
EUROPE

# Understanding mental health in the research environment

## A Rapid Evidence Assessment

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# Preface

RAND Europe has been commissioned by the Royal Society and Wellcome Trust to investigate mental health in the research environment. The aim of the work is to establish whether there are specific mental health needs among researchers, what interventions have been considered in this setting, and whether those interventions have been effective in addressing the mental health and wellbeing needs of researchers. This work consists of a review of the existing literature.

The report is likely to be of relevance to universities and other research-performing institutions, policy makers, research funders and managers, professional bodies, and the research community more widely.

RAND Europe is a not-for-profit policy research organisation which aims to improve policy and decision making through research and analysis. For more information on this report or RAND Europe more widely, please contact Dr Susan Guthrie.

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# Abbreviations

| | |
|---|---|
| ACS | Affective Commitment Scale |
| ADD | Attention Deficit Disorder |
| ADHD | Attention Deficit Hyperactivity Disorder |
| CES-D | Center for Epidemiologic Studies Depression Scale |
| CI | Confidence Interval |
| ESENER-2 | European Survey of Enterprises on New and Emerging Risks |
| GHQ | General Health Questionnaire |
| HE | Higher Education |
| HEFCE | Higher Education Funding Council for England |
| HEI | Higher Education Institution |
| ILO | International Labour Organization |
| MBI | Maslach Burnout Inventory |
| QPR | Question, Persuade, Refer |
| SRP | Stress-Release Programme |
| UCEA | Universities and Colleges Employers Association |
| UCU | University and College Union |
| WHO | World Health Organization |
| y | year |

# Executive summary

The Royal Society and Wellcome Trust are interested in better understanding the mental health needs of researchers, and what interventions could be used to support them. This reflects the recent focus on mental health among undergraduate students in the UK, and the concern that others in the academic and wider research environment may have mental health needs that have not been as well explored and considered. This study aims to establish what is currently known about the mental health of researchers based on the existing literature.

## Context

Over 6 million working-age people in England have a mental health condition at a given time. The most common diagnosable difficulties among working age adults are anxiety and depression, each of which includes a number of different conditions. Less common but still widespread mental health diagnoses include personality disorders and psychoses such as bipolar disorder and schizophrenia. Many people will have more than one diagnosis at a time, or receive different diagnoses over time.

The causes and triggers of poor mental health are complex and not fully understood. There is evidence that the vast majority of people who experience poor mental health in adulthood first experienced difficulties as children, often from a young age. Risk factors for poor mental health include having a parent with mental health difficulties, growing up in prolonged poverty and housing insecurity, experiences of abuse, neglect and bullying, and traumatic experiences during childhood. Some groups of people have a heightened risk of poor mental health, including some black and ethnic minority communities, people with long-term physical conditions, lesbian, gay, bisexual and transgender people, and people with disabilities.

There is mixed evidence about the extent to which a person's experiences of work contribute to their having a mental health difficulty. Survey evidence suggests that workplace factors such as bullying, insecurity and a lack of control are major causes of mental ill health among staff. On the other hand, there is also evidence that work helps many people to recover from an episode of poor mental health, and there is clear evidence that unemployment is a major risk factor for mental and physical ill health.

Mental ill health and work-related stress are key issues for the labour market as they affect productivity through absenteeism and presenteeism, and are associated with high economic costs for individuals, employers and the economy at large. It has been estimated that poor mental health costs employers in the UK £26 billion nationwide each year, equivalent to £1,035 for every employee in the workforce (Centre for Mental Health, 2007).

## Approach

Little is known about how mental health needs vary across working environments, or about how to tailor interventions to address different working populations.

The aim of this study was to assess what is known about mental health in research environments through a literature review, and it focused on the UK and comparable research systems. A better understanding of researchers' mental health needs will enable the design of more effective interventions to address them, while a better understanding of evidence gaps can also help guide future research efforts in this area. The following research questions guided the study:

- How are 'mental health' and 'wellbeing' understood in the context of research environments?
- What is currently known about researchers' mental health and wellbeing, and does it differ from that of other populations?
- What interventions are used to support researchers, and what evidence is there of their effectiveness?
- What are the strengths and limitations of the evidence base in this area?

## How are 'mental health' and 'wellbeing' understood in research environments?

Overall, the existing literature offers little insight into what sets the research environment apart from other workplaces, or into how mental health, stress, and wellbeing are defined in these contexts. Rather, the majority of the literature identified focuses on describing the levels of stress amongst the academic workforce and, in particular, identifying contributory factors within the workplace. There is little available evidence based on objective clinical assessment about the prevalence of clinically defined mental health conditions and their treatment in this context. The focus on wellbeing raises the issue that although the presence of common mental health conditions does correlate with some of the wellbeing scales used commonly in the literature, more serious (e.g. psychotic) mental illnesses are not necessarily aligned with measurement of wellbeing.

