies used significantly more often by experienced teachers than by novices. Using the Lazarus and Folkman questionnaire on primary and secondary school teachers, Carson, Russell, Tsouloupas, Costas, Barber and Larissa (2012) discovered that the connection between defensive strategies and two types of burnout (depersonalization and reduced personal accomplishment) is stronger in secondary school teachers than in primary school teachers. Bearing in mind that in Italy secondary schools include both middle school (students ages 11 to 13) and high school (14 to 18), we intend to study teacher burnout in secondary school, while taking into account the difference between the two levels of education. In fact, in Italy the two levels are both legislatively 1 different, in terms of how

¹ National curricula guidelines (D.M. 254 _16 November 2012 in G.U.n. 30 _ 5 February 2013) regulate teaching and programming procedures in relation to the first cycle of education structured in two consecutive and obligatory scholastic paths: Primary School, duration 5 years; Secondary School, duration 3 years. Primary school teachers are responsible for students acquiring basic learning skills and fundamental knowledge. On the

teachers create their syllabi, as well as in the specific needs related to teaching pre-adolescent and adolescent students.

2. OBJECTIVES

The purpose of this research is to explore the effect of burnout on secondary school teachers. We intend to verify in detail if there are significant differences between middle school teachers (students age 11 to 13) and secondary, or high school, teachers (students age 14 to 18) as regards the sources of stress in the workplace, burnout and coping strategies. The second goal of this study is to identify which coping strategies used by teachers are most helpful in predicting burnout. We hypothesize that the misadaptive coping strategies (avoidance, lack of planning and problem solving) may be able to predict emotional exhaustion and depersonalization, and that the more functional strategies (problem solving and search for social support) may be able to predict professional self-actualization.

3. METHOD

250 secondary school teachers have completed the Maslach Burnout Inventory-Educators Survey (Sirigatti, Stefanile 1993), the Ways of Coping Questionnaire (Folkman & Lazarus, 1988) and an Organizational Stress Indicator (Cooper, Sloan & Williams 2002) adapted for scholastic environments (Pedditzi, Grassi & Nicotra, 2012; Nicotra, Pedditzi, Grassi, 2011). All teachers who took part in the survey are from secondary schools (middle school and high school) and are working in Italy. The survey has been legally authorized and approved by the schools' managers, and it has been conducted with the utmost respect for teacher privacy. The anonymous questionnaires were completed by teachers individually and autonomously. The data was processed in an aggregate form.

3.1. Measures

The version of the Maslach Burnout Inventory, MBI-ES² (Sirigatti, Stefanile 1993) adapted for italian people in the socio-educational field (consisting of 22 items with answers on a scale from 0-7, 0=never / 6=every day) calculates three characteristics:

other hand, secondary (middle) school teachers should mainly concentrate on their discipline to foster the development of wider, across-the-board competency, which are fundamental for students to fully realize their potential and actively participate in the social and cultural life of the country (D.M. 254_16 November 2012 in G.U. n. 30_5 February 2013). In 2010-2011 a reform to the second cycle of instruction was recommended, a measure aimed at reducing the compartmentalization of educational courses after the first half of secondary school.

² The dimension of depersonalization in the Maslach Burnout Inventory-Educators Survey-MBI-ES (Sirigatti & Stefanile, 1993), specifically descriptive of deteriorating relations in helping professions, in its adaption to every occupational field has been remodelled into the more general dimension of "disaffection" from work (Maslach & Leiter, 1997). Several late studies on the dimensionality of the Maslach Burnout Inventory, in its version for school teachers, support the three factor structure of the MBI-ES (Kokkinos, 2006; Nicotra, Pedditzi & Grassi, 2011; Pedditzi, Grassi & Nicotra, 2012) and show that the depersonalization range is

- Emotional Exhaustion (EE), which indicates chronic stress, fatigue and asthenia;
- Depersonalization (DP), which reveals an emotionally detached, formal attitude toward others;
- Personal Accomplishment (PA), which calculates the degree to which an employee is satisfied with his or her working conditions.

High scores on the Emotional Exhaustion (EE) and Depersonalization (DP) scales and low scores on the Personal Accomplishment (PA) scale demonstrate a high degree of burnout.

The questionnaire concerning Stress Indicators from Cooper, Sloan & Williams, (2002) adapted for the school environment (with a Likert scale of 7 points) calculates 6 characteristics:

- Workload, WL (7 items), calculates the individual workload with items like "Teaching requires me to do too many things and I have too little time in which to do them";
- Interpersonal Conflict, IC (7 items), calculates the level of interpersonal conflict between colleagues with items like "There are often conflicts between me and the colleagues I have to work with";
- Organizational Conflict, OC (7 items), calculates organizational conflicts within the school with items like: "I run into many didactic and/or organizational issues because of incompatible procedures";
- Personal Image, PI (7 items), calculates the teacher's perception of him or herself in relation to his/her family-work and his/her social status with statements like: " My partner has a negative view of my job"; "My professional status is my social status"; "My personal needs often clash with my profession";
- Role Image, RI (7 items), evaluates the teacher's image of his or her role with items like "I believe I am not qualified for the task I am carrying out" and "I have very little opportunity of becoming a school director";
- Role Ambiguity, RA (7 items), evaluates the ambiguity of a teacher's role with items like: "Students seem not to understand what my institutional tasks are" and "The demands made on teachers by the institution are often incoherent".

To analyze teacher coping strategies we have used an adapted version of the Coping Questionnaire by Lazarus and Folkman (1988).

We chose to evaluate 3 scales based on the coping strategies that teachers tend to use (Gana and Boblique, 2000; Laugaa and Bruchon-Schweitzer, 2005; Guerrero, Gomez, Moreno et al., 2011):

 The escape-avoidance strategy describes the imaginative and behavioral efforts to escape or avoid the problem with 8 items, such as "I generally avoided being with people";

essential while studying teacher burnout, particularly for psychological features that lead to cynicism and relational depersonalization (Simbula & Guglielmi, 2010).

- The planful problem solving strategy describes efforts aimed at intentionally changing the situation through deliberate problem-centric strategies (6 items, such as: "I made a plan of action and I followed it");
- Seeking social support that indicates efforts made to seek out material, information and emotional support (6 items, such as: "I got professional help").

3.2. Participants

250 secondary school teachers: 54.8% from middle schools (N=137) and 45.2% from high schools (N=113). 73.6% of the teachers were female (N=184), 26.4% were male (N=66). The majority of teachers were regular educators (95.2%) and 4.8% were special education assistants. 88% of teachers were full time and 12% were part-time (N=30). The longest term of service was 23 years, with a standard deviation of 8.9%. All teachers worked in schools in Sardinia (50% from Sassari and 50% from Cagliari). Sardinia was chosen as a site to conduct burnout research after the 2012 findings by MIUR (Ministry of Education, Universities and Research) on truancy, which can be considered an indicator for a decline in education standards. According to the data, 17.6% of Italian youths ages 18-24 (versus an EU average of 12.8%) have only a high school degree and are not continuing their education. The risk of attrition in schools is most prevalent in parts of Southern Italy facing economic and social crises. In Sardinia in particular school attrition has reached a rate of 25.8% and is predominant in male students. Both middle (43.7% ages 14-16) and high school (65%, 18+) students are at risk of dropping out.

The sample of teachers was based on convenience and their willingness to complete the survey questionnaires. The response rate was 64%.

3.3. Data Analysis

To analyze data we used the following statisticI methodologies:

- To identify burnout condition, we calculated the frequency of subjects with a combination of high levels of Emotional Exhaustion, Depersonalization and low scores in Personal Accomplishment;
- One-way analysis of variance to verify at three different times:
 - 1) if education level affects burnout (middle or high school);
 - 2) if education level affects stress;
 - 3) if education level affects coping strategies.
- Multiple Regression Analysis ("Enter" method) to identify the coping strategies that best predict burnout.

All the statistic analysis was conducted while bearing in mind a level of statistical significance less than 0.5.

3.4. Internal Consistency Evaluators

Below is the data relative to internal consistency of the MBI evaluators, specifically the Crobach Alpha Coefficient:

- EE- Emotional Exhaustion Scale (9 items): .885;
- DP-Depersonalization Scale (5 items): .666;
- PA- Personal Accomplishment Scale (8 items): .777.

Crobach Alpha coefficients in IFS Scale are:

- WL-Work Load Scale (8 items): 713;
- IC- Interpersonal Conflict Scale (7 items): .717;
- OC-Organizational Conflict Scale (7 items): .712;
- SI-Self Image Scale (7 items): .620;
- RI- Role Image Scale (7 items): .624;
- RA-Role Ambiguity Scale (7 items): .712.

Coping questionnaire scale coefficients:

- Escape/avoidance Scale (8 items): .720;
- Planful problem solving Scale (6 items): .716;
- Seeking social support Scale (6 items): .620.

4. RESEARCH RESULTS

4.1. Burnout Levels

Burnout condition arises when subjects experience high levels of Emotional Exhaustion and Depersonalization and low scores of Personal Accomplishment simultaneously. The standard criteria of the MBI test for burnout in Italian educators (Sirigatti, Stefanile 1993) indicate that burnout is characterized by scores of emotional exhaustion higher or equal to 24; scores of depersonalization higher or equal to 4; and scores of personal accomplishment lower or equal to 33.

Among the tested subjects, 36% of teachers had high levels of emotional exhaustion; 11.6% had maximum levels of depersonalization and 17.6% had low levels of Personal Accomplishment. 8% (N=20) of teachers satisfied all the conditions to be diagnosed with burnout (simultaneously high scores in EE and DP and low scores of PA).

4.2. Effect of Grade Level

Below are the one-way variance analysis results proving that grade level effects teacher burnout (Table 1).

Personal Accomplishment	School	Ν	Mean	SD	df	F	Sig
	Middle	137	38.44	7.66	1	9.22	.003
	High	113	35.31	8.62			

Table 1. Anova Results: School for Personal Accomplishment

F=9,219; df=1; sig< .05.

The results for personal accomplishment are significant: high school teachers have less personal and professional achievement than middle school teachers (F=9.219; df=1; sig<.05). On the other hand there appeared to be no significant differences concerning emotional exhaustion and depersonalization.

4.3. Sources of Stress

One-way Anova results, obtained in three separate sittings, relative to sources of stress for teachers and differences between middle school and high school teachers (Table 2).

Sources of stress	School	Ν	Mean	SD	df	F	Sig.
Organizational	middle	137	3.57	1.07		7.69	.006
Conflict							
	high	113	3.95	1.07	1		
Role Ambiguity	middle	137	3.30	1.04		7.31	.007
	high	113	3.66	1.050	1		
Role Image	middle	137	3.60	1.027		5.308	.022
	high	113	3.89	.951	1		

Tablet 2. Anova Results: school x sources of stress

Compared to middle school teachers (N=137), high school teachers (N=113) obtained on average higher scores for organizational conflict (M=3.95; SD=1.07), role ambiguity (M=3.66; SD=1.05) and role image (M=3.89; SD=0.95).

4.4. Coping Strategies

There are no significant differences between the coping strategies of high school and middle school teachers in problem solving (F=.917, df=1; sig >.05, n.s.), social support (F=.875, df=1; sig >.05, n.s.) and avoidance (F=.423, df=1; sig >.05, n.s.).

4.5. Burnout Predictors

Through multiple linear regression analysis we have identified those coping strategies considered the most relevant burnout predictors. Below are the predictors for emotional exhaustion (Table 3).

Criterion: EMOTIONAL EXHAUSTION			
Predictors	Beta	t	Sig
Problem solving	033	534	.594
Seeking Social Support	241	-3.636	.000
Avoidance	.174	2.663	.008
	R	R Square	Adj. R Square
	.344	.118	.108
Model's Fit	DF	F	sig
	3	11.02	.000

Table 3. Coping Strategies as Emotional Exhaustion Predictors

The factors that most inform the variation of Emotional Exhaustion criteria are avoidance (β =2.663) and a lack of seeking out social support (β = -.241), which together explain the 10.8% variance.

As far as concerns depersonalization, below are the most significant predictors among the coping strategies analyzed (Table 4).

Table 4. Coping strategies as predictors of depersonalization

Criterion: DEPERSONALIZATION			
Predictors	Beta	t	Sig
Problem solving	154	-2.41	.016
Seeking Social Support	.017	.245	.807
Avoidance	.158	2.323	.021
	R	R Square	Adj. R Square
	.213	.045	.034
Model's Fit	DF	F	sig
	3	3.88	.009

The most significant predictors of depersonalization are avoidance (β = .158) and a lack of seeking out social support (β = -.154), which together t explain the 3.4% variance.

As far as concerns Personal Accomplishment, below are the main predictors (Table 5).

Table 5. Coping strategies as predictors of Personal Accomplishment

Criterion: Personal Accomplishment			
Predictors	Beta	t	Sig
Problem Solving	.258	4.097	.000
Seeking social Support	073	-1.063	.289
Avoidance	045	668	.505
	R	R Square	Adj. R Square
Model's Fit	.258	.066	.055
	Ν	F	р
	250	5.836	.001

Problem solving planning is the most significant predictor of teachers' personal accomplishment at work (β = .258). This data alone is sufficient to explain the 5.5% variance.

5. DISCUSSION

Burnout Syndrome is present in 8% of those studied. The profiles of answers to the test, which define the conditions for risk, involve high percentages of teachers particularly concerning emotional exhaustion (36%), low personal accomplishment (17.6%) and depersonalization (11.6%). As far as the sources of organizational stress conditions are concerned, which may affect the experience of burnout, there are significant differences between middle and high school teachers. The latter seem to suffer higher levels of stress due to Role Ambiguity, role image and organizational conflict. High school teachers also have lower personal accomplishment compared to middle school teachers, which is in keeping with the literature on the subject, which has long indicated higher stress levels for this professional category (Ullrich, Lambert, McCarthy, 2012; Hall-Kenyon, Bullough, MacKay et al., 2014), in particular as it concerns their role image (Pedditzi, Nonnis, 2014). Among those full teachers surveyed, dysfunctional coping strategies can successfully predict emotional exhaustion and depersonalization. Specifically, it appears that avoidance and a lack of seeking out social support are predictors for emotional exhaustion, and avoidance, absence of planning and problem solving strategies are good predictors of depersonalization. Clearly, the coping strategy adopted by teachers can interfere with their well being relative to burnout. Running away from those problems that are the source of stress by taking the avoidance strategy may contribute to the development of emotional exhaustion, especially in the absence of social support. Avoidance also affects depersonalization, which leads teachers to distance themselves from students, not only by closing themselves off and acting disaffected, but by inciting cynicism and a feeling of being undervalued. The lack of problem solving strategies when faced with stressful situations may contribute to dissatisfaction and lack of personal achievement at work.

CONCLUSION

On the whole, the results of our study corroborate prior literature pertaining to burnout.

Earlier studies indicated 8% incidence of burnout syndrome in a sample of 8% of Italian teachers (Pedditzi, Nonnis, 2014), and showed that high school teachers suffered from more stress than middle school teachers (Ullrich, Lambert, McCarthy, 2012; Hall-Kenyon, Bullough, MacKay et al., 2014). Earlier studies also emphasized high levels of teacher discomfort compared with other public employees (Lodolo D'Oria, Pecori, Giraldi, Della Torre et al., 2004; Zurlo & Pes, 2012; Pedditzi & Nonnis, 2014). The results of this study, insofar as the sample surveyed³, help us reflect on Italian middle and high school teacher burnout and understand the proper prevention strategies, particularly important because the main sources of work-related stress find their origin in psycho-social factors.

In fact, the study indicates that the most stressful conditions facing high school teachers, as compared to middle school teachers, are: role ambiguity, role image and organizational conflict. Role ambiguity originates from the multiplicity of roles that teachers are asked to assume, many of which are incompatible, and by an increasing demand in quality and responsibilities at the scholastic level. Nowadays a teacher must instruct and educate students,

³ The study is not representative of the situation in Italy or the entire professional category in Italy.

plan lessons and syllabi, manage relationships with colleagues, school managers, parents and everyone else who comes in contact with the school. Ambiguity is caused by the large number of responsibilities a teacher must shoulder, responsibilities that are often not properly defined (Quattrin, Ciano, Saveri, 2010). Also, it is frequently impossible to evaluate whether a job was done in the best way.

Role Image concerns the teacher's self image in relation to the role he performs. It includes various emotional and cognitive states relative to his own position and what is expected of him. This may mean feeling underestimated at work, for example, or a lack of prospects to advance one's career. In the last few yeas in Italy, teacher discomfort and dissatisfaction has been linked to public opinion. In fact, despite their low wages (below international levels), they are considered privileged subjects because of their work schedule. It should be noted that, compared with the social prestige that once accompanied the profession, teachers today have less social recognition (Favretto, Comucci Tajoli, 1990). From a coping point of view, the escape/ avoidance strategy, which describes the imaginative efforts to escape or avoid a problem, is a typical reaction for subjects who feeling that their tasks (in this case, mostly the ones involving social interactions) are overwhelming in terms of available energy (emotional exhaustion condition). Also, inadequate problem solving strategies may affect depersonalization (starting with unmanageable stress). Hence, to learn planful problem solving strategies committed to making deliberate changes to a stressful situation, with a focused problem solving approach, may be successful in preventing depersonalization and fostering personal accomplishment. As for preventative measures, there has long been talk of expanding individual, social and organizational empowerment to promote a sense of competency, the search for shared solutions and social support within the scholastic institution.

