Chapter 2
Job Strain, Burnout, Wellbeing and Patient Safety in Healthcare Professionals

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2.1 Introduction

Over the last three to four decades, there has been a marked increase in media coverage of stress and as a result this has led to increased research and public awareness. Indeed stress is now the most common cause of long-term sick leave and is frequently shown to be a very important factor accounting for in excess of ten million working days lost per annum in the UK (HSE, 2018). In 2017/2018, stress accounted for 44% of all cases of work-related illnesses in the UK (i.e., 595,000 cases). In the United States, the impact of stress is also far reaching, with 66% of Americans reporting that stress is impacting on their physical health and 63% believing the same for their mental health (American Psychological Association, 2012). It is also well established that one of the major sources of stress is associated with one's job. Stress arising from work is known by a range of different labels including occupational stress, job stress, work-related stress, and job strain. As a result a large amount of research has focussed on investigating the effects of work-related stress on a myriad of health, behavioural and occupational outcomes.

Moreover, there is growing evidence that high levels of occupational stress are impacting negatively on health, wellbeing and work-related outcomes in healthcare professionals (e.g., Chang et al., 2006; Louch, O'Hara, Gardner, & O'Connor, 2017;

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Purcell, Kutash, & Cobb, 2011; Tucker, Weymiller, Cutshall, Rhudy, & Lohse, 2012). Johnson et al. (2018) have recently shown that mental healthcare professionals (HCPs) also report clinical symptoms of psychological distress and burnout. Changes in the organisation and the management of health care provision nationally and internationally, coupled with the nature of medical practice, is likely to have increased the experience of work-related stress in healthcare professionals (Chang et al., 2006; Hall, Johnson, Watt, Tsipa, & O'Connor, 2016; Louch et al., 2017). Elevated levels of occupational stress may also have contributed to the increased prevalence of depression, anxiety and burnout in healthcare professionals (e.g., Adriaenssens, De Gucht, & Maes, 2015; Chang et al., 2006; Singh, Aulak, Mangat, & Aulak, 2016; Woodhead, Northrop, & Edelstein, 2016).

The consequences of work-related stress may be far reaching, not only for the health professionals themselves, but also for the patients within their care. The workload and demands placed on nurses continues to increase and health care organisations are under rising pressure (e.g., Carayon & Gurses, 2008; Gifford, Zammuto, Goodman, & Hill, 2002). Moreover, research has confirmed clear associations between stress and poorer physical and psychological health in nurses together with increased sickness absences, intention to leave and turnover rates, reduced job performance, quality of care and patient safety (e.g., Chang et al., 2006; Heinen et al., 2013). In terms of the latter, a recent daily diary study in hospital nurses found higher levels of chronic stress were associated with poorer perceptions of safety in their hospital wards and being less able to practise safely (Louch et al., 2017). To place in context, in the UK, medical errors are estimated to cost the National Health Service (NHS) over a billion pounds in litigation costs, and £2 billion in additional bed days annually (UK Department of Health, 2000) and it is likely that work-related stress is an important contributing factor. Therefore, there is an urgent need to understand the links between job strain, burnout, wellbeing and patient safety in order to develop effective interventions that can target aspects of the work environment and wellbeing that will help reduce levels of burnout and improve patient safety.

2.2 Work Stress, Patient Safety and Quality of Care

There are a number of psychological models that have dominated the work-related stress area over a long period of time that have attempted to characterise what makes the work environment stressful (e.g., Demerouti, Bakker, Nachreiner, & Schaufeli, 2001; Karasek, 1979; Siegrist, 2002). Of particular note is the job demands-control model or job strain model (Hausser, Mojzisch, Niesl, & Schulz-Hardt, 2010; Heikkila et al., 2013; Karasek, 1979; Van Der Doef & Maes, 1998, 1999). This model incorporates control as a major component in the stress process. The basic axiom of the model is that psychological strain and physical-ill health (and other stress-related outcomes) can be predicted from the synergistic combination of job demands and job control (or decision latitude). The original model argued that a