The literature is also almost exclusively focused on universities, with many studies covering all university staff, which will include both researchers and non-research staff. Some studies focused more specifically on researchers, and a more limited group within that looked at particular groups of researchers – most commonly PhD students, reflecting the wider focus on (typically undergraduate) students in the literature around this topic. The majority of the existing research is based on survey data, which is subject to sampling biases, relies on self-reporting, and was not triangulated with other objective indicators, such as absence data.

## What is currently known about researchers' mental health and wellbeing, and how it differs from other populations?

### *Evidence on the prevalence of work-related stress and mental health problems*

Despite widely reported anecdotal evidence and press coverage of a 'mental health crisis' in academia, there is limited published evidence regarding the prevalence of specific mental health conditions among researchers. The majority of the literature on prevalence identified through this review relates to the experience of work-related stress (and arguably the risk of developing a mental health condition as a result of exposure to identified stressors) among academic staff and postgraduate students in university settings.

- Survey data indicate that the majority of university staff find their job stressful. Levels of burnout appear higher among university staff than in general working populations and are comparable to 'high-risk' groups such as healthcare workers.
- The proportions of both university staff and postgraduate students with a risk of having or developing a mental health problem, based on self-reported evidence, were generally higher than for other working populations.
- Large proportions (>40 per cent) of postgraduate students report symptoms of depression, emotion or stress-related problems, or high levels of stress.

UK national statistics indicate that only 6.2 per cent of staff disclosed a mental health condition to their university, though academics have been found to be among the occupational groups with the highest levels of common mental disorders with prevalence around 37 per cent. It should be noted, however, that prevalence may generally be over-reported in surveys of occupational groups.

### *Personal factors that contribute to mental health outcomes in the research workplace*

Gender was the key personal factor that emerged as a determinant for mental health (or its reporting), with women reporting more exposure to stress than men, as well as greater challenges around work-life balance. There was also evidence that personality and perceived competence affect mental health as self-critical personalities are more susceptible to stress, though it is also possible that they are more aware of it or more willing to report it. However, it was unclear whether stress was a result of working conditions in the research environment, or whether research settings attracted particular types of individuals. The results on whether age affects mental health were inconclusive, partly as age is often difficult to disentangle from discussions about rank and seniority. Other factors such as disability, sexuality and minority status were mentioned in a small number of articles in the sample, and these articles indicated that these personal factors generally increase stress.

### *Environmental factors commonly considered in surveys of mental health and wellbeing in workplaces*

Based on the Health and Safety Executive's framework, and evidence from the wider literature, we identify six key aspects of work that can affect workers' stress levels: work demands, job control, change

management, work relationships, support provided by managers and colleagues, and clarity about one's role.

- These aspects of the work environment can be sources of stress or they can help counteract it.
- Findings from studies of university staff and researchers were consistent with the wider understanding of factors that contribute to stress in workplaces.
- Factors including increased job autonomy, involvement in decision making and supportive management were linked to greater job satisfaction among academics, as was the amount of time spent on research. Opportunities for professional development were also associated with reduced stress.

UK higher education (HE) and research staff report worse wellbeing in most of the six aspects, as compared to staff in other sectors.

- In large-scale surveys, UK higher education staff have reported worse wellbeing than staff in other types of employment (including education, and health and social work) in the areas of work demands, change management, support provided by managers and clarity about one's role.
- The only area where higher education staff have reported higher wellbeing in large-scale surveys is in job control, though even here results are mixed across studies. Wide variability was seen among respondents in relation to the level of support provided by managers and colleagues.
- Job insecurity (real and perceived) appears to be an important issue for those working in the research environment, and particularly for early-career researchers, who are often employed on successive short-term contracts.

PhD students face similar challenges to other researchers and higher education staff.

- The main factors associated with development of depression and other common mental health problems in PhD students are high levels of work demands and work-life conflict, low job control, poor support from the supervisor and exclusion from decision making.
- Believing that PhD work is valuable for one's future career helps reduce stress, as does confidence in one's own research abilities.

Some studies suggested that changes to the UK higher education system had brought increased job stress.

- These studies discussed changes that had occurred in the UK higher education system from the 1990s onwards, and had resulted in increased emphasis on accountability, efficiency and performance management. Study authors suggested that these changes could have brought about increases in job stress for staff working in this system.
- However, data explicitly linking the changes to an increase in stress are limited, partly due to a lack of comparable data from before the 1990s.

Staff who can devote a large proportion of their working time to research have better wellbeing.

- Studies found that spending a larger percentage of one's time on research was associated with reduced stress, and that research-only staff reported lower levels of work-life conflict and had better wellbeing than other higher education institution (HEI) staff. However, this may be to some extent confounded by other characteristics of such researchers (e.g. they may be more senior).

Research on emotionally challenging topics can put staff wellbeing at risk.

- Studies showed that staff involved in research on sensitive topics, such as trauma or abuse, may be emotionally affected by the material they encounter in their work and should receive greater support to mitigate the negative impacts of this work.