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Chapter 12

ACADEMIC STRESS AND BURNOUT AMONG MEDICAL STUDENTS AT THE END OF STUDYING

Dušan V. Backović*

Institute of Hygiene and Medical Ecology, Medical Faculty, University of Belgrade, Serbia

ABSTRACT

Background: The educational process brings to medical students a considerable amount of stress that can lead to reduced academic success, professional performance, dissatisfaction and burnout. In the recent time several research findings brings the fact that studying and training as a formative period gives a significant contribution to further occurrence of burnout in medical profession.

Aim: We assessed the influences of academic stress and the adverse effects in the form of psychological distress and burnout syndrome in medical students.

Methods: This study was in the form of a voluntary anonymous questionnaire, contained: socio-demographic data, self-reported health status and influences of studying activities conducted on 380 medical students who attended the final year. Mental health status was estimated by: General Health Questionnaire – GHQ-12 and Maslach Burnout Inventory – MBI.

Results: About 50% females and one-third of male students (p=0.01) assessed their general stress level as moderate or high. Exams were cited as a highstressor in about 50% of all, frequently in female students (p<0.001). Stressful effects of communication with teaching staff was reported frequently by males (p<0.001), while contacts with patients were considered to be stressful by female students (p=0.011). The scores of GHQ-12 questionnaire were above the threshold in 54%, with values higher in females (p=0.028). High scores were found among 58% in subscale of Depersonalization, and 38.8% on a subscale of Emotional exhaustion MBI. Stressful effect of the exams, contact with patients and teaching staff correlate significantly with scores of GHQ-12 and scores of Emotional exhaustion and Depersonalization of MBI.

Conclusion: The prevalence of burnout among the medical students at the and of studying highlighted the importance of modifying the curriculum for better overcoming

^{*}Dr Subotića 8, Serbia, tel/fax: +381 11 3612762, e-mail: dusan.backovic@med.bg.ac.rs

of stressful influence medical training. Effective measures of stress reduction would be targeted to the optimization of the exams, communication improving, and the development of practical skills.

Keywords: Stress, mental health, burnout syndrome, medical students

INTRODUCTION

Several studies have shown that medical students have specificissues with mental health, which may even deteriorate during medical school (Guthrie et al., 1998; Tyssen et al., 2001; Roberts et al., 2001; Dahlin et al. 2008). Studying medicine is often associated with prolonged state of having to cope with multiple stressors: such as learning workload, lack of free time and mastering complicated medical procedures along with the simultaneous work with patients. Such a widespread presence of distress among medical students has a harmful effect on the accomplishment and professional development and may cause reduced professional interest, degradation of humanitarian attitudes and decline of empathy (Galán F et al., 2011; Moffat et al., 2004; Woloschuk et al., 2004; Hojat et al., 2004). Symptoms of anxiety and depression are much more frequent in medical student population than in agedmatched group of general population or students of other faculties (Dyrbye et al., 2006; Chandavarkar et al., 2006). One of the previous studies on mental health condition of medical students from Belgrade University showed that the total mental disorder prevalence was 16.1% during the first month after the enrollment, but two years later it increased to 17.5%, the estimated incidence rate of psychiatric diseases being 5.3% per year (Ericet al., 1988). For several decades burnout syndrome has been recognized as a measure of the extent of adverse stress reactions which leads towards detachment from the tasks performed by the employees in professions giving support to other people (Shaufeli, Maslach and Marek, 1993). The incidence burnout syndrome among practitioners in Serbia and worldwide was in the range from 25 to 76% depending on the medical specialty, and was more common in the population of young doctors (Ćurčić and Ćurčić, 2009; Lešićet al., 2009; Vičentić et al., 2010, with the highest percentage observed in younger doctors (Shanafelt 2009). Burnout is nowadays seen as a phenomenon of distress in educational process as well, and it was recently recorded in as many as 50% of medical students in the USA, with the increasing frequency throughout the studying (Dyrbye et al., 2006). In this paper we presented the assessment of academic stress influences to mental health among medical students at the final year, expressed in the form of psychological distress and burnout syndrome.

METHODS

This cross sectional study comprised all students of the final year at the Faculty of Medicine in Belgrade. Out of 500 registered students attending the final semester, 380 responded to the voluntary anonymous questionnaire (response rate 76%). The questionnaire contained: selected socio-demographic data with specific questions addressed to the effectiveness of the studies (length of study, number of passed exams and achieved grades).

Course stress questionnaire comprised various aspects of the course including: examinations, colloquia, contact with patients, relation with teaching staff, and questions regarding the general level of stress at the moment of investigation. Students were asked to note their own perception of stress on a 4-point Likert scale. The effect of distress and consequences to mental health was estimated by the 12-item General Health Questionnaire (GHQ-12), measuring: the feeling of tension, depression, inability to defend, disturbed sleep based on anxiety, lack of self-confidence and self-esteem and other symptoms of mental health disturbance, by offered four graded response, and allows a maximum score of 12. GHQ-12 questionnaire has a well established validity in young populations and student samples (Goldberg & Williams 1988; Radovanović & Erić 1983). Maslach Burnout Inventory (MBI), which is widely used as an instrument for measuring burnout with respect to the professional activity, is a questionnaire with 22 questions categorized into seven possibilities (Maslach, Jackson and Leiter 1996). For the purposes of this survey, MBI had been modified to include specific questions referring to studying-related activities. There were three subscales to measure emotional exhaustion (MBI-Ee) (the feeling of emotional drain caused by work-load), depersonalization (MBI-Dp) (the feeling of being detached from colleagues) and personal accomplishment (MBI-Pa) (the feeling of low personal competence and achievement). The total score for each scale was defined as "moderate" or "high" according to the determined average norms from the sample of American health professionals, which had been tested on the sample of health professionals from Serbia (Lešić et al., 2009; Vičentić et al.,2010; Shirom 2011)

Student t-test was applied to compare the mean values of the parameter data for the two groups, and for the non-parameter statistics we used Mann-Whitney U test and χ^2 test for continuous variables and categorical variables, respectively. The obtained data were analyzed by SPSS version 17.

RESULTS

Mean age of students presented in Table 1, ranged usually between 24-27 years with no significant difference between genders. The average length of study at the time of testing was 6.4 ± 1.7 years was uniform for both gender groups. Most of students have passed 32-39 exams at the time of testing, with uniform average grades in both gender groups (8.32 ± 0.69 in the range 6-10). State of mental health was reported as worse than before in 46.1% for both genders, while the physical health of female students was declared more often as a worse than before (53.8% vs. compared 45.2% males, p=0.262).

Approximately 50% females and one third of male students declared their own general stress level like moderate or elevated (p=0.01) (Table 2). Exams were a marked stress or in more than half of students. Colloquia were considered fairly uniform as a mild stress or (45.1% of all). Stressful effects of communication with faculty staff were assessed usually as mild. Contacts with patients was defined most frequently as an activity with no stressful effects in male students (57.5%), while females more often declare this as moderate and highly stressful (p = 0.011).

	Males	Females	Total	
(n)	(n=106)	(n=274)	(n=380)	
age	25.3 ± 1.9	25.2 ± 1.8	25.6 ± 2.2	p=0.657**
length of studying	6.5 ± 1.8	6.4 ± 1.6	6.4 ± 1.7	p=0.548**
passed exams	33.4 ± 6.6	34.2 ± 6.9	33.9 ± 6.8	p=0.229**
mean grades (6-10)	8.31 ± 0.73	8.33 ± 0.67	8.32 ± 0.69	p=0.854*
mental health				
without change	40	95	135	
	(37.7%)	(36.1%)	(36.6%)	p=0.763*
better	20	45	65	
	(18.9%)	(16.4%)	(17.1%)	
worse	46	129	175	
	(43.4%)	(47.1%)	(46.1%)	
physical health				
without change	43	99	142	
-	(40.6%)	(36.3%)	(37.4%)	p=0.262*
better	15	27	42	
	(14.2%)	(9.9%)	(11.2%)	
worse	48	147	195	
	(45.2%)	(53.8%)	(51.4%)	

Fable 1. Demographic characte	ristics, success of study	ying and self assessed	health status
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 $*\chi^2$ significance.

**t test significance.

Table 2. Perceived stressful effect of the studying activities

(n) %	Males	Females	Total	
general stress level	98	257	355	
absent	37	55	92	
	(37.8%)	(21.4%)	(25.9)	p=0.01
mild	28	75	103	
	(26.6%)	(29.2%)	(29.1%)	
moderate	21	76	97]
	(21.4%)	(29.6%)	(27.3%)	
high	12	51	63	
	(12.2%)	(19.8%)	(17.7%)	
exams	106	273	379	
absent	6	3	9	
	(5.7%)	(1.1%)	(2.4%)	p<0.001
mild	16	18	34	
	(15.1%)	(6.6%)	(8.9%)	
moderate	36	78	114	
	(34.0%)	(28.5%)	(30.0%)	
high	48	174	222	
	(45.3%)	(63.5%)	(58.4)	
colloquia	106	273	379	
absent	44	94	138	
	(41.5%)	(34.4%)	(36.4%)	p=0.498

(n) %	Males	Females	Total	
Mild	45	126	171	
	(42.5%)	(46.2%)	(45.1%)	
moderate	16	46	62	
	(15.1%)	(16.8%)	(16.4%)	
high	1	7	8	-
	(0.9%)	(2.6%)	(2.1%)	
communication with				
teaching staff	106	272	378	
absent	44	82	126	
	(41.5%)	(30.1%)	(33.3%)	
mild	37	120	157	p<0.001
	(34.9%)	(44.1%)	(41.5%)	
moderate	14	49	63	-
	(13.2%)	(18.0%)	(16.7%)	
high	11	21	32	-
	(10.4%)	(7.7%)	(8.5%)	
contact with patients	106	273	379	-
absent	61	115	176	
	(57.5%)	(42.1%)	(46.4%)	
mild	39	116	155	p=0.011
	(36.8%)	(42.5%)	(40.9%)	
moderate	6	33	39	
	(5.7%)	(12.1%)	(10.3%)	
high	0	9	9	
	(0%)	(3.3%)	(2.4%)	

*χ2 significance.

Mean value of GHQ-12 test scores presented in Table 3, was increased in 54% of responders, with the significantly higher values in female students, (the mean value of 2.54 versus 1.99 of males, p < 0.05). The scores above the threshold where present in 29% of all students, and in 25.9 % scores was high, with females more frequent in this category (28.2% vs. 19.8% males) Scores of Ee subscale of MBI, were on average 23.73 \pm 10.90, usually positioned in high values by 40.6% male and 37.1% female students, and in the remaining two thirds positioned in the category of medium and low values. Values on the subscale Dp were on the average 13.92 \pm 5.81, and usually also high in 62.2% male and 54.9% female students, and in the remaining third of both groups in the mid range. The average values of Pa score was 30.49 \pm 7.91, with lower levels in more than 50% of the students. Assessing burnout, high scores in Depersonalization scale (MBI -Dp) was present among 57% and in Emotional exhaustion scale (MBI -Ee) among 38.8% of the all respondents.

The most significant correlation with mental health problems evaluated by GHQ-12 questionnaire (Table 4) showed the self assessed general level of stress: ρ =0.386, then the stressful effect of exams: ρ =0.241, following stressful effects in contact with patients and teaching staff, while the stress effect of colloquia correlated not significantly with GHQ-12 score. Scores of Es subscale also correlated strongly with: estimated general level of stress (ρ =0.326), with the stressful effect of communication with teaching staff, particularly in males (ρ =0.400). The stress effects of examinations and colloquia and contact with patients correlates with the subscale Ee strongly. The values of subscale of depersonalization also

correlated strongly with the self assessed general level of stress and with the stress of dealing with faculty staff.

n (%)	Males (106)	Females (273)	Total (279)	
GHQ				
mean±SD	1.99 ± 2.41	2.54 ± 2.54	2.38 ±2.35	p<0.05**
low score	56 (52.8%)	115 (42.1%)	171 (45.1%)	
above threshold score	29 (27.4%)	81 (29.7%)	110 (29.0%)	
high score	21 (19.8%)	77 (28.2%)	98 (25.9%)	p=0.125
MBI- Ee	23.50 ± 10.96	23.82 ± 10.90	23.73 ± 10.90	
mean±SD				p=0.921**
low	35 (33%)	81 (29.7%)	116 (30.6%)	
moderate	28 (26.4%)	88 (32.2%)	116 (39.6%)	
high	43 (40.6%)	104 (37.1%)	147 (38.8%)	p=0.537*
MBI-Dp				
mean±SD	14.96 ± 6.02	13.64 ± 5.72	13.92 ± 5.81	p=0.549‡
low	7 (6.6%)	29 (10.6%)	36 (9.5%)	
moderate	33 (31.3%)	94 (35.5%)	127 (33.5%)	
high	66 (62.2%)	150 (54.9%)	216 (57%)	
				p=0.322*
MBI-Pa				
mean±SD	30.83 ± 8.45	30.31 ± 7.70	30.49 ± 7.91	p=0.340‡
low	54 (50.9%)	138 (50.5%)	192 (50.7%)	
moderate	32 (30.2%)	96 (35.2%)	128 (33.8%)	
high	20 (19.8%)	39 (14.3%)	59 (15.5%)	p=0.451*

Table 3. Mean	values and	distribution	of the (GHQ 12	2 and MBI	subscale scores
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‡ t test significance.

**Mann Whitney U test significance.

*χ2 significance.

Table 4. Correlations between perceived stressful effects and subscale scores inGHQ-12 and MBI

spearman's rho	GHQ	MBI- Ee	MBI-Dp	MBI-Pa
general stress level	0.386(**)	0.326(**)	0.255(**)	-0.176(**)
contact with patients	0.207(**)	0.190(**)	0.146(**)	-0.128(*)
communications with teaching staff	0.155(**)	0.248(**)	0.220(**)	-0.197(**)
exams	0.241(**)	0.247(**)	0.148(**)	-0.087
colloquia	0.064	0.250(**)	0.279(**)	-0.030

** Correlation is significant at the 0.01 level (2-tailed).

* Correlation is significant at the 0.05 level (2-tailed).

DISCUSSION

Students in the final semester of medical faculty had passed the majority (about 75%) of exams and colloquia and have already faced with all kind of preclinical and clinical activities, thus we chose this population like the representative of cumulative academic stress

exposition. The Faculty of Medicine of the BelgradeUniversity had started ten years ago with a new curriculum trying to be correspondent with other European University Schools of Medicine. As a result of academic achievement we have recorded a relatively good success in exams, and also a relatively poor state of self estimated physical and mental health. In recent studies, the most important indicator in forming students' self-rated health status were psychosomatic complaints, common in the population of medical students (Mikolajczyk et. al 2008, Obradović et al., 2009).

Like in recently founded specific tendencies of gender in health patterns, we found also some gender differences in the self perception of: psychical, physical health and stress effect of particular academic activities (Voltmer et al., 2010). About one half of females and one third of males in our studydeclared their own general stress level like moderate or high. Proved sources of academic stress include exams and element of assessments from curricula (Kipping, 2000). Examinations were most frequently perceived like a high stressor (in more than half observed students), also significantly more in females. Male students expressed stressful effects of communication with faculty staff, while females more often declare contact with patients like moderate and highly stressful. In the survey recently conducted at the Faculty of Medicine in Belgrade, interpersonal sensitivity was significantly more frequent in female than in male medical students (Obradović et al., 2009).

On applied GHQ-12 questionnaire, like a measure of distress and mental disturbance in this student sample, the mean value was somewhat greater comparing to the one noticed in populations of general practitioners and psychiatrists of Serbia $(1.37\pm2.27 \text{ and } 1.63\pm2.28)$, but lower than those among medical students from Hungary $(2.15\pm1.36; \text{ even } 76\% \text{ of them scored above the threshold})$ (Biro et al., 2010). Symptoms of anxiety and depression could be found in the population of medical students in a prevalence of 25-58% depending on the design of the study and applied method (Dunn et. al 2008). Possible high incidence of perceived psychological symptoms and self perception of low health status could be a tendency to diagnose themselves with diseases which are actually studying. The appearance of this tendency is called: 'medical school syndrome' or 'medical students' disease' (Collier, 2008).