"high strain job" is one characterised by high job demands and low levels of job control (decision latitude). Typical jobs of this type might include being a junior doctor or a nurse in a busy accident and emergency department. A "low strain job" is characterised by low job demand and high levels of decision latitude. Karasek (1979) proposed two fundamental mechanisms underlying the model; the psychological strain and the active learning mechanisms. The former is characterised by the experience of high job demands with simultaneous low levels of latitude over decision-making. The latter is characterised by the experience of high job demands and high levels of decision latitude and is said to promote the development of new behaviour patterns. The model has subsequently been expanded by the addition of social support to form the job demand–control–support model (Johnson & Hall, 1988). Both forms of the model have stimulated considerable research looking at a wide range of physical and psychological outcomes (for reviews see Van Der Doef & Maes, 1998, 1999; de Lange, Taris, Kompier, Houtman, & Bongers, 2003; Hausser et al., 2010; Heikkila et al., 2013).

Relatively early research into stress in health professionals has highlighted the potential links between working in "high strain" work environments and health professional errors and quality of patient care (Firth-Cozens, 1998; O'Connor, O'Connor, White, & Bundred, 2000). For example, it has been argued that high levels of stress in general practice are associated with increased likelihood of clinical mistakes and medical errors (Firth-Cozens; O'Connor et al., 2000). A more recent study by Berland, Natvig, and Gundersen (2008) investigated the effects of work-related stress and patient safety in nurses working in anesthesiology, intensive care and operating rooms (Berland et al., 2008). These authors reported that a demanding work environment together with minimal control and social support from colleagues resulted in increased stress that often negatively impacted on patient safety. Relatedly, in a longitudinal study of hospital physicians, hospital environments with high demands (i.e., social stressors, time pressure and patient demands) were found to directly impact on physician-perceived quality of care (Kramer, Schneider, Spieb, Angerer, & Weigl, 2016). Moreover, the poor care practices then also contributed to increased demands. This study was particularly noteworthy given it was a prospective design with two waves of data collection over a 1-year time lag that utilised cross-lagged path models to test the main hypotheses.

2.3 Job Demands-Resources Model, Burnout and Patient Safety

Another model that has attracted a great deal of empirical investigation is the Job Demand-Resources Model (JD-R; Demerouti et al., 2001). This model extends and improves the JDC model and is particularly relevant to healthcare professionals as it was originally proposed as a model of burnout. The latter is a syndrome consisting of exhaustion, depersonalization and lack of personal accomplishment (Maslach,

1982). Those working in human service occupations (healthcare professionals, social workers, teachers etc.) were assumed to be particularly vulnerable to burnout. However, the concept has since been extended to other occupations, as the core dimensions of exhaustion and disengagement may be found in many professions (Bakker & Demerouti, 2007).

Like the JDC, the JD-R model suggests that stress results from a lack of equilibrium between sets of broadly positive and broadly negative variables. This model focuses on the equilibrium between *job demands* and *resources*. *Job demands* are defined as the 'physical, social, or organizational aspects of the job that require sustained physical and/or psychological (cognitive and emotional) effort or skills and are therefore associated with certain physiological and/or psychological costs' (Bakker & Demerouti, 2007, p. 312). *Job resources*, on the other hand consist of a broad range of aspects of the job that serve to either help the individual to achieve their work goals, help reduce their job demands or facilitate personal growth and development (Bakker & Demerouti, 2007). This may include control and rewards as well as social resources. The model has also been expanded to include personal resources such as optimism and self-efficacy (Xanthopoulou, Bakker, Demerouti, & Schaufeli, 2007).