### *Outcomes related to poor mental health and wellbeing*

In addition to considering the extent to which individuals in research environments suffer from mental health issues, it is important for employers and institutions to recognise that these issues have further implications:

- Job stress and poor workplace wellbeing can contribute to reduced productivity – both through absence and, more importantly, through presenteeism, where researchers attend work and are less productive.
- They can also lead to lower levels of commitment to their research and to institutions – which can be seen in high levels of turnover and through negative attitudes in the workplace.
- Effects on job satisfaction are less clear because of the satisfaction researchers gain from intrinsic factors such as the intellectual stimulation of their work. Several studies note that high levels of job-related stress can coexist with high levels of job satisfaction.
- Effects can also spill over into personal and family life.

The overall effects of these negative outcomes on the sector have not been fully quantified, but estimates drawing on broader experience suggest that the costs could be high. An estimate from Shutler-Jones et al (2008) which has several caveats and assumptions, suggests that the costs to the UK HE sector could be more than £500 million per year (c. 5 per cent of the sector's total annual income). Costs to the economy and the country more widely could also be significant due to the lost potential for scientific advances and due to impacts on the availability of research talent if PhD students fail to complete their studies or choose to leave research subsequently.

## What interventions are used to support researchers, and what evidence is there of their effectiveness?

Though poor mental health at work is often related to difficulties that are not caused by work (e.g. childhood adversity, family life and other stressors), support in the workplace can offer benefits. However, the evidence around the effectiveness of interventions to support the mental health of researchers specifically is thin. Few interventions are described in the literature and even fewer of those have been

evaluated. Where evaluations have been conducted, they are often of limited utility, either because of the evaluation design or the length of follow-up.

Interventions typically focus on stress and wellbeing rather than clinical mental health conditions, reflecting the wider focus in the literature as described above. In addition, the majority of interventions identified aim to support researchers to deal with workplace stress, but they may not be effective in addressing the root causes of that stress or stresses relating to life outside work. The interventions identified can be broadly classified into four groups: policy changes, communication activities, training, and health-promotion activities.

Focusing specifically on the UK, a range of interventions were piloted and evaluated (to a limited extent) as part of a wellbeing initiative by the Higher Education Funding Council for England (HEFCE) around 2009–2011. These offer scope for further investigation and potentially evaluation now that more time has elapsed. Additionally, the project, though completed in 2011, has spawned a network that is now managed by the Universities and Colleges Employers Association (UCEA), which may offer a route to identify further ongoing initiatives and potentially a space to pursue and evaluate efforts to address these issues in the HE sector.

## What are the strengths and limitations of the evidence base in this area?

The existing evidence base is limited, meaning it is not possible to draw robust conclusions about the mental health status and needs of researchers, and how researchers may differ from other populations in this regard. More work is needed to understand both the mental health needs of researchers and how they can be addressed. Particular gaps include the effectiveness of interventions, prevalence of specific mental health needs (rather than stress) among researchers, and any evidence about researchers outside the academic setting. There are also limitations to the quality and design of many of the studies conducted, such as lack of long-term follow-up and absence of control groups.

## What next?

Based on the evidence gaps identified and the information available, we suggest the following avenues for further research on this topic:

1. **Study the prevalence of mental health conditions amongst postdoctoral researchers:** Further work on prevalence could use a targeted approach building on the recent work by Levecque et al. (2017), who used a survey to assess the presence of psychological distress and potential psychiatric disorders in a sample of PhD students and compared the results to those of three other sample populations, and Eisenberg et al. (2007), who surveyed a sample of undergraduate and postgraduate university students to assess prevalence of depressive and anxiety disorders and took steps to address the issue of non-response bias. In particular, we suggest a similar study focusing on postdoctoral researchers, a group that is particularly poorly addressed in the existing literature.

2. **Map mental health policies and procedures at UK HEIs:** The current standard of mental health policies and procedures in UK research institutions is not well understood. We suggest that a mapping of the current policies in place across institutions could be valuable, and could build on standards such as those set out in the Mindful Employer Charter (Mindful Employer, 2017).
3. **Evaluate the interventions introduced through the HEFCE wellbeing and engagement initiative:** The wellbeing initiative established by the HEFCE and subsequently maintained as a network by UCEA offers a range of interventions for evaluation. In the project reporting in 2011, many of the institutions noted that it was too soon to tell whether their interventions had been effective. Though these initiatives generally focus on wellbeing rather than clinical mental health conditions, there is scope to explore with the relevant institutions whether those interventions have developed over the years, and whether data are now available (or could be collected) to provide more useful evaluation of the interventions introduced.
4. **Investigate and develop the HSE management standards as a framework for workplace mental health management in research environments:** As well as providing a framework for workplace stress used in several important surveys, the Health and Safety Executive (HSE) have also set out management standards that describe an approach to identifying sources of workplace stress and addressing them at an organisational level. It could be useful to work through that approach with a university or a research organisation to identify the mechanisms at play in those environments. Doing so could establish the relevance of the approach in this context, and potentially provide a model that could be used more widely in the sector.
5. **Conduct more and higher-quality evaluations of mental health interventions and publish their results:** Broadly, better-quality evaluations are needed to identify what works in this area. There is a need for high-quality studies to test the effectiveness of interventions.