Cut of GHQ-12 score established in Belgrade student population three decades ago (1/2, with positive predictive ratio of 40.4%) was interpreted as above threshold and high, and appeared in our study and in 47.2% of male and 57.9% female medical students (Radovanović & Erić, 1983). The high cut-off of score of 3/4, (that got a positive predictive value in 54% in a study by Gutrie published. 1998.), in our study was also called a `high score` and was present in 28.2% of female and 19.8% male medical students. Gutrie concluded that where the GHQ-12 is used as a screening with this criteria, about half of those scoring above threshold would in fact be without real psychiatric disease. Other kind of secondary screen would then have to be used to identify students with serious psychological difficulties (Gutrie et al., 1998). In the study previously conducted among medical students in Belgrade the incidence rate of psychiatric disorders was 5.3% per year, and neuroses being the most frequent diagnoses (3.5%) (Erić et al.,1988). In our study the most significant associations with mental health distress were: stressful effect of exams, effects of contacts with patients and teaching staff.

Assessing burnout syndrome among students by using the questionnaire MBI values we have found more frequent and uniform incidence of burnout comparing to recent findings from the national sample of residents from Netherlands. (Prins et al., 2010) Present values on

MBI questionnaire are also somewhat higher among medical students from USA, especially comparing Depersonalization subscales most relevant for students' clinical years (Dyurbye et al., 2006). Compared to findings for orthopedic surgeons from the University Clinical Centre, and general practitioners from primary health care centers in Belgrade, were about 70% of the physicians considering both groups had high scores of emotional exhaustion. Our medical students in final year had lower values on this subscale, but even two fold greater values in the Depersonalization subscale. Similar findings were found in psychiatrists from Belgrade (12.26±4.37 on Depersonalization subscale), that could be explained like poor personal relations in the present work or academic environment (Vićentić et al., 2010).

In present stud scores of MBI- Ee subscale had been correlated with the perceived general level of stress and stressful effects from the learning environment: communication with teaching staff, examinations and colloquia. The values of MBI -Dp besides controlling the general level of stress also correlated with stress on the exams and stress in contact with patients. Firth-Cozens found that 22% of fourth-year students had psychological symptoms both as students and as house practitioners, when they were followed up 2 years later, that opened the hypothesis that practitioner distress and burnout started as early as during the academic years (Firth-Cozens, 1987.)

The high prevalence of psychological distress among students at the end of the medical studies suggests a need to apply measures of promotion of mental health from the very beginning of the studies. Mental health problems could have a previous history before starting and during studying, and it is important to follow and recognize the critical moments in the academic process. Personality is the main intrinsic factor that predicts respectful range variance of burnout appearance among medical students. (Lue et al., 2010) Some authors advocate that personality traits of university students should be taken into account at the beginning of their academic studies aiming to screen early possible problems of mental health (Lievens et al., 2002).

The learning environment is important for the achievement and indicates that it also has a profound impact on student burnout. (Tyssen et al., 2001) In multicentric study in five medical schools in USA, on multivariate analysis: personal characteristics, life events and shared learning environment were independently related to burnout. A critical factor for burnout was found to be student's satisfaction with specific characteristics of the learning environment (OR 1.36–2.07). (Dyrbye et al., 2009)University administration should make an effort to alleviate student stress trying to improve their mental and emotional well being and adopt strategies intended to lessen potentially traumatic stressors (Collier, 2008). Unfortunately, burnout syndrome is common among medical teachers and practitioners and always make adverse effects to professional modeling of future physicians (Rose et al., 2005).

Initiatives to promote support and self-efficacy are likely to have benefits in enhancing students' well-being. Recognizing relations with faculty teaching staff like the second common academic stressor in our study, institutional efforts to build relationships between students and faculty will have crucial importance. The perception of misuse or abuse is common among medical students, especially during the "clinical" years, where clinical staff was usually defined as the perpetrators of bad verbal conduct and inappropriate allocation of tasks to students. The effect of these phenomena can severely affect the trust of students, the climate of labor and institutional loyalty (Lubitzet al., 1996; Roberts et al., 2001).

Academic institutions should also consider implementing faculty development programs to teach educators about how to optimize the learning environment. A good relationship with

teachers encourages autonomy, clarifies the role expectations and helps in students' selfdetermination (Reio et al., 2009) It was found that students' engagement and assisted learning of practical skills had a positive influence on their well being. This finding suggests students' expectations and desire to work hard in a supportive environment that promotes their professional development (Steele & Fullagar, 2009). Medical faculty should equip graduates with the skills necessary to assess personal distress that are essential to maintain perspective, professionalism, and resilience through the course of a career (Dyrbye et al. 2006.)

Exams and colloquia were the greatest stressors in the observed group of medical students. Considering this finding the whole examination process should be reevaluated. The high prevalence of burnout syndrome in medical students by the end of clinical training draws attention to the necessity for modifying the curriculum and more intense education of future doctors to be able to overcome stress caused by the contact with patients (Slavinet al., 2014). Special programs need to educate students about the variety of professional and personal stressors and how to access support systems to help students address these challenges. (Rosenzweig et al., 2003).

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Chapter 13

BURNOUT AND VOCATIONAL SATISFACTION: AN INCREMENTAL VALIDITY STUDY

Michael Galea

Faculty of Health Sciences, University of Malta, Msida, Malta

ABSTRACT

Burnout is a reality that affects all individuals, including those involved in religious pastorate (Hall, 1997). Considering its repercussions, research may help in buffering burnout's far reaching effects. This preliminary study focused on the holistic wellbeing of lay catechists in Malta, a very specific population which has not been studied as such before, in view of burnout reality. Lay catechists are committed Catholics who are non-ordained and fully committed to catechism and evangelization within their church. They normally hail from different groups, each guided by different spiritualities, within same faith. Participants (N = 217) completed measures assessing burnout, wellbeing, personality, spirituality, and vocational satisfaction. Results suggested moderately high levels of burnout, and low scores of personal accomplishment. Furthermore, results suggest that fully committed catechists may be more vulnerable to stress and burnout, than candidates. More pertinent to this study, vocational satisfaction predicted a small albeit significant of the variance of burnout even after controlling for personality and subjective well-being. Thus, the stronger the sense of call, the less likely one risks burnout. The psycho-social and spiritual implications of these results were discussed.

Keywords: Vocational satisfaction, burnout, holistic wellbeing, spirituality, lay catechists

INTRODUCTION

Burnout is a reality that affects all individuals not least those in religious pastorate (Hall, 1997). However, related studies have been almost entirely focused on ordained clergy or religious personnel committed in religious pastorate.

Results have identified several areas that risk burnout, including stress, frustration with work-load, time-constraints, and social isolation, amongst others (Warner & Carter, 1984). It is the scope of this study to further this investigation by encompassing a population never studied as such before: the wellbeing of lay catechists committed in religious pastorate in view of burnout issues.

To understand better the concept of burnout, Maslach and Leiter (1997), in their extensive research on burnout and their creation of the Maslach Burnout Inventory (MBI), explain it in terms of 3 aspects: emotional exhaustion, depersonalization, and reduction in perceived personal and professional accomplishment. Although this may not be enough, their results are definitely meaningful and noteworthy to our subject. What is clear however is that burnout negatively correlates to wellbeing, as documented in research (Laschinger & Grau, 2012; Manzano & Ayala, 2012; Charanjit, 2011; Galea, 2014 c, d).

A number of studies looked at the impact of burnout on the holistic wellbeing of diverse populations. However, no study to date has focused on lay catechists, a very restricted population. This study purposely intends to understand better this relationship.

Maslow (1971) understood self-actualization as encompassing amongst others the sense of vocation. The term 'vocation' is simply the Latin word for 'calling'. Originally, this term referred to a religious calling, whereby a person may feel called to evangelize others or even be ordained within a particular religious church or group. The word 'vocation' in this study adheres to this meaning. Individuals who are called normally abide by some spirituality in order to evangelize within their religious community. Moreover, certain religions give a formal mandate to some of their members, lay and/or ordained, after rigorous training, to partake in this evangelization.

Apostolate within the Catholic Church involves both ordained and non-ordained individuals. The latter are normally committed to particular spirituality and ways of life. Catechists are one such group. A catechist is a lay person who is authorized by his or her church to prepare others (normally youngsters) to receive sacraments. Usually a catechist has to be a confirmed communicant in good standing, who is faithful in worship and in stewardship, mature in faith, of good reputation in the congregation, and who has demonstrated the talents or gifts of teaching and discernment. Training to become a catechist depends according to the religious group one belongs to. However, such training is not as formal and strict as that of ordained clergy.

Considering that no research has been found on catechists' holistic wellbeing vis-à-vis burnout, it was the objective of this study to consider this reality from a preliminary stage. This study focused on two such particular groups, both very active in Malta. It was our target to seek the status of wellbeing in view of burnout issues among such religiously-committed individuals. Considering that related studies among ordained Catholic clergy indicated that one's vocational satisfaction does buffer the impact of burnout, it was therefore logical to investigate whether vocational satisfaction among lay and non-ordained catechists have similar effects.

Two Catholic groups in Malta, namely the Society of Christian Doctrine (SDC) and the Legion of Mary (LoM) have been targeted for this study. Both are run by lay and nonordained individuals, and both have evangelization and catechism as their main scope and focus. Individuals join such groups voluntarily. However, membership often requires a commitment process, which can take a number of years. Moreover, their particular spirituality may entail much more activities than just teaching catechism classes (Legio Mariae, 2001).

Many groups may ask members of daily rituals and prayer, each according to one's own spiritual focus. Despite differences in each's spiritual lifestyles, both groups adhere to common principles, such as: prayerful life, on-going personal religious formation, catechism and evangelization. Individual's membership normally is independent of one's employment, which usually has nothing to do with catechism. For example, one may be a nurse, teacher, carpenter or even a mechanic, and be a full member in such groups. These two groups are different from similar religious ones found elsewhere (e.g., Special Ed classes in the United States). Some groups may demand specific commitment of their members. SDC requires full members to be celibate, for example.

Vocational Satisfaction among Lay Catechists

This study looks at the holistic wellbeing and satisfaction with one's calling as a catechist. According to the Guide for Catechists (1993) of the Catholic Church, there are two types of catechists: full time and part time ones. Both have various responsibilities and challenges. The vocation of catechists is described as a vital sector for the future of mission in the world (n. 1). Catholic lay catechists are valued for the quality of information they impart, and also because their ministry is rooted in their witness in the world. Lay catechists have also an added calling, being a witness in the world, often in environments not normally entrusted in ministry to the ordained clergy (Lumen Gentium, 1964; Christifideles Laici, 1988). Thus, lay people have a unique contribution to give, particularly in their places of work and in their own homes and families, two key places where the ordained clergy may not necessarily be able to evangelize.

A downside to this reality is the fact that this population has been ignored by research. Probable reasons may include: a) the fact that lay catechists may not have a sacramental status in church, thereby being less in the limelight of church official attention, and b) their recruitment is less formal and structured, thus they may be seen as less important and/or representative of their faith community. Therefore, the resulting scarcity of empirical research on the well-being and vocational satisfaction of Catholic lay catechists. This has created a biased vacuum. Whereas ordained clergy are well researched, lay catechists are not.

To this end, a starting point in our investigation may involve a brief look at the wellbeing and burnout status of ordained clergy. Because lay catechists and ordained clergy are not the same, however, results cannot be substituted for each other.

Vocational Satisfaction among Clergy

Within the Catholic Church, all baptized individuals have a mandate to spread the good news. Ordained clergy have a more official and sacramental mandate, in virtue of their holy orders. Because of the scarce empirical research on vocational satisfaction of lay individuals committed to evangelization, this section focuses on research about ordained clergy, research that exists in abundance. Although conclusions cannot be compared to this study, as if the two groups are one and the same, however, clergy studies could guide research among lay catechists in view of the empirical vacuum that still exists.

Research among ordained clergy indicates that religious commitment and pastoral involvement significantly predicted life satisfaction, even after controlling for race and gender (Knox, S., Virginia, S., Thull, J., & Lombardo, J., 2005). Galea (2011) found that structural and administrative systems lead to a more stressful life. Problems such as low psychological maturity (Baars & Terruwe, 1972) and pastoral frustration could add up to one's burnout and stressful levels, besides a low satisfaction with one's vocation.

Pastoral fulfillment is associated with the identity of being pastoral in one's life and attitudes. Joretta (1994) explained such an identity as the ability to think theologically about the situations in which one is placed in. This may entail spiritual maturity from individuals (Froehlich et al., 2006). Other key contributing factors include: personal motivation, higher qualifications, age, social support (by peers and relatives), incorporating leisure in one's life, (Brown & Sargeant, 2007; Fife, Adegoke, McCoy & Brewer, 2011; Galea, 2009; Knox et al., 2005; Salmela-Aro and Nurmi, 2004; Tomic, Tomic & Evers, 2004; Virginia, 1998).

Wittberg (1993) found that personal dedication, investment in one's job and commitment increase job satisfaction in clergy and religious order workers. Extensive literature on job satisfaction focused mostly on ordained clergy rather than non-ordained workers. Clergy found to display more satisfaction than lay respondents.

Marshall (1994) found that satisfaction and fulfillment among ordained clergy is based on a) external manifestations (preaching and teaching); b) internal manifestations (prayer life and affirmation of God's calling); and c) social interactions and affirmation (relationship with parishioners and appreciation from them). Galea (2011), in his research among ordained clergy, also found that pastoral fulfillment normally covers two ends of the same continuum: an external domain (teaching, evangelizing, contact with others) and an internal domain (selfcare, prayerful life, own spiritual wellbeing).

Pastoral Fulfillment of Lay Catechists

Considering that research among ordained clergy indicated that religious commitment and pastoral involvement significantly predicted life satisfaction (Knox, S., Virginia, S., Thull, J., & Lombardo, J., 2005), and that pastoral fulfillment is correlated with the identity of being pastoral in life (Joretta, 1994), one may deduce that even these factors play an important role to the wellbeing and fulfillment of lay catechists. Therefore, one has to factor in such variables in investigating this new field furthermore.

One area of pastoral frustration and discomfort among lay ministers seems to result from fear of rejection and/or students' parents objections to their invitations to consider a vocation, according to a study by Nadolski (2008).

In many respects, it may be deduced that Marshall's three pillars are also consonant with lay catechists' own satisfaction and fulfillment, namely external manifestations (teaching of catechism), internal manifestations (prayerful life), and social support, especially from within their own religious group and church community.

The Personality Profile of Individuals Who Evangelize

Personality, a construct empirically thought to be robust over time, seems to influence burnout (Huebner & Mills, 1994; Tomic et al., 2004). Diener and Seligman (2002) suggested that there are many variables that correlate with happiness, including satisfying social relationships, high extraversion, low neuroticism, and relatively low levels of psychopathology and negative effect.

Recent research on intrinsic motivation has identified three key aspects of vocation or calling: personal challenge, personal engagement, and love (Amabile, Hill, Hennessey & Tighe, 1994). A movement among major religions, especially Christian, has been spreading the belief that all individuals, ordained and lay (non-ordained), have a particular calling in the plan of God. All this points at the complexity of this reality. That is, how leading a stressful life together with the demands by one's vocation could be balanced by spirituality. Although we are not talking specifically about causality, it remains to be seen how these dynamics work in reality, and what is the actual effect of each.

Personality profile studies among clergy indicated high introversion and neuroticism, amongst others (Louden & Francis, 1999; Burns, Francis, Village, & Robbins, 2013). Randall (2007) found that chronological age, not years in ministry, negatively correlated with emotional exhaustion and depersonalization subscales of burnout. Extraversion, neuroticism, and psychoticism scores are shown to be significant predictors of self-assessed burnout. It would be interesting to compare the personality profile of lay catechists also committed in religious pastorate to these clergy's results.

The current study aimed to raise more awareness about the holistic wellbeing of committed lay individuals in the Catholic Church whose main spirituality is based on evangelisation and catechesis, in view of burnout. Most understand burnout as a combination of personality and job-related factors. Lay catechists are a particular group of people who have been totally sidelined by empirical research for what may be special or unique about their vocation and ministry of evangelization.

This study examined the incremental validity of vocational satisfaction in predicting burnout among two Maltese lay groups committed to catechism and evangelization, after controlling for key variables including personality and well-being.

In particular, this study sought to investigate the following hypotheses: a) whether lay catechists suffer from burnout, and if so, to what extent; b) the degree of vocational satisfaction among this sample; c) their personality profile; d) clarifying the relationship among key variables relevant to the wellbeing of lay catechists; and e) establishing whether vocational satisfaction predicts burnout.

METHODS

Participants

Two Catholic groups (Legion of Mary and Society of Christian Doctrine) were earmarked for this study. The choice was based on feedback from the local Catholic church authorities in Malta. Leaders of the two organizations were personally contacted by the

researcher. Legion of Mary (LoM) accepted to participate without any objections. The Society of Christian Doctrine (SDC) female section accepted wholeheartedly to participate, while the male section had some reservations and were reluctant to participate in such studies. Apparently, past negative experiences had prejudiced later studies.