The model suggests two processes, *the health impairment process* whereby excessive demands may lead to exhaustion and health problems, and the *motivational process* whereby job resources may lead to increased work engagement and performance (Bakker & Demerouti, 2007). A number of studies have now supported these two core processes in relation to psychological burnout and job engagement (e.g., Schaufeli, Leiter, & Maslach, 2009; Xanthopoulou et al., 2007).

In addition to these main effects, the JD-R model, like the JDC model, proposes that interactions between the core variables are also important in predicting strain and motivation. Because of the large number of potential resources and demands, a range of interaction effects are possible whereby specific job resources (control, support, feedback, role clarity etc.) may buffer the impact of different types of demands (Bakker & Demerouti, 2007). Not only may the effects of job resources reduce the negative impact of high demands, but the model also proposes that resources may aid motivation when demands are high.

Moreover, in 2011 a large-scale meta-analysis was published that established clear links between the JD-R model components and different aspects of workplace safety (Nahrgang, Morgeson, & Hofmann, 2011). In particular, they found support for the health impairment process and for the motivational process as mechanisms through which job demands and resources were associated with safety outcomes. Interestingly, these authors also found that across industries, the most consistent job resource was having a supportive work environment and the most consistent job demands were risks and hazards (i.e., perceived risk, level of risk, number of hazards & perceptions of safety) in relation to predicting variability in burnout, engagement, and safety outcomes (i.e., actual accidents & injuries, adverse events and unsafe behaviours). However, this review did not focus on patient safety outcomes or health professionals specifically and the final study included was published in 2010. In addition, therefore, next we review studies that have investigated whether there are

links between burnout and patient safety outcomes and also broaden the discussion to include wellbeing.

2.4 Associations Between Healthcare Professionals' Wellbeing and Burnout, and Patient Safety

As outlined earlier, ever increasing numbers of healthcare staff, of all disciplines and across the world, are suffering from high levels of stress, burnout, and poor wellbeing (Gibson et al., 2015; NHS England Survey Coordination Centre, 2018; Reith, 2018). Burnout and poor wellbeing have been cited throughout the literature as contributors to reduced patient safety levels and patient safety incidences (Avery et al., 2012; Salyers et al., 2016; Tawfik et al., 2019; Welp & Manser, 2016). Whilst there has been a wealth of research demonstrating this association exists, the terms burnout and wellbeing are often used interchangeably. This is problematic, because wellbeing and burnout have different causes, symptoms, and potentially differing consequences. Burnout is an effective response to chronic organizational stress, resulting in a 'state of vital exhaustion' (WHO, 2004). Whereas, an individual's wellbeing is affected by all areas of their life, including, but not limited to, their occupation. Poor wellbeing is often characterized by symptoms or diagnoses of mental illnesses (e.g. depression), high levels of stress, and/or a reduced quality of life.

To understand whether it is overall wellbeing, or burnout specifically, that is more strongly associated with patient safety, a systematic review was conducted by Hall et al. (2016). We identified nineteen studies measuring the link between burnout and patient safety, sixteen for wellbeing and patient safety, and eleven measuring both wellbeing and burnout in relation to patient safety. Of those that included a measure of wellbeing (such as quality of life, depression, mental health), the majority (22/27; 82%) found that poorer wellbeing was significantly associated with reduced safety levels (e.g. increased errors, lower ratings of safety). Similarly, within the studies that included a measure of burnout (often the Maslach Burnout Inventory (MBI Maslach et al., 1996)), the majority of these (25/30; 83%) found that higher levels of (at least one subscale of) burnout was significantly associated with decreased safety.