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# 1. Introduction

Diagnosable mental health conditions affect approximately 23 per cent of the adult population at a given time (Department of Health, 2014). The most common diagnosable difficulties among working age adults are anxiety and depression (Table 1-1), with a combined prevalence of about 14 per cent, each of which includes a number of different conditions (e.g. phobias, obsessive compulsive disorder and post-traumatic stress disorder). Less common but still widespread mental health diagnoses include personality disorders, which affect about 5 per cent of the adult population, and psychoses such as bipolar disorder and schizophrenia, which affect about 1–2 per cent. Many people will have more than one diagnosis at a time, or receive different diagnoses over time.

The causes and triggers of poor mental health are complex and not fully understood. There is evidence that the vast majority of people who experience poor mental health in adulthood first experienced difficulties as children, often from a young age. The risk factors for poor mental health include having a parent with mental health difficulties, growing up in prolonged poverty and housing insecurity, experiences of abuse, neglect and bullying, and traumatic experiences during childhood. Some groups of people have a heightened risk of poor mental health, including some Black and ethnic minority communities, people with long-term physical conditions, lesbian, gay, bisexual and transgender people, and people with disabilities (Mental Health Taskforce, 2016).

The economic and social cost of mental ill health in England has been calculated at £105 billion (Centre for Mental Health, 2010). This comprises the direct and indirect costs of health and social care (including informal care within families as well as statutory services), the 'business' costs of lost economic activity, and the 'human' costs relating to the substantial, and often underestimated, reduction in quality of life associated with poor mental health. For the UK HE sector, possible costs of poor performance, presenteeism and absenteeism resulting from issues around wellbeing and engagement have been estimated at more than £500 million per year.

## 1.1. Mental health in the workplace

### *1.1.1. Understanding 'mental health' and 'wellbeing' in the workplace context*

While mental health and wellbeing are commonly used terms in recent literature, their meanings are far from universally accepted. Mental health is defined by the World Health Organization (WHO) (2004, 10) as:

> *…a state of well-being in which the individual realises his or her own abilities, can cope with the normal stresses of life, can work productively and fruitfully, and is able to make a contribution to his or her community.*

The International Labour Organization (ILO) (2017) notes that workplace wellbeing:

> *…relates to all aspects of working life, from the quality and safety of the physical environment, to how workers feel about their work, their working environment, the climate at work and work organization.*

Another term which is important to clarify at the start is 'work-related stress', which the WHO (2017) defines as:

> *…the response people may have when presented with work demands and pressures that are not matched to their knowledge and abilities and which challenge their ability to cope.*

We followed these broad definitions and let them guide our review of mental health in the research environment.[1]

Looking to the future, to improve how mental health issues are understood and tackled in the research context, it will be important to draw on what is already known from other workplaces. Though research environments and the researcher population may present unique features, some elements will be common to many work environments.

There is mixed evidence about the extent to which a person's experiences of work contribute to their having a mental health difficulty. On the one hand, being at work and returning to it appears to help improve mental wellbeing (McManus et al. 2012), and there is clear evidence that unemployment is a major risk factor for mental and physical ill health. However, survey evidence suggests that workplace factors such as bullying, insecurity and a lack of control are major causes of mental ill health among staff. Ongoing changes in the work environment can also cause or exacerbate mental health problems (Waddell & Burton, 2006; Butterworth et al. 2011). Some of these changes include population dynamics, the use of new technologies, the shift from manufacturing to service-based economies, and the transformation of work patterns. They lead to increased psychosocial risks and put workplace interventions which help to improve mental health and wellbeing of employees at the forefront of policy making (EU-OSHA, 2013).

Three main theoretical approaches attempt to explain the relationship between mental health and work:

- Job demand and control theory assumes that jobs with high levels of demand and low levels of control are associated with increased exposure to stress and negative health effects (Karasek & Theorell, 1990).
- The effort-reward imbalance model holds that psychological stress is a result of a mismatch between efforts invested by employees and the rewards they receive in terms of pay, esteem, job security and career opportunities (Siegrist, 1996).

[1] In the remainder of the report we use 'mental health problems', 'mental health needs', 'mental ill-health' or 'mental health illnesses' interchangeably. These should be distinguished from the terms 'condition' or 'disorder', which refer to a mental health problem that is considered as clinically manifest. As such, 'work-related stress' is a different and complex concept. It is not defined as a 'disease' and can have beneficial or harmful consequences for an employee.

- The organisational justice concept focuses on issues of fairness, justice and equity in the workplace (Elovainio et al. 2002).

Mental ill health and work-related stress are key issues for the labour market as they affect productivity through absenteeism and presenteeism,[2] and are associated with high economic costs for individuals, employers and the economy at large. It has been estimated that poor mental health costs employers in the UK £26 billion nationwide each year, equivalent to £1,035 for every employee in the workforce (Centre for Mental Health, 2007).