Item	%							
Membership type								
Full member89								
Candidate	09							
Undecided 01								
Soon to quit 01								
Commitment (years)								
0 - 5 16								
5 - 10 12								
11 - 20 18								
21 +	54							
Frequenc	y of prayer							
Never	0							
Rarely	0							
Sometimes 07								
Regularly 11								
Daily 82								
Importance of Emp	bathy in personal life							
None	16							
Neutral	23							
Always 61								
Satisfaction	as a catechist							
Always	62							
Neutral	10							
Never	28							
Satisfaction with my	organization's support							
Satisfied	60							
Neutral	18							
Unsatisfied	22							
Feeling God's presence in life								
Very often	46							
Sometimes	46							
Rarely	08							
Guided by (my)	faith's principles							
True	94							
Neutral	05							
False 01								
1 017								

Table A. Descriptive Statistics

N = 217.

The author handed packets containing the surveys and cover letter to the respective lay authorities, who in turn invited their respective members to participate. Participation was on a confidential and voluntary basis.

Overall, 217 surveys were returned. Response rates were 78% and 67% for the SDC and LoM respectively (Mean age = 34, SD = 7.9, range 18 to 55 years). SDC participants totalled to 65% of the total respondents in this study. Among SDC respondents, the majority were female which explains the point mentioned earlier. LoM participants (54% female) amounted to 35% of the total respondents.

Measurements

Burnout

The Maslach Burnout Inventory (MBI) by Maslach and Jackson (1986) is a 22-item scale measuring the affective experience of individuals. It consists of statements rated on a 7-point Likert Scale (from 'Never' to 'Every day'). The MBI has 3 subscales: emotional exhaustion (being emotionally drained by work), depersonalization (being unresponsive or impersonal towards others at work), and personal accomplishment (competency at work). Alpha coefficients for the three subscales are: Emotional Exhaustion = .70, Depersonalization = .80, and Personal Accomplishment = .75.

Wellbeing

The Subjective Well-Being Scale (SWLS) was developed by Diener, Emmons, Larsen and Griffin (1985). This 5-item scale is designed to measure global cognitive judgments of satisfaction with one's life. It is scored on a 7-point Likert scale (from 'Strongly Disagree' to 'Strongly Agree'). The alpha in this study was .75.

Personality

The Big Five Inventory (BFI) was developed by Benet-Martinez and John (1998). It consists of 44 brief personality descriptors, answered on a 5-point Likert scale (from 'Strongly Disagree' to 'Strongly Agree'). It is based on the five factors of personality, namely Neuroticism or emotional stability, Extraversion, Agreeableness, Openness To Experience, and Conscientiousness. Alpha reliabilities for these 5 factors are: .74, .75, .70, .73, .81 respectively.

Measuring Vocational Satisfaction

Although the author noted a similar scale on vocational satisfaction by Knox Virginia, Thull, & Lombardo (2005), their scale 'Vocational Satisfaction Scale' was purposely created for an ordained clergy population. No similar scale was found to be used with lay catechists. Thus, it was decided to create a preliminary scale.

A self-report inventory was created by first analysing responses from a pilot study group of 5 senior lay catechists (not included in the final study), who were asked to complete a sentence stem: '*key areas in my vocational satisfaction are* ...' After review, core themes

were identified by three independent judges, which later served as basis to the questionnaire used in this study to measure vocational satisfaction. The measure consisted of 12 questions which were forced-choice format, with responses varying on a six-point Likert scale (varying from 'Never Helpful' to 'Always Helpful'), and one open ended question, seeking respondents' suggestions and recommendations.

Key areas covered in the questionnaire included one's: a) pastoral fulfillment; b) spiritual wellbeing; and c) social support and involvement within one's organization. Examples of the items used include ('how much important is: 'the opportunity to help others?', 'feeling called for this mission?', and 'the support from other catechists?' Questions focused on respondents' engagement and commitment as catechists, and not their other employment (for which they are paid for).

Procedure

Two Maltese Catholic groups were chosen for this study. After seeking approval from the respective organizations' leaders, the author distributed the survey packets to all members during their annual meeting. Packets contained a cover letter describing informed consent issues, and the questionnaires. The author explained that participation was on a voluntary and confidential basis. No identifying information was requested throughout the questionnaire. Individuals who agreed to participate, had one week to respond. All results were then returned to the author in self-addressed envelops. Results were then converted to standardized scores and entered into a database by a research assistant using SPSS software.

RESULTS

Demographic statistics are presented in Table A. Results indicate that the majority of respondents were full members in their respective groups. More than half (54%) had been involved in their respective group for over 20 years, and a further 18% of respondents for a range between 11 and 20 years. This means that over 70% of participating catechists had a solid commitment and affiliation to catechism and to their organization.

On the spiritual aspect, the majority of subjects prayed daily and felt guided in life by their faith (82% and 94% respectively). In contrast, however, only 46% felt God's presence in life in a strongly manner.

	Low	Moderate	High
DEP	00	81	19
EEX	40	45	15
PAC	57	43	00

Table B. Burnout among Lay Catechists

DEP = Depersonalization; EEX = Emotional Exhaustion; PAC = Personal Accomplishment.

Of importance to this study is that just 62% of respondents felt satisfied as lay catechists while 28% did not. Interestingly, 22% felt not satisfied with the social support given within one's organization. This may further enlighted the satisfaction with one's vocation as catechists by respondents, considering results found elsewhere (Galea, 2011; Marshall, 1994). Those studies have highlighted the importance of social support within one's group or organization as key in achieving fulfillment in one's vocation.

Another interesting issue is the question regarding one's empathy and sensitivity towards suffering around, in which 61% felt empathic, while 16% did not. Empathy may include physically and/or morally assisting others, which may require moral stamina and physical energy, traits and talents not possessed by all. Empathy may also involve other ways of assisting others in need. The issue surrounding empathy is crucial where vocational satisfaction is concerned, and therefore could have required a more exhaustive scale to measure it, than just one item as used in this study.

Lay catechists in Malta have a full time employment, which normally is unrelated to their vocational commitments. That is a paid job and normally their main income that sustains their upkeep in life. Lay catechists' vocational commitment is usually done during their free time, including evenings and weekends. Vocational commitment is on a voluntary basis, and no stipends or wages are earned.

It must be clarified that burnout in this study is measuring the impact of one's whole life on their wellbeing, and not just one's vocation and commitment as a catechist. Table B shows burnout levels in this study.

Table B shows this study's scores on the burnout scale. The majority of respondents declared moderate to high feelings of depersonalization in life (81% and 19% respectively, M = 9.85, SD = 2.66). Depersonalization, an indifferent attitude towards others, is the opposite of empathy. However, 61% scored high on empathy (Table A).

Burnout is a complex reality and is related to the whole of life but more specifically to work. It does not respect one's religious boundaries or pastoral fulfillment. Burnout can be a predictor or an outcome variable. It can predict negative wellbeing, but can also result from mistaken decisions in life.

The resulting discrepancy (between respondents' depersonalization versus their empathy) could be more complex than one may think. A person may feel depersonalized due to work pressures, and still have empathic attitude in life as motivated by his upbringing or religious commitment. One may feel stressed out by one's employment, but not by their vocational commitment, or vice-versa, or even by both.

What is clear however is that depersonalized respondents also indicated low personal accomplishent (57%). Respondents who felt less empathic at work scored lower on accomplishment. This may indicate the correlation of one's sensitivity towards others to one's fulfillment at work, so relevant for lay catechists. To support this, empathy positively correlated with personal accomplishment (r(215) = .29, p<.001).

Another component showing burnout among this population is emotional exhaustion. This domain relates to feeling emotionally drained by work. More than half of subjects scored in the moderate to high ranges (45% to 15% respectively, M = 19.70, SD = 6.15). To further confirm this scenario is the respondents' results on personal accomplishment, where 57% scored low.

	С	Ν	А	E	0	EEX	PAC	DEP	VSS	WB	SAT	ID	AGE	PRAY	EMP	SOC	PRES	PRIN
С	1.00																	
Ν	.35***	1.00																
А	.32**	.19	1.00															
E	.34**	.25*	.45*	1.00														
0	.44***	.24*	.32**	.32**	1.00													
EEX	.35	.27*	03	12	09	1.00												
PAC	.32**	.24*	.19	.05	.27*	.08	1.00											
DEP	00	.20	14	18	11	.70**	11	1.00										
VSS	09	05	09	24*	18	.11	11	.05	1.00									
WB	.12	13	02	.08	.06	38**	.19	36**	30*	1.00								
SAT	09	05	09	24*	18	.11	11	.05	1.00****	30***	1.00							
ID	01	.03	09	05	.02	.26*	08	.24*	01	28*	01	1.00						
AGE	12	.03	.13	03	17	.14	18	.15	.03	05	.03	47**	1.00					
PRAY	.19	02	.07	.04	12	.14	.18	07	.11	.15	.11	02	.09	1.00				
EMP	.11	.01	.07	.09	.23	03	.29**	14	.11	.13	.11	15	04	.36**	1.00			
SOC	08	.09	.17	.05	01	.05	09	.09	.32**	16	.32**	.08	02	00	01	1.00		
PRES	05	.05	.06	08	.17	08	12	.17	.35**	41**	.35**	.09	12	18	.01	.26*	1.00	
PRIN	.03	.01	01	.05	.11	09	.09	.06	09	06	09	.15	06	38**	27*	.17	.13	1.00

Table C. Correlations among key Study Variables

N = 217. *p<.05; **p<.01; ***p<.001. All two-tailed tests. Note: C = Conscientiousness, N = Neuroticism (Inverted), A = Agreeableness, E = Extraversion, O = Openness, EEX = Emotional Exhaustion, PAC = Personal Accomplishment, DEP = Depersonalization, VSS = Vocational Satisfaction, WB = Wellbeing, SAT = Satisfaction as a catechist, ID = Candidacy type, AGE = Years with organization , PRAY = Frequency of prayer, EMP = Empathy, SOC = Social support (within organization), PRES = God's presence in my life, PRIN = Religious Principles in my life.

Step	Variable	R ²	ΔR^2	F Change
1	PERS	.12	.12	41.04***
2	SWLS	.33	.22	19.73**
3	VSS	.35	.02	6.84**

Table D. Predicting Burnout

N = 217. Note: PERS = Big Five Inventory (Personality), SWLS = Subjective Well-being, VSS = Vocational Satisfaction Scale.

Although this study does not control for the potential inter-related dynamics affecting burnout specifically, results point at the fact that lay catechists do score moderate to high on all burnout domains. Whether this relates mostly to one's respective employment, life in general, and/or vocational commitment, is yet to be investigated.

In noting the pearson r correlation matrix among key variables (Table C), wellbeing correlated positively with vocational satisfaction (r(215) = .30, p<.01), and with personal accomplishment, as expected. Thus, the more a person is satisfied with own vocation, the better s/he feels about one's own health. As expected, wellbeing negatively correlated with burnout, more specifically with emotional exhaustion (r(215) = -.38, p<.01) and depersonalization (r(215) = -.36, p<.01). Vocational satisfaction correlated negatively with burnout scales, especially emotional exhaustion (r(215) = -.11, p<.05).

Heavy work-load but limited attention to human needs may further one's stress. This in turn reduces one's energy and enthusiasm towards one's own vocation (Galea, 2011). One may query how much up-dated traditional Catholic lay groups are being kept vis-à-vis modern life demands. This study's participants come from groups which have been founded well over 50 years ago, where social conditions and religious needs were quite different from those today.

Empathy towards suffering correlated positively with personal accomplishment (r(215) = .29, p<.01), and with prayer frequency (r(215) = .36, p<.01). Lay catechists who feel competent at their job, and effective in their work, are more likely to feel empathic to suffering around them, than those who do not. They are also more prone to pray and feel a need to relate to God, than those who do not.

It is noteworthy that full membership correlated positively with emotional exhaustion (r(215) = .26, p<.05) and depersonalization (r(215) = .24, p<.05). Considering that full membership is positively correlated with age of subjects, it may indicate accumulated stress earned through life's multiple experience.

How does vocational satisfaction relate to personality, according to results from this study? It seems that respondents who score high on vocational satisfaction, score low on extraversion (r(215) = -.24, p<.04). Thus, satisfied catechists (with their vocation and/or life in general) are more likely to be introverted. This result is consistent with related studies among Catholic clergy (Louden & Francis, 1999; Burns et al., 2013).

The next question deals on what predicts burnout among lay catechists. Subjective wellbeing predicts emotional exhaustion (r(215) = -.38, p<.01) and depersonalization (r(215) = -.36, p<.01). Having been a fully committed member seem to also predict emotional exhaustion (r(215) = .26, p<.05) and depersonalization (r(215) = .24, p<.05). On the other hand, feeling and seeing oneself as empathic predicts personal accomplishment (r(215) = .29, p<.01).

Vocational satisfaction was found to be predicted by wellbeing (r(215) = .30, p<.01), support by one's organization (r(215) = .32, p<.01), and by feeling God's presence in one's life (r(215) = .35, p<.01). Feeling God's presence correlated with social support within one's organization (r(215) = .30, p<.01). Subjective wellbeing was predicted by one's risks for burnout and vocational satisfaction (r(215) = .30, p<.01).

Conscientiousness predicted personal accomplishment (r(215) = .32, p<.01), negative affect predicted emotional exhaustion (r(215) = .27, p<.05) and personal accomplishment (r(215) = .24, p<.05), while openness to experience predicted personal accomplishment (r(215) = .27, p<.05). In this regression, neuroticism significantly predicted burnout (β .314, t = 2.610, p<.011).

Predicting Burnout

It was hypothesized that vocational satisfaction would have unique variance in predicting burnout, over and above the contribution of personality and subjective wellbeing. To determine this possibility, a number of stepwise regressions were performed using SPSS to help clarify the incremental validity of key variables, as shown in Table D. Personality predicted 12% of burnout. Subjective wellbeing furthered this prediction by 22% over and above the contribution of the five factor model of personality. It is only natural that wellbeing and burnout have close affinity, as they influence each other, and can at times be even interdependent.

Of particular interest to this study is the incremental validity of vocational satisfaction. Vocational satisfaction predicted 2% of the variance of burnout even after partialling out the contribution of personality and subjective well-being.

Thus, the stronger the sense of call, the less likely their burnout levels are to be. Both personality and well-being are considered to be key variables in one's psycho-social health status.

This result is very important in that it points and highlights the value and key contribution that vocational satisfaction has on lay catechists' psycho-emotional balance against negative life events and conditions, such as burnout.

DISCUSSION

This was a preliminary study focusing on the holistic wellbeing of a population not studied as such before Maltese Catholic lay catechists. Most respondents have been candidates with their respective organization between 11-20 years, thus indicating that this sample was composed mostly of mature individuals. This study investigated lay catechists' wellbeing status, vis-a-vis potential burnout status emanating from their respective employments, their vocational calling as catechists, and life in general. Respondents were employed in jobs unrelated to their vocational commitment.

Participants' responses in this study yielded stress and high burnout levels, thus confirming the first hypothesis. In particular, all respondents felt moderate to high

depersonalization, whereas 60% scored moderate to high emotionally exhausted. More than half of respondents scored low on personal accomplishment.

This study's results indicate a worrying reality whereby lay catechists risk a substantial degree of burnout and stress levels, definitely challenging to their holistic health. Empirical research have consistently correlated high burnout with low levels of wellbeing.

Because 89% of respondents were full members of their respective religious group, and 54% had been committed (as catechists) for over 20 years, it is reasonable to point out that subjective wellbeing was mostly predicted by these factors. Full membership correlated positively with emotional exhaustion and depersonalization. Age and experience could easily add to one's accumulated stress.

The second hypothesis was also confirmed whereby the degree of vocational satisfaction was found to be above average (62%). This is coherent to the result that 61% felt empathic. Furthermore, lay catechists reported a healthy contact with God, indicated by a healthy prayerful life, feeling God's presence in life, being guided by their faith, and finally, feeling satisfied with one's group social support.

Results suggest that catechists' personality profile is generally high on emotional stability and openness to experience, and low on extraversion. A catechist personality profile may thus be described as a person who is mostly high on introversion, who is emotionally stable and creative in their pursuits.

To further clarify the dynamics of correlated variables, it was suggested that the more one is satisfied with own vocation, the better they feel about own health. Respondents scored moderate to high on all burnout domains. Empathy positively correlated with pesonal accomplishment. Depersonalized respondents indicated low personal accomplishment. As expected, accumulated stress correlated with life's varied experiences. Finally, respondents who scored high on vocational satisfaction are more likely to be introverted.

The fifth hypothesis was also supported. Results clearly show that vocational satisfaction does uniquely contribute to lowering burnout. This was achieved when controlling for personality and wellbeing, two factors commonly linked to burnout. The significant component of vocational satisfaction involved pastoral fulfillment, spiritual wellbeing, and social support within one's (religious) group. It would seem that vocational satisfaction does indeed tell us something about burnout among lay catechists. Poorer commitment within one's religious group seems to risk more burnout.

Such findings are consistent with studies elsewhere. Golden, Piedmont, Ciarrocchi and Rodgerson (2004) also found a small but significant contribution of one's affiliation to spirituality and religious involvement, in predicting burnout.