Of particular interest to the question at hand are the eleven studies that measured both burnout and wellbeing. Whilst the majority of these studies (7/11; 64%) found that both variables were significantly associated, in some way, with patient safety, it becomes more complex when you take into account whether self-report or objective measures were used. Of those seven studies that found an association, all bar one used solely self-perceived errors as the patient safety measure. Studies which additionally, or only, used objective measures of safety tell a different story. In these studies, only wellbeing (characterized as stress (Dugan et al., 1996), or depression (Fahrenkopf et al., 2008; Garrouste-Orgeas et al., 2015)) was significantly associated with errors (measured by chart audits). This has implications for

the sensitivity of patient safety measures, and may also speak to differences between healthcare professionals' safety *perceptions* versus *behaviours*. It could be that burnt-out HCPs are more likely to perceive their practice as less safe, regardless of actual safety behaviours, due to feelings of low personal accomplishment and exhaustion. Conversely, HCPs with poor wellbeing (e.g. depression) may be more at risk of actual involvement in patient safety incidences, as a consequence of some of the symptoms of poor mental health (e.g. memory and concentration issues, indecisiveness). Given this, future studies should strive to use both subjective and objective measures of safety, alongside measures of wellbeing and burnout, to better understand these nuances.

Since Hall et al.'s (2016) review, four meta-analyses have been published on this topic, allowing effect sizes to be calculated, in addition to describing more recent studies, and expanding the breadth of focus (to include quality of care, professionalism, patient satisfaction, and teamwork) (Panagioti et al., 2018; Salyers et al., 2016; Welp & Manser, 2016). Welp and Manser's meta-analysis of 25 studies measuring wellbeing and patient safety reported a significant association in the expected direction, in the majority of studies, with effect sizes ranging between OR = 1.09 and OR = 8.3. However, burnout and wellbeing were conflated, with most studies measuring burnout (using the MBI), and not overall wellbeing. Salyers et al.'s (2016) meta-analysis focused solely on burnout, and included measures of quality of care in addition to safety. The 40 articles investigating safety yielded an overall small but significant relationship in the expected direction ($r = -0.23$), despite high levels of heterogeneity. Interestingly, a stronger relationship was found between burnout with *perceptions* of safety ($r = -0.28$), rather than incidents ($r = -0.16$), which has also since been suggested in a survey study amongst General Practitioners in the United Kingdom (Hall, Johnson, Watt, & O'Connor, 2019). Panagioti et al.'s (2018) meta-analysis reported that both physician burnout, and physician depression/emotional distress were associated with being twice as likely to be involved in a patient safety incident. However, similarly to Salyers et al., burnout was only found to be significantly associated with *physician-reported* incidents (OR = 2.07), and not for *system-recorded* incidents (OR = 1.00). This sub-analysis was not reported for depression/emotional distress.

Considering all of the aforementioned reviews, it is likely that both wellbeing and burnout are important for patient safety. Potential variances between poor wellbeing and burnout may manifest themselves in the differences between perceived safety behaviours and actual incidents, as touched upon throughout this section. Additionally, there is some evidence to suggest that suffering from both burnout and poor wellbeing (specifically depression), presents an even higher risk of making an error than suffering from one or the other (de Oliveira et al., 2013).

An important limitation of the literature is that the majority of studies within these reviews utilize cross-sectional designs. Thus, causality cannot be inferred. Whilst the previous section of this chapter outlines how job strain, job demands and resources etc. could lead to poor patient safety (through increasing stress, depression, and burnout), the reverse is also known to be true, with a breadth of literature on the 'second victim' effect (Seys et al., 2013; Wu, 2012). This gives rise to the notion that

burnout, (poor) wellbeing, and patient safety are interconnected in a 'vicious cycle', whereby increases in one leads to the likelihood of increases in another, regardless of which occurred first.

A couple of longitudinal studies attempted to overcome this limitation. West et al. (2006) reported that burnout and error had a circular relationship when measured at three-month intervals. However, whilst self-reported errors predicted subsequent quality of life and screening positive for depression, the reverse was not found to be true. Welp, Meier, and Manser (2016) also measured outcomes at three-month intervals and suggested that clinician burnout leads to reduced interpersonal and cognitive-behavioural teamwork, which then leads to decreased clinician-rated patient safety. Whilst this is a start, it is evident that more prospective studies are needed to better understand the relationships between healthcare professional wellbeing, burnout, and patient safety outcomes. What is clear, however, is that there is indeed a relationship between these variables. As such, it is imperative that healthcare organisations intervene to improve employee wellbeing and burnout levels, for both their workers' and their patients' health and safety.