### *1.1.2. Workers' mental health and wellbeing*

Over 6 million working-age people in England have a mental health condition at a given time (McManus, 2009). More recent data show that 26 per cent of British adults reported having ever been diagnosed with at least one mental health condition and a further 18 per cent declared having experienced mental ill health without a formal diagnosis (HSE, 2014). The data also reveal that the most frequently reported mental health problem was depression (19 per cent of adults), followed by panic attacks (8 per cent of adults) and generalised anxiety disorder (6 per cent of adults).

Individual mental illnesses can be grouped into four main categories: 1) common mental disorders, 2) serious mental illnesses, 3) other mental illnesses including complex disorders, and 4) alcohol and drug dependence (Table 1-1). It should be noted that some people will have combinations of these conditions, and diagnoses can vary over time.

**Table 1-1. Mental illness categories**

| Common mental disorders | Serious mental illness | Other mental illnesses including complex disorders | Alcohol or drug dependence |
|---|---|---|---|
| • Phobia<br>• Panic attacks<br>• Post-traumatic stress<br>• Generalised anxiety disorder<br>• Depression<br>• Post-natal depression<br>• Obsessive compulsive disorder | • Bipolar disorder<br>• Eating disorder<br>• Nervous breakdown<br>• Personality disorder<br>• Psychosis or schizophrenia | • Attention deficit hyperactivity disorder (ADHD)<br>• Attention deficit disorder (ADD)<br>• Dementia<br>• Seasonal affective disorder<br>• Any other mental, emotional or neurological problem or condition | |

Source: HSE (2014)

There is little information on how the prevalence of mental health problems varies by industry sector[3] or occupation.[4] However, the European Survey of Enterprises on New and Emerging Risks (ESENER-2)

[2] Presenteeism refers to employees coming to work despite having an illness for which an absence would be justified.

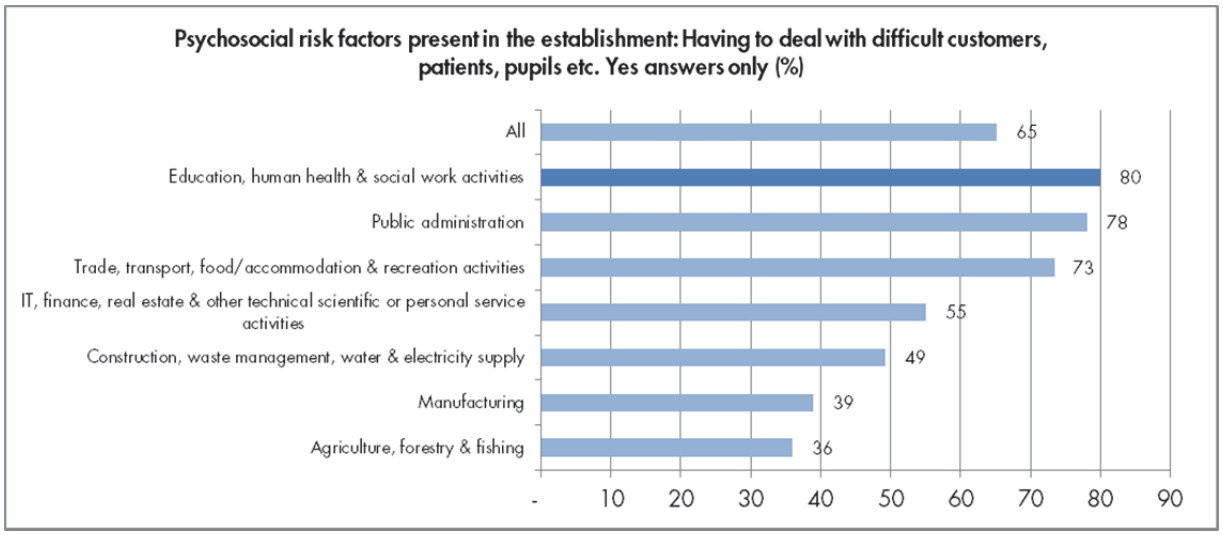
[3] Sector is defined as a group of companies that engage in the same economic activity.

[4] Occupation refers to a set of jobs with similar tasks and duties as well as qualification and skills requirements.

carried out in 2014 sheds some more light on the prevalence of psychosocial risk factors[5] in the UK compared to other EU countries. The survey showed that British workers were particularly exposed to long or irregular working hours compared to their European colleagues (32 per cent and 23 per cent of respondents, respectively (EU-OSHA, 2014)).

In addition, the ESENER-2 data for the UK revealed some differences in the exposure to various risk factors across industry sectors. The education sector (clustered together with human health and social work activities) ranked first – perhaps unsurprisingly – in terms of exposure to difficult customers, patients, pupils, etc. (Figure 1). It came second after 'Public administration' with respect to almost all remaining psychosocial risk factors (including time pressure, poor communication or cooperation, employees' lack of influence, job insecurity, and discrimination).