Consonant with Maslow's study (1971), lay catechists who are more self-actualized, have more a sense of vocation. On the other hand, those who are more vulnerable to burnout at work, are less self-actualized and have less sense of calling in life. In many respects, high burnout will tarnish the intrinsic motivation in life, which empirically is translated into three core aspects of any religious vocation: challenge, personal engagement, and love (Ammabile, Hill, Hennessey, & Tighe, 1994). Therefore, the next step from this study is to find concrete ways to maintain this healthy balance: positive vocational satisfaction which entails holistic well-being for the committed individual.

Some concluding points are in place. First, these results were found even after partialing out personality and wellbeing. Thus the results reflect the true contribution of vocational satisfaction. Second, it is very interesting that the five factor model of personality contributed

just 12% of the variance of the composite burnout score. To consider the unique variance by vocational satisfaction in this study over that produced by personality and subjective wellbeing, albeit small is still significant. Finally, the scope of multiple regression analysis is to sift as it were through any relevant variables and seek their unique contribution.

Limitations

This study is correlational in nature and therefore no causality can be deducted from the results. Secondly, a study on vocational satisfaction would have greatly been enriched by a robust and empirical measure on empathy, rather than by a 1-item measure. Finally, the construct of burnout as measured here relates to one's employment but does not rule out other factors. Considering that this study focused on individuals who had a salaried employment and a committed vocation as catechists, results did not specify exactly as to which area contributed mostly to burnout. On a different perspective, this study could have been enhanced if the work environment variable was indeed included among key variables. On a positive note, it is commendable to note that this preliminary study focused on a population that has not as yet been studied before. Hopefully, other related studies will build on the present results.

Implications

Three things emerge from these results. First, it is clear that lay catechists do experience a moderate to high degree of burnout. Burnout is known empirically not only to have an adverse effect to one's wellbeing but also that it affects those around the person concerned, particularly if they are dependants. Second, personality profile of lay catechists depicted as high on introversion converge with related research about clergy (Burns et al., 2013). Finally, vocational satisfaction does have a significant bearing on the holistic wellbeing of catechists, particularly on the presence and degree of burnout. The more satisfied a catechist is with own vocation and calling, the less likely one risks burnout problems.

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Chapter 14

PREVENTING BURNOUT IN UNDERGRADUATE AND POSTGRADUATE STUDENTS STUDYING MEDICINE

Fiona Moir¹, Mataroria Lyndon^{1,3}, Marcus A. Henning¹, Grace Wang², Jill Yielder¹ and Andrew Hill^{1,3}

¹University of Auckland, New Zealand ²Auckland University of Technology, New Zealand ³Ko Awatea, Counties Manukau District Health Board, New Zealand

ABSTRACT

In this chapter, the definition and measurement of burnout will be discussed, followed by an exploration of the factors which contribute to burnout in medical trainees along with the likely consequences. Many interventions have been used to prevent and manage burnout, including building resilience in individuals and within organizations. The effectiveness of some of these interventions will be reviewed, with a focus on educational management strategies. The chapter concludes with examples of specific interventions which are being used to prevent and manage burnout in New Zealand medical trainees.

In the chapter, the term 'medical trainees' will be used to refer to both undergraduates (medical students) and postgraduates (junior doctors in a training programme).

INTRODUCTION

Patient safety has always been a major focus of health care policy worldwide, and good mental health and well-being of medical professionals is critical for the quality and safety of health care services. Medical school training is intended to prepare graduates to care for the sick and promote health, as well as assisting them to develop the personal and professional competencies of a doctor. Research, therefore, should aim to identify the factors which

contribute to burnout in medical trainees, in order to provide an evidence base for the development of interventions.

The consequences of burnout have been well addressed in the literature. It has been suggested that burnout can lead to poor quality work, job turnover, and personal and family difficulties (Maslach, Schaufeli et al. 2001). In the medical setting, burnout among doctors has been shown to be positively related to medical errors (Shapiro, Shapiro et al. 2000). An anonymous, cross-sectional survey conducted with members of the American College of Surgeons in 2008 showed that 700 out of 7905 (8.9%) participating surgeons made a major medical error in the last 3 months and those errors had a large and significant adverse relationship with burnout (Shanafelt, Balch et al. 2010). It has been suggested that doctors who experience burnout are more likely to lose enthusiasm for work, treat patients as objects of care and have a sense that work is no longer meaningful (Shapiro, Shapiro et al. 2000). As a result, the quality of care they provide to patients is adversely affected and their chances of making medical errors are increased.

The term 'burnout' was first used by Freudenberger (1974) to describe the gradual emotional depletion, loss of motivation, and reduced commitment experienced by human services workers chronically exposed to the distress of their clients. Since this time, its precise definition has proved elusive. In the first major review on burnout by Pearlman and Hartman (1982), more than 48 definitions had been proposed. Edelwich and Brodsky (1980) defined burnout as a progressive loss of energy, idealism, and purpose. In comparison, Schaufeli and Greenglass (2001) proposed that burnout is a state of "physical, emotional, and mental exhaustion that results from long term involvement in work situations that are emotionally demanding" (p. 501). Because of the multitude of definitions, a debate among scholars on the nature of burnout continues. The debate is centered on the dimensionality of burnout and the context in which it takes place. This has implications for the measurement of burnout with a variety of measures currently in use. Perhaps the most commonly accepted definition has come from Maslach and colleagues (1996) who described burnout as a multidimensional condition comprising emotional exhaustion, depersonalization (cynicism), and reduced personnel accomplishment among individuals "who work with people in some capacity." (p. 4). This definition of burnout, and the Maslach Burnout Inventory (MBI) from which it is derived is considered the "gold standard" for measuring burnout (Winwood and Winefield 2004; Schaufeli and Taris 2005). The MBI, based on Maslach's multidimensional view of burnout, is the most widely used measure of burnout in scientific publications and is commonly utilized in medical education research (Poghosyan, Aiken et al. 2009; Dyrbye, West et al. 2014).

Similar to the MBI, the Oldenburg Burnout Inventory (OLBI) is a self-administered questionnaire that measures multiple dimensions of burnout including exhaustion and disengagement (Halbesleben and Demerouti 2005). The OLBI has also been used in studies of burnout among undergraduate and postgraduate students studying medicine (Dahlin, Nilsson et al. 2011; Fridner, Belkic et al. 2012).

Proponents of a multidimensional view of burnout such as Maslach and Schaufeli maintain that burnout is characterized by both exhaustion and depersonalisation (Maslach, Jackson et al. 1996; Schaufeli and Taris 2005). The third dimension of burnout proposed by Maslach, reduced personal accomplishment, is becoming less recognised as a key component of burnout, but rather a precursor or coping strategy (Schaufeli and Taris 2005). Proponents of a one dimensional view of burnout such as Kristensen et al. and Pines and Aronson,

maintain that the core of burnout is exhaustion (Pines and Aronson 1981; Kristensen, Borritz et al. 2005). Measures of burnout such as the Copenhagan Burnout Inventory (CBI) and the Burnout Measure (BM) were both conceived as one-dimensional questionnaires measuring exhaustion (Pines and Aronson 1988; Kristensen, Borritz et al. 2005). Kristensen et al. (2005) suggested that burnout could also be conceptualized as taking place generally (personal burnout), and also taking place in specific contexts or domains of a person's life (work related and client related burnout). Consistent with these domains the CBI contains three sub-scales to measure personal burnout, work related burnout, and client related burnout. This contrasts with the MBI which measures burnout in relation to both working with recipients such as patients and work-like activities such as studying or volunteering (Schaufeli and Taris 2005).

The relationship between stress and burnout is complex. Emotional exhaustion, one of the three components of burnout, has a reciprocal relationship with stress. Therefore a high stress level can cause emotional exhaustion and vice versa (McManus, Winder et al. 2002). For example, burnout could result from the relationships and interactions between a doctor and their patients if the doctor experienced these interactions as being stressful and draining (Awa, Plaumann et al. 2010). Burnout can have similar symptoms to stress, such as fatigue, worry and pessimistic thinking (Eckleberry-Hunt, Lick et al. 2009; Henning, Hawken et al. 2009; Awa, Plaumann et al. 2010). However, when these symptoms are present as features of burnout, they will be prolonged and work-related (Awa, Plaumann et al. 2010).

The Prevalence of Burnout in Medical Trainees

In a comprehensive study involving 1,098 medical students in Minnesota in the US, Dyrbye et al. (2006) found that 45% of their sample met the criteria for burnout, with high levels noted in areas of emotional exhaustion (35%). Moreover, they reported that 56% screened positive for depression, 22% reported at-risk of alcohol use with 15% at-risk of binge drinking, and that there was some evidence of lower quality of life than the general population. It is not surprising that higher rates of depression have been found in medical students than in the general population, given their academic pressure, workload, financial concerns and exposure to patients' suffering and deaths. A longitudinal study of 127 medical students reported that 25% of the interviewed medical students had a clinically significant psychiatric diagnosis and that higher levels of the personality trait 'Impulsivity' predicted burnout (Dahlin and Runeson 2007). It has been argued that burnout among doctors has its origin in medical school (Dyrbye, Thomas et al. 2006).

Looking at students in their early years at medical school, Aktekin et al. (2001) revealed a significant negative increase in depression and anxiety from years 1 and 2 in medical students in Turkey (Aktekin, Karaman et al. 2001). Furthermore, in year 2, medical students were scoring above thresholds for depression and anxiety when compared with economics and physical education students. Pagnin et al. (2013) also found that time as a student was correlated with greater cynicism and lesser academic efficacy. They surmised that a longer time in medical school increased the likelihood of burnout and as a consequence elevated cynicism and lowered students' sense of academic efficacy.

A recent study investigated the prevalence of burnout, symptoms of depression and suicidal ideation, quality of life, and fatigue amongst US medical students, residents/fellows, and early career physicians (Dyrbye, West et al. 2014). It reported that compared to

population controls, medical students were more likely to be burnt out and to show symptoms of depression, but were not more likely to indicate experiences of suicidal ideation. High levels of burnout exist in New Zealand doctors and psychiatrists in particular (Moloney and MacDonald 2000; Kumar, Hatcher et al. 2005; Dyrbye, Thomas et al. 2006).

The Causes of Burnout

Burnout can be regarded as a social issue, as occupational and organisational characteristics can significantly impact on an individual (Maslach, Schaufeli et al. 2001). Job characteristics include 'job demands' and 'job resource'. Job demands include quantitative factors such as workload and qualitative ones such as role conflict. Job resource refers to the understanding of a job description, perceived work-related information and autonomy (Maslach, Schaufeli et al. 2001). Additional contributing factors are a lack of control and a lack of skill use.

Evidence shows that there is a dysfunctional stress syndrome caused by the busy workload, consisting of emotional exhaustion, increased anxiety, reduced personal accomplishment and impaired professional judgment (Haack 1988; Sweeney and Summers 2002; Deighton, Gurris et al. 2007). The level of job-related stress can also be increased by role conflict as a result of incongruent expectation and demands from other people. Significant positive correlation between psychosomatic health complaints and work-related stress has been found (Piko 2006).

It should be noted that different people may respond to the same work setting in different ways. Personal factors including demographic variables, personalities, and work-related attitudes also play a role in individual experienced burnout. Younger employees tend to report higher levels of burnout than their senior colleagues (Brewer and Shapard 2004). It has been suggested that less years of work experience might make younger employees more susceptible to burnout and support intervention needs to be implemented proactively (Brewer and Shapard 2004). Several personality traits related to risk of experiencing burnout have been identified. People with low levels of hardiness, poor self-esteem, external locus of control and avoidance coping style are more likely to experience burnout, and they can also be considered as stress-prone individuals (Maslach, Schaufeli et al. 2001).

Looking specifically at medical students, there is fierce competition to gain a place at medical school, and the people who are successful often have personality traits such as neuroticism and conscientiousness (Tyssen, Dolatowski et al. 2007; Tyssen, Hem et al. 2009). Whilst this may prove useful in their future role as a doctor, it also makes them more at risk of psychological complications than others (Tyssen, Dolatowski et al. 2007). Dyrbye's large systematic review of mental health in US and Canadian medical students reported that there was insufficient data to draw any conclusions about the causes of the high level of distress in medical students (Dyrbye, Thomas et al. 2006). In relation to burnout, however, she concluded that the strongest relationship to the risk of developing burnout was the number of negative personal life events that had occurred in the previous 12 months (Dyrbye, Thomas et al. 2006). Alongside individual factors such as life events and personality, workplace factors need also to be considered (Henning, Hawken et al. 2009). These could include work culture, workload and the experience of training (Henning, Hawken et al. 2009). Medical curricula do involve a high volume of work, on-going assessment, and the acquisition of new clinical

skills, and curricular issues should be regarded as possible contributory factors in the picture of medical student burnout (Dyrbye, Thomas et al. 2006).

After qualifying as a doctor, the demands of postgraduate training coupled with the heavy clinical workload can add to the psychological burden. In common with many junior staff within large organisations, the working environment and routine may often be outside the junior doctor's control. There are multiple factors that contribute to a doctor's burnout, such as lack of social support, lack of autonomy, role ambiguity, organisational policies, time pressure, or responsibility for others (Schaufeli, Bakker et al. 2009).

It has been suggested that the degree of burnout may differ according to seniority (Guthrie, Tattan et al. 1999). Trainee doctors experience higher levels of psychological distress and job-related stress, and are more likely to report symptoms of burnout than their senior colleagues (Guthrie, Tattan et al. 1999; Schaufeli, Bakker et al. 2009). Work-related stressors faced by junior doctors appear different from those faced by more senior colleagues. For example, ward rounds, being on call, unexpected cover, and academic work have all been found to be more stressful among trainee doctors than consultants (Guthrie, Tattan et al. 1999). In other words, although stress in the workplace affects doctors at all grades, junior doctors face the greatest pressures.

The Consequences of Burnout

There are many consequences in the workplace of burnout such as absenteeism, staff turnover or reduced work satisfaction. As well as this, a person with burnout may have a reduction in enthusiasm and commitment to the job, and the quality of work can be affected (Maslach and Goldberg 1998). Burnout may also adversely impact on employees' health and relationships. This may take the form of both physical and psychological consequences, such as depression, substance abuse, and reduced quality of life (Maslach and Goldberg 1998; Henning, Hawken et al. 2009).

With respect to medical students, a review by Henning, Hawken and Hill (2009) found significant evidence to suggest that medical students appear to be more "vulnerable to conditions such as depression, anxiety, suicidal ideation, inability to cope with problems and distress, and dissatisfaction with social support networks (p. 104)". In a more recent systematic review, Ishak et al. (2013) showed that burnout is a significant issue amongst medical students, and some of the worrying consequences include the prevalence of psychiatric disorders and suicidal ideation. Furthermore, significant correlations have also been noted between burnout, empathy and professionalism (Brazeau, Schroeder et al. 2010). In the Brazeau et al. study, students more likely to burnout were also measured as being less empathetic and less professional, although a cause-effect relationship was not established. A further critical factor is that medical students at risk of burnout or experiencing burnout are likely to experience problems with learning which inevitably adversely impacts risk of drop out and academic non-achievement (Yusoff, Rahim et al. 2010; Reed, Shanafelt et al. 2011).

As with medical students, there is evidence to suggest that doctors early in their career experience severe distress and experience burnout (Stodel and Stewart-Smith 2011; Nason, Liddy et al. 2013; Saijo, Chiba et al. 2013; Dyrbye, West et al. 2014). In their survey, Dyrbye et al. (2014) found that residents/fellows and early career physicians were more likely to be burnt out when compared with population controls. As with medical students,

residents/fellows were at risk of depression but not suicidal ideation. West, Shanafelt, and Kolars (2011) found that 52% of residents exhibited burnout, 46% exhibited high levels of emotional exhaustion and 29% reported high levels of depersonalization. Interestingly, international medical graduates reported less signs of burnout than local graduates, perhaps indicating greater levels of resilience amongst the international cohort. Nonetheless, self-reporting burnout has some problems as junior doctors may not truly gauge their levels of distress (Henning, Sollers et al. 2014) indicating that burnout may be under-reported in this group of doctors.

Burnout has also found to be correlated with the experience of intense work stressors and perceptions of lower support in the work place (Bowers and Sochos 2011; Sochos, Bowers et al. 2012). Although, it is likely that alienation and depersonalisation in the workplace leads to burnout; it is equally likely that burnout may in fact cause workplace problems such as alienation from colleagues and patients. Consequentially, there is likely to be a shift in workplace performance and an impact on the work environment (Stodel and Stewart-Smith 2011). In their study, Stodel and Stewart-Smith found that doctors experiencing burnout had a deleterious effect on those working around them and this adversely impacted job satisfaction, workplace attendance, turnover intentions and job performance. In a further study, Nason et al. (2013) suggested that burnout likely leads to decreased job performance and stress-related illness, and that high levels of depersonalization could create negative doctor-patient relationships.

Doctor-patient interactions are evidently a critical aspect of care and factors that adversely affect this relationship are concerning. Rogers, Creed and Searle (2014) investigated the impact of burnout on emotional labour which has two levels: a surface approach involving artificial expression of emotion and a deep approach that engenders a deep and authentic concern towards another. In their study of junior doctors, Rogers et al. found that those doctors working at a more superficial level of emotional labour were more likely to experience burnout than those working at a deeper level. In their study they assumed that the cause-effect relationship was from surface approaches in emotional labour to burnout but equally likely is that the cause-effect relationship occurs from burnout to surface approaches in emotional labour indicating an inability to cope with the intense emotional and relationships that exist within health environments.