2.5 Interventions

The final section of the chapter considers research that has tested interventions to reduce burnout, work related stress, and improve wellbeing in the health professional context. Interventions for burnout are usually split into those which are targeted at the 'individual' or 'person' level and those which are focused on organisational-change (Awa, Plaumann, & Walter, 2010; Johnson et al., 2018). They can also be understood as being 'primary', 'secondary' or 'tertiary' in their focus. Primary interventions are those which aim to reduce work stressors; secondary interventions are those which aim to help participants cope with work stressors and tertiary interventions are those which treat individuals who are already suffering with stress due to work (Maslach & Goldberg, 1998). While these taxonomies are distinct there is some overlap, as organisation-directed interventions are often primary interventions, whereas person-directed interventions are often secondary or tertiary interventions.

In healthcare settings, person-directed interventions have included stress-management workshops and mindfulness classes (Goldhagen, Kingsolver, Stinnett, & Rosdahl, 2015; Regehr, Glancy, Pitts, & LeBlanc, 2014). Conceptually, these interventions are context-free; they view workers as stressed individuals and seek to remediate their stress by increasing their capacity to cope. Organisation-directed interventions, in contrast, view workers in context. They conceptualise burnt-out professionals as individuals in environments which are generating stress. Consistent with this view, they seek to reduce the stress which the work environment is causing. In healthcare settings, organisation-directed interventions have included improving inter-professional communications and the introduction of peer support groups (Dreison et al., 2016; Linzer et al., 2015).

Recent years have seen a growing research literature into the evidence-base for burnout interventions in healthcare settings, and three significant reviews of this literature have been published since 2016. The first focused only on interventions in doctors (West, Dyrbye, Erwin, & Shanafelt, 2016). It meta-analysed 15 randomised trials and 37 cohort studies, including 3630 physicians altogether. Results suggested that overall, burnout interventions were effective and decreased burnout on average by 10%, with mean levels dropping from 54% before the intervention to 44% afterwards. The second also focused on studies in doctors. It included 20 randomised trials including a total of 1550 physicians, and similar to the previous review it suggested that overall these resulted in 'small and significant' reductions in burnout (Panagioti et al., 2017). In a departure from the previous two, the third review focused on mental health staff and included studies conducted in all healthcare disciplines (Dreison et al., 2016). It included 13 randomised trials and 14 cohort studies comprising 1894 participants in total, and reported that on average, burnout interventions produced small but significant reductions (Dreison et al., 2016). Taken together, these three reviews suggest that burnout interventions in healthcare professionals are effective, but the level of effectiveness is limited and there is a need to understand how they can be improved.

The issue of intervention type is contentious. Due to increasing demand on healthcare services combined with limited resources, there has been steadily increasing pressure on healthcare professionals to accomplish more with less (Liu, Goryakin, Maeda, Bruckner, & Scheffler, 2017). There is also a growing global healthcare worker shortage, which has led to increased reports of under-staffing and rota gaps in services (Aluttis, Bishaw, & Frank, 2014; RCP, 2018). In this context, many health professionals have rejected person-directed interventions, suggesting they shift blame from government and senior leadership to individual workers (Balme, Gerada, & Page, 2015; Montgomery, Panagopoulou, Esmail, Richards, & Maslach, 2019; Oliver, 2017). Despite this, person-directed interventions have been the most commonly tested in the research literature. For example, in the review by West et al. (2016), person-directed interventions comprised 80% (12 out of 15) of interventions tested in the randomised trials, and 54% (20 out of 37) of the cohort studies. Similarly, in the review by Panagioti and colleagues, 60% of the tested interventions were person-directed (2017). In fact, the only review which suggested that a majority of interventions (70.4%) were organisation-directed was that conducted by Dreison et al. (2016). This variation could be due to an artefact of how 'organisation-directed' interventions were conceptualised. For example, while West et al. (2016) categorised communication training interventions as a form of person-directed intervention, Dreison et al. (2016) grouped these together with other professional training interventions, which they considered to be organisation-directed interventions.