**Figure 1. Psychosocial risk factors present in the establishment: Having to deal with difficult customers, patients, pupils etc.**




Source: ESENER 2014, UK data only

Note: Besides these risks, there may also be health risks resulting from the way work is organised, including social relations at work or the economic situation.

Survey question: Please tell me for each of the following risks whether or not it is present in the establishment? Having to deal with difficult customers, patients, pupils etc. (1) Yes (2) No (9) No answer

These data illustrate the importance of mental health issues in education, the sector to which a large proportion of researchers belong. Workplace interventions are a key part of the policy mix necessary to tackle this problem.

[5] The risk factors in the survey include: 1) time pressure, 2) poor communication or cooperation, 3) employees' lack of influence, 4) job insecurity, 5) difficult customers, patients, pupils, 6) long or irregular working hours, 7) discrimination.

### 1.1.3. Workplace interventions improving mental health and wellbeing

Despite the high prevalence of common mental health disorders in the workplace, until recently there has been relatively little research on the effectiveness of interventions that help people with these conditions to remain in work or return to work after a sickness absence (Lelliott et al. 2008). Much of the cost of poor mental health at work is related to difficulties that are not caused by work (e.g. childhood adversity, family life and other stressors); nonetheless, support in the workplace can offer benefits. It is not known what proportion of the economic costs associated with mental ill health in the workplace could be saved through better management of mental health at work, but employers who have taken steps in this regard have seen significant reductions in sickness absences (Centre for Mental Health, 2007).

Two early reviews (Hill et al. 2007; Seymour & Grove, 2005) suggested that stress management techniques (such as teaching of problem-solving skills, exercise and rehabilitation) may improve people's ability to cope with stress and avoid stressful situations at work, but failed to provide firm evidence that these techniques reduce the prevalence of common mental illness or sickness absence. The studies also indicated that cognitive behavioural therapy could be beneficial in supporting people who have common mental disorders that are affecting their work. The authors concluded that interventions should be comprehensive and address both individual and organisation level factors, and that by keeping in touch with people on sickness leave due to mental disorders, line managers can help them get back to work sooner (Lelliott et al. 2008).

The most recent review of workplace health interventions identified 24 systematic reviews of workplace health programmes which had examined statistically the impact of the interventions on a variety of outcomes, including mental health, absenteeism (and its costs), work ability and job stress (Brunton et al. 2016). The reviews showed that workplace interventions have modest effects in improving health outcomes (Brunton et al. 2016). Four of the 24 reviews examined workplace health interventions and focused specifically on mental health; statistically significant beneficial effects were reported in three of them:

- Martin et al. (2009) examined the effects of health-promotion interventions in the workplace on depression and anxiety symptoms: for anxiety, effect size (d) = 0.29 (95% Confidence Interval (CI): 0.06–0.53) and depression, d = 0.28 (95% CI: 0.12–0.44);
- McLeod (2010) conducted a review of the effectiveness of workplace counselling but reported no statistically significant results;
- Richardson and Rothstein (2008) carried out a meta-analysis to determine the effectiveness of stress management interventions in occupational settings: for psychological functioning, d = 0.53 (95% CI 0.36–0.69);
- Tan et al. (2014) focused upon research examining work-based universal prevention of depressive illness: for depression following exposure to workplace health interventions, d= 0.16 (95% CI: 0.07–0.24) or cognitive behavioural interventions, d = 0.12 (95% CI: 0.02–0.22).

### 1.1.4. Strengths and limitations of the evidence base

While the number of studies assessing the effectiveness of workplace interventions on mental health outcomes is still limited, there is a growing number of systematic and meta-reviews published in peer-

reviewed journals. Increasingly, studies are using randomised control trials to test interventions and compare results between treatment and control groups. However, a number of limitations persist. Most notably, Brunton et al. (2016) pointed out that:

- Few studies examine interventions with small- to medium-sized enterprises – most evidence comes from large, often multinational corporations.
- Few studies evaluate costs of workplace interventions and it is unclear whether all outcomes relevant to employers (beside 'presenteeism' or 'absenteeism') have been taken into account.
- Few studies examine whether the positive changes persist over a long period of time.
- Few studies explore the perspectives of key decision makers (such as senior managers, owners or board members) on workplace interventions.

Given the current high profile of mental health and wellbeing issues at a national level in the UK, corresponding to the policy strand on *Mental health service reform* (Department of Health, n.d.), and the recent green paper 'Improving Lives' (Department for Work and Pensions & Department of Health, 2016), this is an appropriate time to assess the extent to which researchers have specific mental health needs that are not addressed by general service provision as set out in a report by the National Audit Office (2016), and if so, what these are and how they are being addressed.

## 1.2. This study: aims and report structure

The aim of the present study is to assess what is known about mental health in research environments, including academia and industry, using a literature review approach. The review focused on the UK context in particular, covering literature about the UK or comparable research systems. A better understanding of the mental health needs of and challenges faced by this population will enable the design of more effective interventions to address those needs. In addition, a better understanding of evidence gaps can help guide future research efforts in this area.