Interventions for Burnout

Interventions and education placed under the banner of mental health promotion that are for all medical trainees rather than for those who are burnt out and psychologically unwell, strengthen the message that good mental health and well-being is a mainstream social issue (Wozny, Porter et al. 2008). This sort of approach can build a positive well-being culture and may help to counteract the stigma that can so often acts as a barrier to help-seeking (Chew-Graham, Rogers et al. 2003). Anonymous web-based support services may enable helpseeking and can be used to provide information about well-being and on-line interventions (Ryan, Shochet et al. 2010). For undergraduate students, alongside the introduction of health promotion initiatives at Universities, it may also serve to be wary of promoting mixed messages. For instance, there may be widely-advertised campus activities that promote

alcohol abuse, which would not be in keeping with well-being messages being promoted (Callender, Fagin et al. 2011).

The design of curricula and academic support services can play a role in enhancing student well-being and lessening distress and risk factors for burnout. Education programmes have been put in place in some Universities, teaching topics such as reducing alcohol and drug misuse, helpful coping strategies, mental health screening and skills like cognitive-behavioural techniques and relaxation (Cook 2007). The development of personal skills such as self-esteem and emotional expression could be included as part of a package of student skills to enhance well-being (Arora, Ashrafian et al. 2010). The evidence shows that it could also be useful to explore interventions to recognise and work with perfectionism (Chang and Rand 2000). Part of equipping students with skills and resources is to enable them to enhance their access to well-being resources (Ministry of Youth Affairs 2002; Storrie, Ahern et al. 2010). Guided access to self-help resources for all students is recommended (Richards and Tangney 2008; Richards 2009; Ryan, Shochet et al. 2010).

A review of stress-management programmes in medical schools by Shapiro found 24 studies designed to measure the effectiveness of such interventions (Shapiro 2000). However, only six of the studies used a robust research design, as many studies lacked controls or validated measures. Nevertheless, the authors concluded that stress-management interventions were effective in medical students, and had been shown to reduce depression and anxiety, improve immune function, increase spirituality and empathy, resolve role conflicts, improve coping mechanisms and increase knowledge about stress. However, they stated that it was unclear what the successful components of the programmes were, whether they were best delivered to individuals or groups, and what duration and frequency of input was most effective. Since that review, several studies have contained evaluations of educational wellbeing programmes for medical students, some of which have been part of the curriculum (Hassed, de Lisle et al. 2009). The 'Health Enhancement Programme' (HEP) forms part of the curriculum for Year 2 students at Monash medical school and is an experiential programme taught in small groups (Hassed, de Lisle et al. 2009). The effectiveness of the HEP was evaluated in a pre-post study, which showed that it improved student well-being, even when the final measures were collected in a pre-exam period. There is also a new health and wellbeing curriculum (SAFE-DRS) in all years of the medical programme at the University of Auckland which is currently being evaluated.

Alongside stress management, the importance of meaning, contribution and connection have repeatedly emerged in the literature as making a vital contribution to the maintenance of positive mental health and well-being. For example, "religiosity" has been shown to be a suicide protective factor in young people (Nonnemaker, McNeely et al. 2003) and in doctors, having "a meaning in life" and paying attention to one's non-professional life has been reported to have protective effects against burnout (Garfinkel, Bagby et al. 2001). In view of the importance of establishing healthy connections with others, programmes have been developed for medical students that promote social networking (George 2013). This is in keeping with findings from a study by Lee et al. who used qualitative methodology to assess the essays of 60 students enrolled in a wellness elective which highlighted the importance of maintaining networks (Southwick, Vythilingam et al. 2005). However, Lee cautioned that social support could be a 'double-edged sword', stating that as well as providing support it can also place demands on students' time and energy.

Aiming to understand and change the help-seeking behaviour of medical trainees should be a key focus (Chew-Graham, Rogers et al. 2003; Tyssen, Rovik et al. 2004). One study reported data from a suicide prevention programme that involved screening and education, and aimed to increase awareness of depression and de-stigmatise help-seeking (Moutier, Norcross et al.). An interesting feature of this programme was that it was targeted at a wide range of medical trainees, both doctors and medical students. The authors supported the logic of targeting a 'de-stigmatising programme' at clinicians as well as students, as it is possible that this could be a way of influencing the wider medical culture. The study results showed that of the people who were referred for treatment, 71% of them stated they would not have sought help were it not for the support and feedback provided through the education and screening components of the programme.

In her review of burnout in 1998, Maslach suggested that one burnout prevention approach might be to apply strategies to each of the three components of burnout (Maslach and Goldberg 1998). For the stress dimension, the antithesis of emotional exhaustion could be focusing on ways to increase levels of energy. For the interpersonal dimension, the opposite of detachment and cynicism could perhaps be connection – how could a medical student or doctor find ways to become more connected to others? For the self-evaluation dimension, one could ask how could they find ways of ways of improving a sense of efficiency and selfworth? Looked at in this light, it seems clear that possible strategies are going to vary between individuals. Whilst there may be generic interventions which could be applicable to all medical trainees, such as basic stress management techniques, the authors suggested that it is important to include interventions which enable individuals to increase their self-awareness and self-reflection. As well as aiding personal development and possibly reducing the likelihood of burnout, these skills are also a crucial part of the development of a health professional. The authors considered the development of self-awareness and self-reflection as a three-pronged approach, through formalised learning experiences, assessment, and opportunities for professional supervision.

In the teaching and learning environment, medical trainees need to be given the opportunity to understand the relevance and importance of these concepts for themselves. This may be facilitated through small group experiences that allow them to undertake activities such as self-awareness, emotional intelligence or personality exercises or inventories that can be individualised and also processed within the group. For example, exploring personality type may be used to help identify strengths and limitations, particularly through identifying reactions in times of stress and how this may play out personally and in relationships with others. When appropriately facilitated, this becomes an aspect of both self-awareness and emotional intelligence that helps trainees make the links to their future professional practice as doctors.

Further, this type of activity, in encouraging self-awareness in a safe and supportive environment, communicates much about self-reflection, as it creates an opportunity to see that everyone is different and that it is not threatening to look at your own strengths and limitations in the context of wanting to promote well-being and best practice. Movement from reflection to critical reflection can be facilitated through group discussion of difficult issues that give trainees the opportunity to examine their own assumptions and beliefs and how these may impact on their perceptions and practice. Resources illustrating examples of the differences between reflection and critical reflection can be helpful, as this skill doesn't come naturally to all students.

It is important to reinforce the value placed on reflection through assessment. Medical trainees appear to be driven by assessment, prioritising those learning activities that will be assessed even to the exclusion of important learning that is not assessed. Literature shows that assessment drives learning, that it is imperative that there is congruence between teaching and assessment and that there is some form of 'reward' associated with the assessment, such as the allocation of a grade or credit (Driessen 2003). As stated by Driessen, van Tartwijk and Dornan (2008), "When you speak of your students needing to be 'more reflective' you mean they should let their future behaviour be guided by systematic and critical evaluation and analysis of actions and beliefs and the assumptions that underlie them. All UK doctors are now expected to make reflection a critical foundation of their lifelong learning on the assumption that patients will benefit."(p. 827)

While it may be helpful to include formative assessment early in a programme for the practise of reflection, the authors argue for the importance of compiling a portfolio that a) shows evidence of how a student is developing professionally, and b) shows a developing capacity to critically reflect on that professional development. The use of portfolios as a learning experience and for assessment has generated mixed reviews in the literature. For example, Driessen et al. (2003) claimed that a portfolio is an important tool for teaching and assessing authentic learning, allowing trainees to integrate clinical actions with theoretical knowledge and consider alternative actions. They stress the importance of structure, mentoring and assessment in making a portfolio successful. However, other authors write of the time-consuming nature of assessing reflective writing, questioning whether it can in reality be assessed (Cherry, Fletcher et al.; Flugel Colle, Vincent et al.; Halvari, Halvari et al.); (Fertman, Fichter et al. 2001)), and also whether assessment and reflection can be combined in a single portfolio (Driessen 2003). Potts (2010) raises the point that students typically go through a period of uncertainty when portfolios are introduced, before gaining an understanding of their value. It is important therefore that educators allow time to establish a maturity of response to portfolio compilation when they are first introduced.

The authors suggest that a marking matrix that focuses on process rather than content may be used to consistently and meaningfully assess portfolios, providing feedback that enables on-going development. However, in order to promote the freedom for trainees to reveal weaknesses or mistakes in a reflexive manner that constitutes a real learning experience, the assessment needs to be undertaken by assessors who are not directly associated with trainee progression and who have no conflict of interest.

The third aspect to the development of self-awareness and self-reflection is the reinforcement of these attributes through professional supervision, which may take the form of a facilitated peer group process, or through individual supervision with a professional supervisor. While many health professions require regular professional supervision, as yet this does not seem to be commonly accepted within medicine, other than Balint groups being used by some General Practitioners. We argue that in undergraduate programmes students benefit from the opportunity for facilitated reflective peer discussion in the style of Balint groups, and also that there is a real need for professional supervision at all points of postgraduate practice. This can be conceptualised as a process that enables practitioners to evaluate, reflect and develop their own clinical practice, and includes reflection, support and development (Cummins 2009). These groups do not need to be provided by a doctor per se, as the focus is on processing individual reactions, reflections and interpersonal dynamics in order to promote best practice.

Perhaps then, the best way to enable medical trainees to achieve these lifelong attributes of a reflective practitioner is to ensure that they build a firm foundation by practicing good self and collegial care in a safe and positive working environment. This may well provide the strongest platform on which to build more sophisticated competencies, such as complex clinical decision-making and ethical deliberations - a base from which to safely explore and develop the skills of more advanced clinical and professional practice.

In November 2014, the Medical Council of New Zealand's training framework for newly qualified junior doctors will take effect (The Medical Council of New Zealand 2014). This curriculum framework places a strong emphasis on professional skills alongside clinical skills. Under the heading 'Professional Behaviour', the new curriculum framework covers aspects of personal well-being such as the development of awareness and skills to enable self-care, the importance of having one's own treating doctor, and identification of, and appropriate help-seeking behaviour for colleagues in difficulty. Perhaps this signals the advent of a new culture, where the health and well-being of medical trainees is seen as an integral part of their training and development; a culture which fosters flourishing and miminises the advent of burnout.

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Chapter 15

BURNOUT AS A RISK FACTOR FOR STRAIN, DEPRESSIVE SYMPTOMS, INSOMNIA, BEHAVIORAL OUTCOMES, SUICIDE ATTEMPTS, AND WELL-BEING AMONG FULL-TIME WORKERS

Tsukasa Kato

Toyo University, Japan

ABSTRACT

Burnout is a prolonged response to chronic emotional and interpersonal stressors on the job, and is defined by the three dimensions of exhaustion, depersonalization, and inefficacy. Previous literature on burnout has focused on relationships between burnout and psychological and behavioral health. The present study examines relationships between burnout and burnout outcomes, including strain, depressive symptoms, insomnia, suicide attempts, behavioral outcomes, and poor well-being. Three hundred forty-three Japanese full-time workers participated in this survey. Multiple regression analyses revealed that although exhaustion was associated with almost all burnout outcomes, these relationships disappeared after controlling for the effects of chronic fatigue. This result suggests that exhaustion overlaps with chronic fatigue. Depersonalization was associated with negative behavioral outcomes and suicide attempts, and inefficacy was associated with strain and depressive symptoms, after adjusting for the effects of working hours and chronic fatigue on burnout outcomes.

Keywords: Burnout; depressive symptoms; suicide attempts; well-being; chronic fatigue

INTRODUCTION

Burnout is characterized by negative affective states, including feelings of emotional exhaustion, physical fatigue, and cognitive weariness, resulting from cumulative exposure to chronic work-related stress (Melamed, Shirom, Toker, Berliner, & Shapira, 2006). According

to Maslach, Schaufeli, and Leiter (2001), burnout is a prolonged response to chronic emotional and interpersonal stressors on the job, and is defined by the three dimensions of exhaustion, depersonalization, and inefficacy. Exhaustion is the central feature of burnout and it has been widely reported and thoroughly analyzed. It comprises feelings of being overextended and having depleted one's emotional and physical resources. Depersonalization represents the interpersonal context dimension of burnout, and it consists of negative, callous or excessively detached responses to various aspects of the job. Inefficacy refers to feelings of incompetence and a lack of achievement and productivity at work.

Burnout is a key concept in work-related stress research, and it attracts increasing attention. For example, Schaufeli, Leiter, and Maslach (2009) estimated that over 6,000 books, dissertations, and journal articles had been published on burnout. In addition, many workers suffer from burnout; for example, burnout was estimated to affect between 21% and 67% of mental health workers (for a review, see Morse, Salyers, Rollins, Monroe-DeVita, & Pfahler, 2012), between 30% and 80% of medical and surgical residents (for a review, see Mazurkiewicz, Korenstein, Fallar & Ripp, 2012), and between 50% and 60% of orthopaedic surgeons (for a review, see Arora, Diwan, & Harris, 2013).

Previous literature on burnout has focused mainly on burnout and risk to mental health and has provided evidence of a negative impact of burnout on mental health (Melamed et al., 2006; Schaufeli & Enzmann, 1998). Based on these findings, we examined relationships between burnout and burnout outcomes, including strain, depressive symptoms, insomnia, negative behavioral outcomes, suicide attempts, and poor well-being. In the following sections, we reviewed relationships between burnout and the other variables included in the present study.

Burnout As Risk Factor for Strain

The relationships between burnout and job stress have been discussed in many studies (e.g., Finney, Stergiopoulos, Hensel, Bonato, & Dewa, 2013; Iacovides, Fountoulakis, Kaprinis, & Kaprinis, 2003; Lloyd, King, & Chenoweth, 2002; Maslach et al., 2001; Melamed et al., 2006; Schaufeli & Enzmann, 1998; Schaufeli, Leiter et al., 2009; Shirom, 2003; Shirom, Melamed, Toker, Berliner, & Shapira, 2005). Burnout and strain (or stress response) are both responses to stressors. As described above, burnout is a prolonged response to chronic stressors at work. Strain comprises affective, behavioral, and biological responses to stressors. Chronic stressors may cause a stress-related disease (Schneiderman, Ironson, & Siegel, 2005).

Longitudinal studies found that burnout exhibited remarkable stability, attesting to its chronic nature (Melamed et al., 2006; Schaufeli & Enzmann, 1998); cross-time correlations ranged from .50 to .60 even with a time interval extending up to 8 years (for a review, see Melamed et al., 2006). This stable nature of burnout may contribute to the appearance of physical illness (for reviews, see Melamed et al., 2006; Shirom et al., 2005). In fact, previous studies (e.g., Honkonen et al., 2006) demonstrated that burnout was associated with physical illness, such as musculoskeletal disorders and cardiovascular disease. Based on the accumulated evidence and several stress-related theories, Melamed and colleagues (2006) suggested that burnout was associated with an increased risk of cardiovascular disease. Moreover, Maslach and her colleagues (2001) claimed that burnout, and in particular its

exhaustion component, is predictive of stress-related health outcomes (i.e., strain). Other researchers (e.g., Schaufeli & Enzmann, 1998; Shirom et al., 2005) also suggest that strain, including effects on physical health, is caused by prolonged burnout.

Burnout As Risk Factor for Depressive Symptoms

All approaches toward conceptualizing burnout include a component of fatigue or loss of physical energy, and these symptoms also appear among the criteria for the diagnosis of major depressive disorder (Melamed et al., 2006). Therefore, burnout may overlap with depressive symptoms in fatigue or low levels of energy. However, previous studies have consistently provided evidence that burnout does not overlap with depressive symptoms (e.g., Bakker et al., 2000; Brenninkmeyer, van Yperen, & Buunk, 2001; Glass & McKnight, 1996; Leiter & Durup, 1994; McKnight & Glass, 1995; Shirom & Ezrachi, 2003; for reviews, see Glass & McKnight, 1996; Maslach et al., 2001; Melamed et al., 2006; Schaufeli & Enzmann, 1998)¹. Although burnout is not a formal diagnostic category, Ekstedt (2005) states that depression is a diagnosis different from burnout according to the Diagnostic and Statistical Manual of Mental Disorders 4th ed. (DSM-IV) and the International Classification of Diseases (ICD-10).

Moreover, several researchers (e.g., Ahola, et al., 2005, 2006a; Hakanen & Schaufeli, 2012; Iacovides et al., 2003; Neveu, 2007; Schaufeli & Enzmann, 1998) assumed that burnout is a phase in the development of depression, implying that it precedes depression; previous studies (e.g., Bakker et al., 2000; Hakanen, Schaufeli, & Ahola, 2008) provided evidence for the causal relationship between burnout and depressive symptoms. For example, using a three-wave cross-lagged longitudinal design, Hakanen and Schaufeli (2012) found that burnout predicted depressive symptoms three and four years later but not vice versa. Ahola and Hakanen (2007) showed that the odds ratio (OR) of burnout for depressive symptoms was 2.6 (95% confidence interval (CI) [2.0, 3.5]) among dentists suffering from burnout without depressive symptoms at baseline.