The issue of which type of intervention is most effective is also somewhat controversial. For example, both reviews in doctors provide some indication to suggest that organisation-directed interventions may be more effective than person-directed interventions for reducing burnout. West et al. (2016) reported that organisation-directed interventions had a significantly stronger impact upon

reducing overall burnout than person-directed interventions, although there were no significant differences when specific facets of burnout were examined (emotional exhaustion and depersonalisation). Panagioti et al. (2017) only examined the emotional exhaustion facet of burnout. They found that organisation-directed interventions resulted in medium significant reductions in burnout and they were significantly more effective for reducing burnout than person-directed interventions, which only produced small significant effects. In contrast, however, Dreison et al. (2016) found that person-directed interventions were more effective than those targeted at the organisation-level.

These contrasting findings could be misleading and caused by the overly-broad grouping of intervention types. For example, when Dreison and colleagues (2018) broke down the category of organisation-directed interventions into training interventions and non-training interventions, their results changed. Training interventions were the most common subtype of organisation-directed interventions in their study (comprising 44.4%) and when they separated these out, they found that training interventions were in fact more effective for reducing overall burnout scores than person-directed interventions. These findings highlight the limitations in our current approach to conceptualising burnout interventions and indicate that a shift in approach could be needed if more effective interventions are to be developed.

A paradigm shift to this effect is now becoming visible in the literature with researchers calling for a renewed focus on ameliorating the known causes of burnout, rather than rolling out one-size-fits-all programmes (Johnson et al., 2018; Montgomery et al., 2019). This approach requires innovative thinking that transcends the traditional categories of 'organisation-directed' and 'person-directed' interventions. For example, drawing on recent research literature, Montgomery et al. (2019) have called for approaches which consider all aspects of work life—workload, control, reward, community, fairness and values—and consider the 'fit' between individual workers and their workplace on these areas. Similarly, Hall et al. (2017) sought to generate new solutions for burnout in General Practitioners using a focus group design. General Practitioners in the study identified a range of potential interventions, ranging from the use of strategies to improve support from patients, to increasing opportunity for regular tea and coffee breaks. Several of these did not conform easily to the categories of 'person-directed' or 'organisation-directed' interventions, but were instead practical solutions which could be viewed as a mixture of the two. Interestingly, however, they could be interpreted in terms of the JD-R model, with many of the suggested interventions aiming to increase support from colleagues or patients. While reduction in job demands was discussed, General Practitioners viewed this as generally being out of their personal control, and something that could only be affected by the higher organisational levels of UK healthcare.

Key Messages for Researchers

There is an urgent need to understand the links between the work environment, burnout and patient safety.

The need to measure healthcare professional wellbeing (i.e. mental health, quality of life, stress) *and* burnout (an affective response to occupational stress), alongside subjective *and* objective measures of safety, is evident: It may be that burnout is only associated with *perceived* safety, whereas wellbeing may be more strongly associated with *actual* safety behaviours.

Definitions of 'organisational' and 'individual' interventions varies; clearer definitions may enhance the consistency of results between studies.

Key Messages for Healthcare Delivery

Stress arising from the work environment can impact on the health and wellbeing of healthcare professionals *and* can lead to reduced quality of patient care and increased medical errors

Healthcare organisations should consider what they could do to improve employee wellbeing and prevent burnout, with implications being evident for patient safety outcomes.

Overall, interventions to reduce burnout in healthcare professionals are effective, supporting their general use in healthcare settings.

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