The following research questions guided the study:

1. How are 'mental health' and 'wellbeing' understood in the context of research environments?
2. What is currently known about researchers' mental health and wellbeing compared to other populations?
3. What interventions are being used to support the specific mental health needs of researchers, and what evidence is there of their effectiveness?
4. What are the strengths and limitations of the evidence base in this area?

The rest of the report is organised as follows: Methods are described in Chapter 2 and results are covered Chapters 3–5, which address the first three research questions in turn. Conclusions, reflections on research question 4 and future directions for work in this area – including specific suggestions of actions that could be taken to better address researchers' mental health in the UK – are discussed in Chapter 6.

# 2. Methods

This rapid evidence review drew on a scoping review methodology (Levac et al. 2010) to establish what is known about mental health in the research environment: the prevalence of mental health problems, the personal and environmental factors that contribute to mental health problems within the research environment, and interventions are being used to support the mental health of researchers and their effectiveness. Our approach followed the principles of a systematic review in terms of having clearly defined research questions, systematic and replicable search strategies, and explicit inclusion and exclusion criteria. We also used a consistent approach to assess quality, coding each study in terms of relevance, study design and interpretation, and used this as a basis for excluding some studies. We noted methodological concerns in our synthesis. In general, we sought to undertake a narrative synthesis based on our research questions and knowledge of the literature, rather than pool numerical results.

## 2.1. Search strategy

An initial trial of search terms was conducted by two researchers to refine search terms and scope based on the quantity of relevant literature identified. This was an iterative process whereby searches were run and the results obtained were reviewed for precision and recall to ensure relevant material was being captured without superfluous material being included. Titles and keywords of some relevant studies were considered to help inform the refinement of search terms. After several rounds of testing, a final set of search terms were established and then applied consistently to enable reproducibility of the search approach. The refined search terms were applied to the following databases on the 21 March 2017: Academic Search Complete, Education Resources Information Center (ERIC), PsychInfo (EBSCO), PubMed and Web of Science, covering the period 2007–present. The search terms used are presented in Table 2-1. In addition to academic literature, we also searched for grey literature (policy reports and studies) using Google Scholar on the 24 March 2017, covering the period 2007–present and using the search terms presented in Table 2-2.

**Table 2-1. Search terms for academic literature. TI=title search. AB=Abstract search.**

| |
|---|
| *(TI ("PhD" OR "postdoc*" OR "postdoctoral" OR "post-doc" OR "professor" OR "lecturer*" OR "faculty" OR "researcher*" OR "universit*") OR AB ("PhD" OR "postdoc*" OR "postdoctoral" OR "post-doc" OR "professor" OR "lecturer*" OR "faculty" OR "researcher*" OR "universit*") ) AND* |
| *(TI ("job" OR "occupation*" OR "employ*" OR "workplace" OR "work place" OR "staff") OR AB ("job" OR "occupation*" OR "employ*" OR "workplace" OR "work place" OR "staff") ) AND* |
| *(TI ("mental health" OR "mental ill health" OR "wellbeing" OR "well being" OR "CBT" OR "cognitive behavioral therapy" OR "cognitive behavioural therapy" OR "talking therapy" OR "talking therapies" OR "mindfulness" OR "Stress*" OR "suicid*" OR "anxiety" OR "depress*" OR "autis*" OR "asperger*" OR "panic attack*" OR phobia OR "attention deficit" OR "ADHD" OR "disorder" OR "psychosis" OR "psychotic" OR "schiz*" OR "breakdown") OR AB ("mental health" OR "mental ill health" OR "wellbeing" OR "well being" OR "CBT" OR "cognitive behavioral therapy" OR "cognitive behavioural therapy" OR "talking therapy" OR "talking therapies" OR "mindfulness" OR "Stress*" OR "suicid*" OR "anxiety" OR "depress*" OR "autis*" OR "asperger*" OR "panic attack*" OR phobia OR "attention deficit" OR "ADHD" OR "disorder" OR "psychosis" OR "psychotic" OR "schiz*" OR "breakdown" ) )* |

**Table 2-2. Search terms for grey literature**

| |
|---|
| *mental health university staff* |
| *mental health of researchers* |
| *wellbeing of researchers* |
| *well-being faculty staff* |
| *researcher "stress" OR "depression" OR "anxiety"* |
| *research career "stress" OR "depression" OR "anxiety"* |

## 2.2. Inclusion and exclusion criteria

Any type of study published in English from 2007 onwards (i.e. in the last ten years) that examined the wellbeing or mental health of researchers in the UK, either in academia or industry, was eligible for inclusion. We did not exclude literature based on methodology, though commentaries and other opinion pieces which were not based on cited evidence were excluded. Studies that only examined undergraduate student mental health were excluded, as were those that had mental health as a topic but did not have researchers as subjects. Studies that did not address researchers within the UK were initially excluded; however, after the title screening we broadened the scope to include studies from Europe, North America and Australasia, since we expect the research environments in these areas to be fairly similar to that in the UK. Table 2-3 summarises the inclusion and exclusion criteria used.