Burnout As Risk Factor for Insomnia

Insomnia has historically been defined as complaints of disturbed sleep in the presence of adequate opportunity and circumstance for sleep (National Institutes of Health, 2005). Similarly to burnout, insomnia has been described as a chronic disturbance (Armon, Shirom, Shapira, and Melamed, 2008). Considerable empirical evidence has shown that burnout is associated with insomnia (e.g., Ekstedt, Söderström, & Åkerstedt, 2009; Ekstedt et al., 2006; Grossi, Perski, Evengård, Blomkvist, & Orth-Gomér, 2003; Melamed et al., 1999; Sonnenschein, Sorbi, van Doornen, Schaufeli, & Maas, 2007; Söderström, Ekstedt, Åkerstedt, Nilsson, & Axelsson, 2004; Söderström, Jeding, Ekstedt, Perski, & Åkerstedt, 2012; Vela-Bueno et al., 2008; for a review, see Ekstedt, 2005). In addition, Schaufeli and Enzmann (1998) suggested the possibility that chronic burnout may bring about subsequent insomnia;

¹ Although a few studies highlighted the similarity between burnout and depressive symptoms (e.g., Ahola, Hakanen, Perhoniemi, & Mutanen, 2014).

several studies provided evidence for this possibility. For example, Armon and colleagues (Armon et al., 2008) found that burnout predicted insomnia 18 months later; OR = 1.93; 95% CI = [1.45, 2.58].

Burnout As Risk Factor for Negative Behavioral Outcomes

In addition to its effects on psychological and physical health, burnout also has an impact on behavioral outcomes (for reviews, see Cordes & Dougherty, 1993; Darr & Johns, 2008; Demerouti, Bakker, & Leiter, 2014; Lee & Ashforth, 1996; Petitta, & Vecchione, 2011; Schaufeli & Enzmann, 1998; Shirom, 2003; Shirom et al., 2005; Ybema, Smulders, & Bongers, 2010), resulting in absenteeism, turnover, decrease in job performance, impulsivity, increased accidents, violence, risk-taking behaviors, over- or under-eating, and increases in tobacco, drug and alcohol consumption.

For example, a study of 5,407 Italian call center operators showed that burnout predicted subsequent absenteeism (Consiglio, Borgogni, Alessandri, & Schaufeli, 2013). The longitudinal survey by Schaufeli, Bakker, and van Rhenen (2009) also showed that burnout at Time 1 was significantly and positively associated with absence duration between Time 1 to Time 2, but absence duration was not associated with burnout at Time 2.

Regarding job performance, Demerouti and colleagues (Demerouti, et al., 2014) found that employee-reported exhaustion and disengagement, which are components of burnout, were associated with supervisor-rated task performance. With respect to alcohol and drug consumption, Ahola and colleagues (Ahola et al., 2006b) reported that the ORs of burnout for alcohol dependence among 3,276 Finnish workers were 1.80 (95% CI [1.35, 2.40]) for women and 1.51 (95% CI [1.27, 1.78]) for men.

In the present study, in addition to negative behavioral outcomes, we also measured suicide attempts as possible negative behavioral outcomes. Few studies have examined relationships between burnout and suicide or suicide attempts. For example, MEDLINE showed that only two academic articles written in English included BURNOUT and SUICIDE in the title (July 1, 2014); neither of these two articles, measured a suicide-related variable but instead they focused on hopelessness. However, some researchers assume that burnout may be associated with suicide (for a review, see Pompili et al., 2006).

According to the interpersonal theory of suicide (Joiner, 2005; Joiner, van Orden, Witte, & Rudd, 2009; van Orden et al., 2010), the most dangerous form of suicidal desire is caused by the simultaneous presence of two interpersonal constructs: thwarted belongingness and perceived burdensomeness (van Orden et al., 2010). Although the interpersonal theory of suicide does not suggest that suicide attempts are caused by burnout, it might indicate a potential relationship between suicide and burnout.

Burnout As Risk Factor for Poor Well-Being

Burnout researchers have focused on relationships between burnout and job satisfaction rather than well-being, such as quality of life, life satisfaction, and happiness (for reviews, see Lee & Ashforth, 1996; Lloyd et al., 2002; Schaufeli & Enzmann, 1998; Schaufeli, Taris, & Rhenen, 2008). Yet several studies suggest that burnout affects well-being negatively (e.g.,
Demerouti, Bakker, Nachreiner, & Schaufeli, 2000; Glass & McKnight, 1996). For example, using a three-wave cross-lagged longitudinal design, Hakanen and Schaufeli (2012) found that burnout predicted life satisfaction three and four years later but not vice versa.

Burnout and Chronic Fatigue

Although burnout and chronic fatigue differs in background, context, and conceptualization (for reviews, see Johannisson, 2006; Leone, Wessely, Huibers, Knottnerus, & Kant, 2011), burnout overlaps with chronic fatigue in each core component. As described above, burnout refers to a negative affective state, including emotional exhaustion, physical fatigue, and cognitive weariness resulting from chronic stress (Melamed et al., 2006). Emotional exhaustion, physical fatigue, and cognitive weariness are central concepts of burnout, and in particular of exhaustion, which is one of three components of burnout, and all of these overlap with the concept of chronic fatigue (for reviews, see Ekstedt, 2005; Leone et al., 2011). Moreover, previous studies found that chronic fatigue was associated with burnout outcomes which were investigated in the present study, including strain, depressive symptoms, insomnia, suicide attempts or morbidity, and poor well-being (for reviews, see Ax, Gregg, & Jones, 2001; Cairns, & Hotopf, 2005; Wessely, 2001). Because burnout overlaps with chronic fatigue, and because chronic fatigue is associated with burnout outcomes, researchers need to take into account the effects of chronic fatigue on burnout outcomes, such as strain, depressive symptoms, insomnia, suicide attempts, and well-being, when examining relationships between burnout and burnout outcomes. Therefore, in the present study, we measured chronic fatigue in order to adjust for the effects of chronic fatigue on burnout outcomes.

METHOD

Participants and Procedure

Participants of the present study included participants recruited specifically for this study and participants in a study by Kato (2014a). New participants were recruited using the same procedure as in the previous study by Kato (2014a). Potential participants were recruited through five manufacturing industry labor unions under the condition that they are full-time non-shift workers. After signing an informed consent form, all participants completed a set of questionnaires in group sessions at their workplace.

All participants received a pen valued at 100 yen (ca. 1.25 USD) in exchange for completing the survey. Participants were 343 Japanese full-time workers (157 men and 186 women), whose age ranged from 20 to 68 years (M = 38.51, SD = 10.42); nine participants did not provide their age. Approximately 44% were clerical workers, 12% were engineers or engineering managers, and 25% were managers or supervisors. In total, 58% of the workers had completed graduate education, 36% of had high school education, and 5% reported postsecondary undergraduate education or vocational education.

Measures

In order to translate measures, originally written in English, into Japanese, the same procedure was used as in the study by Kato (2014a). Three native Japanese psychologists independently translated all measures into Japanese, and the measures were then back-translated into English by a native English psychologist. After the back-translation, the original and back-translated questionnaires were compared for discrepancies. Modifications were made to the translated questionnaires after a discussion among the translators. The measures assessing burnout, strain, depressive symptoms, insomnia, and well-being were the same as those used in the previous study by Kato (2014a).

Burnout

The Maslach Burnout Inventory-General Survey (MBI-GS; Schaufeli, Leiter, Maslach, & Jackson, 1996) was used to measure burnout. The MBI-GS is a 16-item questionnaire designed to measure three components of burnout, namely exhaustion (5 items), depersonalization (5 items), and inefficacy (6 items), across different types of occupations. The MBI is the most frequently used measure of burnout; in fact, it was used in 93% of journal articles (Schaufeli & Enzmann, 1998). The validity of the MBI-GS scores has been established for Japanese workers (e.g., Kitaoka-Higashiguchi et al., 2004). The Cronbach's alphas for the subscales of the Japanese version of the MBI-GS were .85 for exhaustion, .87 for depersonalization, and .81 for inefficacy (Kitaoka-Higashiguchi et al., 2004). Participants rated each item according to their experiences within the past week using a 5-point Likert scale, which ranged from 0 (*not at all*) to 4 (*very much so*). Higher scores indicate higher levels of burnout. The Cronbach's alpha in the present study was .83, .82, and .89 for exhaustion, depersonalization, and inefficacy, respectively.

Strain

Strain was measured by the General Health Questionnaire-12 (GHQ-12; Goldberg and Williams, 1988), which is a general measure of health and psychopathology. The GHQ-12 is a self-report scale with adequate reliability and validity. Reliability and validity for the Japanese version of GHQ-12 have been verified in several previous studies (e.g., Doi & Minowa, 2003). According to the Japanese version of the GHQ manual (Nakagawa & Daibo, 1985), outpatients with neurosis show higher scores than normal adolescents and adults. In addition, the GHQ-12 is scale is also positively correlated with scales related to anxiety for samples of normal adolescents (Nakagawa & Daibo, 1985). The Cronbach's alphas for the Japanese version of the GHQ-12 were .88 for samples of Japanese workers (Kato, 2012) and salespeople (Kato, 2014c). Participants rated each item according to their experiences within the past week on a 5-point Likert scale ranging from 0 (*much less than usual*) to 4 (*better than usual*). Higher scores indicate higher general distress. The Cronbach's alpha in the present study was .90.

Depressive Symptoms

The Center for Epidemiologic Studies Depression Scale (CES-D; Radloff, 1977), a 20item self-report scale, was used to assess depressive symptoms. In studies using the Japanese version of the CES-D, samples with mood disorders have shown higher scores than

nonclinical samples (Shima, 1998). The Japanese version of the CES-D has been shown to have adequate reliability and validity with Japanese workers (e.g., Iwata & Roberts, 1996; Iwata, Roberts, & Kawakami, 1995). For example, the Cronbach's alpha for the Japanese version of the CES-D was .90 for a sample of Japanese workers (Kato, 2012). Participants rated each item according to their experiences within the past week on a 5-point Likert scale ranging from 0 (*not at all*) to 4 (*very much so*). Higher scores indicate higher levels of burnout. The Cronbach's alpha in the present study was .91.

Insomnia

Insomnia was measured with the Epworth Sleepiness Scale (ESS; Johns, 1991), an 8-item self-report scale, which was designed to measure excessive daytime sleepiness. The reliability and validity of the Japanese version for the ESS is well established in samples of Japanese workers (e.g., Kato,2014d; Takegami et al., 2009). For example, Takegami and her colleagues (Takegami et al., 2009) found that the Japanese version for the ESS was significantly associated with another self-report measure for insomnia, the Pittsburgh Sleep Quality Index (PSQI; Buysse, Reynolds, Monk, Berman, & Kupfe, 1989). Another study (Kato, 2014d) showed that the Cronbach's alpha for the Japanese version of the ESS was .71 for a sample of Japanese workers. Participants rated each item on a 4-point Likert-type scale ranging from 0 (*would never doze*) to 3 (*high chance of dozing*). Higher scores indicate higher levels of insomnia. In the present study, the Cronbach's alpha was .75.

Behavioral Outcomes

We used a 5-item scale to assess negative behavioral outcomes of burnout. The five items of the scale were developed for the present study and were worded as follows: *I repeatedly made mistakes at work, I came to work late or was absent, my consumption of alcohol increased, I acted impulsively,* and *my job performance went down.* Participants rated each item according to their experiences within the past week on a 5-point Likert scale ranging from 0 (*not at all*) to 4 (*very much so*). Higher scores indicate higher levels of negative behavioral outcomes. The Cronbach's alpha in the present study was .61.

Suicide Attempts

The Suicide Behaviors Questionnaire-Revised (SBQ-R) (Osman et al., 2001) was used to measure suicide attempts. The SBQ-R is a four-item self-rating scale designed to assess suicide behavior including past suicide attempts, frequency of suicide attempts, threats of suicide attempts, and likelihood of suicide attempts. Kato (2014b) showed that the Japanese version of the SBQ-R was significantly associated with depressive symptoms and poor sleep quality scores among Japanese workers. In addition, the Cronbach's alpha for the Japanese version of the SBQ-R was .90 for a sample of Japanese workers (Kato, 2014b). The present study used the scoring method of Osman and colleagues (Osman et al., 2001), who developed the SBQ-R. According to this scoring method, the total score ranges from 3 to 18; higher scores indicate higher levels of suicide attempts. The Cronbach's alpha in the present study was .91.

Well-Being

The Satisfaction With Life Scale (SWLS; Diener, Emmons, Larsen, & Griffin, 1985) was used to assess well-being. The SWLS is a 5-item self-report scale measuring general satisfaction with the respondent's life as a whole. This scale has well-established reliability and validity among various samples, including worker samples (for a review, see Pavot & Diener, 1993). The Cronbach's alpha for the Japanese version of the SWLS was .93 for a sample of Japanese workers (Kato, 2014d). Participants rated each item on a 5-point scale rating from 0 (*strongly disagree*) to 4 (*strongly agree*). Higher scores reflect greater satisfaction with life. The Cronbach's alpha in the present study was .91.

Chronic Fatigue

The Fatigue Severity Scale (FSS; Krupp, LaRocca, Muir-Nash, & Steinberg, 1989) was used to assess chronic fatigue. The FSS is a 9-item self-rating scale emphasizing the functional and behavioral impacts of fatigue. This scale is one of the best known and most used fatigue scales (Dittner, Wessely, & Brown, 2004). Previous studies have reported high reliability and validity of FSS scores (Dittneret al., 2004; Krupp et al., 1989). The Cronbach's alpha for the Japanese version of the SBQ-R was .89 for a sample of Japanese workers (Kato, 2014d). Participants rated each item on a 5-point Likert scale ranging from 0 (*not at all*) to 4 (*very much so*). Higher scores indicate higher levels of chronic fatigue. The Cronbach's alpha in the present study was .88.

Working Hours

Workload, including working hours, is an important variable for work stress; researchers have provided evidence for an association between long working hours and health problems (see Johnson & Lipscomb, 2006; Shields, 2000; van der Hulst, 2003, for reviews). In addition, considerable evidence shows that working hours are also associated with burnout (for reviews, see Maslach et al., 2001; Schaufeli & Enzmann, 1998). Therefore, working hours were used in the present study as a variable to adjust the effect of burnout on burnout outcomes.

Participants were asked to report the number of hours worked per week, which included work in the home as well as work in the workplace. Participants rated working time, during the past month, in units of minutes. To minimize the impacts of extreme outliers, participants' responses were recoded into nine categories: 1 = 25 hours or fewer, 2 = between 25 and 30 hours (not including 25 hours), 3 = between 30 and 35 hours (not including 30 hours), 4 = between 35 and 40 hours (not including 35 hours), 5 = between 40 and 45 hours (not including 40 hours), 6 = between 45 and 50 hours (not including 45 hours), 7 = between 50 and 55 hours (not including 50 hours), 8 = between 55 and 60 hours (not including 55 hours), and 9 = more than 60 hours. This taxonomy for working hours was the same method as in a study by Kato (2014a).

Data Analyses

In order to examine relationships between burnout as a risk factor for burnout outcomes (strain, depressive symptoms, insomnia, negative behavioral outcomes, suicide attempts and

well-being), hierarchical multiple regression analyses were conducted with burnout outcomes as criterion variables, and gender, working hours, chronic fatigue, and burnout as explanatory variables. Scores for gender and working hours were entered in Step 1 (Model 1), scores for the three burnout subscales were entered in Step 2 (Model 2), and fatigue scores were entered in Step 3 (Model 3). Effect sizes are provided as Cohen's f^2 for delta R^2 . According to Cohen (1988), small, medium, and large effect sizes correspond to .02, .15, and .35, respectively.

RESULTS

The means and standard deviations are shown in Table 1. Hierarchical multiple regression analyses were conducted with scores for strain (Table 2), depressive symptoms (Table 3), insomnia (Table 4), negative behavioral outcomes (Table 5), suicide attempts (Table 6), and well-being (Table 7) as criterion variables.

Variable	Mean	SD	Range
Burnout			
Exhaustion	8.12	4.67	0-20
Depersonalization	5.97	3.85	0-20
Inefficacy	8.64	4.41	0-24
Distress	18.07	8.38	0-48
Depressive symptoms	29.43	12.32	0-80
Insomnia	12.03	3.44	0-32
Well-Being	11.20	3.72	0-20
Behavioral outcomes	3.29	2.71	0-20
Suicide attempts	5.85	2.20	3-18
Chronic Fatigue	18.50	5.45	0-36

Table 1. Means and Standard Deviations for All Variables

Note. Range is possible ranges of scores for each variable.

Table 2. Hierarchical Multiple Regression	on Analysis Predicting Strain Scores from
Scores of Gender, Working Hou	rs, Burnout, and Chronic Fatigue

	Model 2			Model 3		
Variable	beta	t		beta	t	
Gender	.05	1.10		.02	0.45	
Working hours	.05	1.20		.07	1.65	
Exhaustion	.20	3.75	***	.02	0.42	
Depersonalization	.05	0.81		.09	1.47	
Inefficacy	.48	7.90	***	.37	6.40	***
Chronic fatigue				.38	8.05	***
R^2	.44	***		.53	***	
ΔR^2	.41	***		.09	***	

Note. *** *p* < .001.

Table 3. Hierarchical Multiple Regression Analysis Predicting Depressive Sym	ıptoms
Scores from Scores of Gender, Working Hours, Burnout, and Chronic Fati	gue

	Model 2			Model 3		
Variable	beta	t		beta	t	
Gender	.07	1.74		.04	1.07	
Working hours	02	- 0.37		.00	- 0.01	
Exhaustion	.18	3.35	***	03	- 0.48	
Depersonalization	.09	1.35		.13	2.21	*
Inefficacy	.47	7.78	***	.34	6.18	***
Chronic fatigue				.44	9.55	***
R^2	.44	***		.56	***	
ΔR^2	.42	***		.12	***	

Note. *** *p* < .001, * *p* < .05.

Table 4. Hierarchical Multiple Regression	Analysis Predicting Insomnia Scores from
Scores of Gender, Working Hour	s, Burnout, and Chronic Fatigue

		Model 2			Model 3		
Variable	beta	t		beta	t		
Gender	.00	- 0.07		01	- 0.27		
Working hours	.04	0.76		.05	0.85		
Exhaustion	.07	1.04		.01	0.10		
Depersonalization	.04	0.49		.05	0.64		
Inefficacy	.00	- 0.02		04	- 0.53		
Chronic fatigue				.14	2.08	*	
R^2	.02			.03			
ΔR^2	.01			.01	*		

Note. * p < .05.

Model 2

Multiple regression analyses in Model 2 revealed that the changes in R^2 at Step 2 were significant for strain ($\Delta R^2 = .41$, ΔF (3,337) = 82.38, p < .001, $f^2 = .69$), depressive symptoms ($\Delta R^2 = .42$, ΔF (3,337) = 83.91, p < .001, $f^2 = .72$), behavioral outcomes ($\Delta R^2 = .20$, ΔF (3,337) = 26.80, p < .001, $f^2 = .26$), suicide attempts ($\Delta R^2 = .20$, ΔF (3,337) = 28.09, p < .001, $f^2 = .25$), and well-being ($\Delta R^2 = .13$, ΔF (3,337) = 16.48, p < .001, $f^2 = .15$) scores, but non-significant for insomnia scores ($\Delta R^2 = .01$, ΔF (3,337) = 1.14, p = .334, $f^2 = .01$).

The beta weights for exhaustion scores were significant and positive in the multiple regression analyses in Step 2 for strain ($\beta = .20, p < .001$), depressive symptoms ($\beta = .18, p < .001$), and behavioral outcomes ($\beta = .18, p < .01$), and negative for well-being scores ($\beta = -.14, p < .05$), but non-significant for insomnia ($\beta = .07, p = .297$) and suicide attempts ($\beta = .09, p = .152$) scores.

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	Model 2			Model 3		
Variable	beta	t		beta	t	
Gender	09	- 1.86		11	- 2.26	*
Working hours	.05	1.05		.06	1.20	
Exhaustion	.18	2.89	**	.08	1.13	
Depersonalization	.26	3.47	***	.28	3.81	***
Inefficacy	.08	1.14		.01	0.16	
Chronic fatigue				.23	3.94	***
R^2	.24	***		.27	***	
ΔR^2	.20	***		.03	***	

 Table 5. Hierarchical Multiple Regression Analysis Predicting Behavioral Outcomes

 Scores from Scores of Gender, Working Hours, Burnout, and Chronic Fatigue

Note. *** *p* < .001, ** *p* < .01, * *p* < .05.

Table 6. Hierarchical Multiple Regression Analysis Predicting Suicide Attempts Score
from Scores of Gender, Working Hours, Burnout, and Chronic Fatigue

	Model 2			Model 3		
Variable	beta	t		beta	t	
Gender	03	- 0.56		04	- 0.86	
Working hours	10	- 1.99	*	10	- 1.88	
Exhaustion	.09	1.44		.00	- 0.03	
Depersonalization	.23	2.95	**	.25	3.23	***
Inefficacy	.19	2.67	**	.13	1.83	
Chronic fatigue				.20	3.30	***
R^2	.20	***		.23	***	
ΔR^2	.20	***		.03	***	

Note. *** p < .001, ** p < .01, * p < .05.

Table 7. Hierarchical Multiple Regression Analysis Predicting Well-Being Scores from
Scores of Gender, Working Hours, Burnout, and Chronic Fatigue

	Model 2			Model 3		
Variable	beta	t		beta	t	
Gender	01	- 0.16		.00	0.02	
Working hours	.02	0.34		.01	0.26	
Exhaustion	14	- 2.05	*	08	- 1.08	
Depersonalization	11	- 1.34		12	- 1.48	
Inefficacy	18	- 2.35	*	14	- 1.82	
Chronic fatigue				12	- 1.93	*
R^2	.13	***		.14	***	
ΔR^2	.13	***		.01	*	

Note. *** p < .001, * p < .05.

The beta weights for depersonalization scores were significant and positive in the multiple regression analyses in Step 2 for behavioral outcomes ($\beta = .26$, p < .001) and suicide attempts ($\beta = .23$, p < .01) scores, but non-significant for strain ($\beta = .05$, p = .419), depressive symptoms ($\beta = .09$, p = .179), insomnia ($\beta = .04$, p = .625) and well-being ($\beta = - .11$, p = .183) scores. The beta weights for inefficacy scores were significant and positive in the multiple regression analyses in Step 2 for strain ($\beta = .48$, p < .001), depressive symptoms ($\beta = .47$, p < .001), and suicide attempts ($\beta = .19$, p < .01) scores, and negative for well-being scores ($\beta = - .18$, p < .05), but non-significant with insomnia ($\beta = .00$, p = .984) and behavioral outcomes ($\beta = .08$, p = .255) scores.

Model 3

Multiple regression analyses in Model 3 revealed that the changes in R^2 at Step 3 were significant for all variables: strain ($\Delta R^2 = .09$, ΔF (1,336) = 64.85, p < .001, $f^2 = .10$), depressive symptoms ($\Delta R^2 = .12$, ΔF (1,336) = 91.14, p < .001, $f^2 = .14$), insomnia ($\Delta R^2 = .01$, ΔF (1,336) = 4.34, p < .05, $f^2 = .01$), behavioral outcomes ($\Delta R^2 = .03$, ΔF (1,336) = 15.55, p < .001, $f^2 = .04$), suicide attempts ($\Delta R^2 = .03$, ΔF (1,336) = 10.89, p < .001, $f^2 = .03$), and well-being ($\Delta R^2 = .01$, ΔF (1,336) = 3.74, p < .05, $f^2 = .01$) scores.

All beta weights for exhaustion scores were non-significant in the multiple regression analyses in Step 3 for strain ($\beta = .02$, p = .674), depressive symptoms ($\beta = -.03$, p = .629), insomnia ($\beta = .01$, p = .920), behavioral outcomes ($\beta = .08$, p = .261), suicide attempts ($\beta = .00$, p = .979), and well-being ($\beta = -.08$, p = .280) scores. The beta weights for depersonalization scores were significant and positive in the multiple regression analyses in Step 3 for depressive symptoms ($\beta = .13$, p < .05), behavioral outcomes ($\beta = .28$, p < .001), and suicide attempts ($\beta = .25$, p < .001) scores, but non-significant with strain ($\beta = .09$, p = .143), insomnia ($\beta = .05$, p = .521), and well-being ($\beta = -.12$, p = .140) scores.

The beta weights for inefficacy scores were significant and positive in the multiple regression analyses in Step 3 for strain ($\beta = .37$, p < .001), depressive symptoms ($\beta = .34$, p < .001) scores, but non-significant for insomnia ($\beta = - .04$, p = .599), behavioral outcomes ($\beta = .01$, p = .872), suicide attempts ($\beta = .13$, p = .068), and well-being ($\beta = - .14$, p = .070) scores.

DISCUSSION

We examined relationships between burnout and burnout outcomes (i.e., strain, depressive symptoms, insomnia, negative behavioral outcomes, suicide attempts, and wellbeing) in a sample of Japanese workers.

Exhaustion

Multiple regression analyses revealed that exhaustion was significantly associated with strain, depressive symptoms, negative behavioral outcomes, and poor well-being, after

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adjusting for the effects of working hours. However, when controlling for the effect of chronic fatigue, no significant relationships were observed between exhaustion and any of the burnout outcomes measured in the present study. Nonetheless, chronic fatigue was significantly associated with all burnout outcomes after adjusting for the effects of working hours and burnout.

Our findings suggest that exhaustion overlaps with chronic fatigue. As mentioned in the Introduction, emotional exhaustion, physical fatigue, and cognitive weariness, which are central concepts of burnout, overlap with the concept of chronic fatigue (for reviews, see Ekstedt, 2005; Leone et al., 2011); these components of burnout are central to the concept of exhaustion. Moreover, our findings also suggest that chronic fatigue plays an important role in workers' psychological and behavioral health. In addition, according to Wessely (2001), approximately 20% to 30% of individuals in the population have chronic fatigue. Therefore, researchers need to examine relationships between burnout and burnout outcomes while taking into account the effects of chronic fatigue on burnout outcomes.

Depersonalization

Multiple regression analyses revealed that depersonalization was significantly associated with negative behavioral outcomes and suicide attempts, after adjusting for the effects of working hours and chronic fatigue. These results suggest that depersonalization predicts behavioral health, including suicide attempts, beyond the effect of working hours and chronic fatigue. Among the three components of burnout, only depersonalization was significantly associated with suicide attempts, after controlling for the effects of working hours and chronic fatigue on suicide attempts. As described in the Introduction, depersonalization represents the interpersonal context dimension of burnout. The interpersonal theory of suicide (Joiner, 2005; Joiner, van Orden, Witte, & Rudd, 2009; van Orden et al., 2010) states that suicidal desire is caused by interpersonal problems. Thus both depersonalization and suicide attempts relates to interpersonal relationships.

Inefficacy

Multiple regression analyses revealed that inefficacy was significantly associated with strain and depressive symptoms, after adjusting for the effects of working hours and chronic fatigue. On the other hand, the significant relationships between inefficacy and suicide attempts and poor well-being disappeared when controlling for the effects of chronic fatigue on suicide attempts and poor well-being.

To summarize, we found characteristic relationships between each component of burnout and burnout outcomes.

Namely, (a) although exhaustion is associated with almost all burnout outcomes, these relationships disappear after controlling for the effects of chronic fatigue on burnout outcomes, (b) depersonalization is associated with negative behavioral outcomes and suicide attempts, and (c) inefficacy is associated with strain and depressive symptoms. Our findings suggest the importance of addressing specific symptoms in intervention for burnout: for example, training for coping with interpersonal stress (Kato, 2013).

Limitations

Despite the strengths, several limitations in the present study need to be mentioned. First, because the data were gathered from self-report measures in a cross-sectional design, causal relationships between burnout and burnout outcomes cannot be inferred. Further experimental studies could provide information about potential causal relationships. In addition, the use of self-report measures may produce biases due to common method variance (CMV). However, many of the procedures suggested by Podsakoff, MacKenzie, and Podsakoff (2012) to control for common method biases were used in this study, including protecting respondent anonymity, reducing evaluation apprehension, and the use of reliable and valid measures for each construct. The use of a longitudinal design could further reduce potential biases (see Podsakoff et al., 2012). Moreover, as our sample included only Japanese workers, our findings cannot be generalized to other populations (e. g, Western populations).

Finally, researchers should use the data in the present study for a meta-analysis or an integrative analysis with caution, because our data partially overlapped with the data in Kato (2014a).

CONCLUSION

Although exhaustion was associated with almost all burnout outcomes, these relationships disappeared after controlling for the effects of chronic fatigue on burnout outcomes. These results suggest that exhaustion overlaps with chronic fatigue. Therefore, researchers need to examine relationships between burnout and burnout outcomes while taking into account the effects of chronic fatigue on burnout outcomes. Depersonalization is associated with negative behavioral outcomes and suicide attempts, and inefficacy is associated with strain and depressive symptoms, after adjusting for the effects of working hours and chronic fatigue on burnout outcomes.

Conflict of Interest Statement

The author declares that there are no conflicts of interest.

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Chapter 16

BURNOUT AMONG MEDICAL PROFESSIONALS: PREVALENCE, RISK FACTORS AND HOW TO COMBAT THE EPIDEMIC

Manit Arora

University of New South Wales, Australia University of New England, Australia Bond University, Australia

ABSTRACT

Doctors and other health care workers are believed to be particularly susceptible to burnout compared to the general public. In the last two decades, recognition of the importance of burnout among doctors has spurned much research in the field. Burnout is affected by both work-related and non-work related factors, and appears to be influenced by specialty and geographical location, with developing countries, surprisingly, faring better than developed countries. Targeted intervention, epidemiological studies and strong policy formation are needed to combat this epidemic.

INTRODUCTION

Doctors and other health care workers are believed to be particularly susceptible to burnout compared to the general public (Ramirez, Graham, Richards, Cull, & Gregory, 1996).

Burnout is a syndrome of emotional exhaustion, depersonalisation, and a reduced sense of personal accomplishment among individuals who work with people in some capacity (Maslach, Jackson, & Letter, 1996). Two common symptoms of burnout are treating patients and colleagues as objects rather than human beings and feeling emotionally depleted. Symptoms of burnout also include physical exhaustion, poor judgment, cynicism, guilt, feelings of ineffectiveness, and a sense of depersonalisation in relationships with co-workers or patients.

Both work-related and non-work related factors have been associated with burnout. Work related factors that increase burnout include more hours worked per week (Shanafelt TD, 2012), greater number of years in the profession (Popa et al., 2010), and high anxiety caused by concern for adverse clinical outcomes (Kuhn, Goldberg, & Compton, 2009). Non work related factors include age and gender (Goldberg et al., 1996)(Kuhn et al., 2009) (Lloyd, Streiner, & Shannon, 1994), marital status (Shanafelt TD, 2012) and work-family conflict(Estryn-Behar et al., 2011), however, both positive and negative associations between these factors and burnout have been reported.

BURNOUT AMONG DOCTORS

Burnout has a direct relationship to discipline and to geographical location. In one of the largest studies on burnout to date, American researchers found that 45% of physicians reported at least one symptom of burnout (Shanafelt TD, 2012). The highest rates of burnout were seen in front-line specialties (family medicine, general internal medicine, and emergency medicine). Pathology, dermatology, general pediatrics and preventative medicine had the lowest rates of burnout. Emergency medicine doctors, the face of our institutions, have burnout rates in excess of 60% (Arora, Asha, Chinnappa, & Diwan, 2013), compared to orthopaedic surgeons (50-60%) (Arora, Diwan, & Harris, 2013), and general surgeons (30-40%). These levels are much higher than for the general American population (28%) (Shanafelt TD, 2012). Residents, or junior doctors, tend to fare worse than their senior colleagues, but again this is titrated by specialty and geographical location. For instance, one in five Dutch medical residents are burned out (Prins et al., 2010) compared with one in two Australian orthopaedic residents (unpublished data, Arora et al.).

What is emerging as a trend is the low rate of burnout in developing countries, contrary to the popular belief that doctors in developing countries suffer high rates of burnout due to the high workload and poor working conditions. A study of 563 doctors in Yemen found that only 12% had a high burnout level (Al-Dubai & Rampal, 2010), with similar results found in a Chinese study (Wu, Zhu, Li, Wang, & Wang, 2008).

COMBATING THE EPIDEMIC

Any attempt to combat burnout, thus, needs to be specialty and country specific. A prerequisite for this is well formulated epidemiological studies among doctors in various countries and strong policy formation.

High rates of burnout can be addressed by several means. Master music teachers (Hamann, 1990), dental educators (Neidle, 1984) and army intensive care nurses (Bartz & Maloney, 1986) are examples of professions highly prone to burnout, and research in these fields has identified several strategies for combating burnout that may be translatable to the orthopaedic setting – exercise, networking with other sufferers, practicing relaxation, development of new hobbies or interests, and time for non-clinical activities (such as research and continuing professional development activities). A Canadian study of emergency physicians found a strong association for increasing time for non-clinical duties with lower

burnout (Lloyd et al., 1994). More directly, a review on combating burnout among surgeons (Balch & Shanafelt, 2010) highlights the phenomenon of "being tough" during training by shielding emotional problems. There may be a need for more open emotional communication with colleagues and for adequate support systems to deal with burned out trainees.

Clearly, we are at the tip of an epidemic, and appropriate strong policy initiatives are needed before we are left with a plague of burned out doctors serving in our institutions.

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