**Table 2-3. Inclusion and exclusion criteria**

| | Inclusion | Exclusion |
|---|---|---|
| Study population | Researcher in academia or industry. Studies which cover a broader population (e.g. University staff) included | Undergraduate students only, non-research staff at universities, studies which use a university population as a convenience sample |
| Language | English | Any language other than English |
| Country setting | UK, North America, Europe, Australasia | Other regions |
| Document type | Any type of publication where the assertions are based on empirical evidence or systematic reviews/meta-analyses | Commentaries, editorials or opinion pieces with no systematic methodology |
| Date of publication | 2007 onwards (last 10 years)* | Before 2007* |

* Some references published prior to 2007 were selected for inclusion during the snowballing stage (described in Section 2.3) if they appeared to be highly cited and/or reported on large studies that had not since been replicated.

Quality criteria were developed and piloted for five studies by all reviewers and any discrepancies discussed and the criteria refined before the full review of all studies took place. Quality of the studies was assessed on the basis of the following criteria which have been used in previous studies (e.g. Guthrie et al. 2017):

1. Topic relevance:
   - Does the study directly address the mental health or the wellbeing of researchers?
2. Quality of study design and conduct:
   - Is the study well designed to meet the research aims/questions?
   - Is the sampling approach appropriate and well justified?
   - Is the data collection approach appropriate and well justified?
3. Quality of analysis and interpretation:
   - Are data appropriately analysed and findings adequately corroborated?
   - Does the interpretation of the findings adequately reflect the assumptions made, limitations of the method, and any issues around generalisability of the findings?

For each of the three criteria, studies were rated as 'Addressed the criteria clearly and fully', 'Addressed the criteria partially', or 'Did not address the criteria'. Studies marked as 'Did not address the criteria' under at least one area were excluded from the main analysis. In addition, the researchers were asked to judge whether a study should be included or excluded based on the overall quality. Additional remarks about study quality were also noted during the data extraction and taken into account in the synthesis.

## 2.3. Study selection

Records identified by the searches were assessed for inclusion by scanning titles and abstracts against the inclusion and exclusion criteria. At this stage studies were deliberately retained if there was any

uncertainty as to their relevance. This was done by three reviewers using the stated inclusion and exclusion criteria, and uncertainties were resolved through discussion with the wider study team. Full-text screening of potentially eligible studies was undertaken as part of the data extraction stage (see below), during which studies were excluded against the same inclusion and exclusion criteria based on the more detailed information available through full-text review.

In addition, a 'snowballing' approach was used to identify additional studies for screening and potential inclusion. In this approach, the reference lists of relevant studies were reviewed for further potentially relevant studies, which were then screened in the same way.

## 2.4. Data extraction and synthesis

During this stage, potentially relevant studies were coded using QSR International's NVivo 11 Software. Data from studies identified as eligible were extracted using an NVivo coding template and included records were managed in Endnote (version 7.7.1). Guided by our research questions, data were extracted on the following: study type; methods; study population; evidence type; mental health/wellbeing definition and, if stated, mental health condition type; contributing factors (both personal and work environment); outcomes in terms of job satisfaction, commitment to institution and health; and other notable findings. The data extraction template was piloted on a small number of studies and refined. Data extraction was undertaken by four researchers.

We synthesised the evidence available in relation to each of our research questions and identified additional themes arising from the literature that we considered potentially important in the context of understanding the factors underlying mental health issues in researchers.

## 2.5. Overview of the evidence base

Our searches identified 6,013 articles, reports, commentaries and data sources. A total of 107 sources were initially selected on the basis of title and abstract review, of which 50 studies covered the UK research environmental specifically. A further 52 studies were identified through snowballing for full-text review. Following data extraction and quality assessment, 48 studies were selected for inclusion in the review. Taken together, these sources presented a range of different types of evidence on mental health in the research environment – ranging from evidence on prevalence and interventions to discussion and evaluation of contributory factors.

Almost all of the studies were journal articles, reflecting the fact that there is strong interest in researchers' mobility among both policymakers and researchers themselves. The remainder were grey literature (i.e. policy reports). In terms of methods used, three quarters reported survey data, 15 per cent used interviews and/or focus groups, and small numbers (less than 5 per cent each) used literature reviews, mixed methods and secondary data analysis. Almost all sources focused on researchers within academic institutions, with only five studies explicitly covering researchers from other sectors (e.g. in hospitals). While the majority of studies did not clearly state which career stages they covered, or covered all career stages, five studies focused on early-career researchers and eight on PhD students. In terms of geographical focus, around one third focused on the UK specifically, and the remaining two thirds were split among North America,

Europe and Australia/New Zealand. Table 2-4 gives an overview of topics covered. Topic coverage and gaps are discussed in more detail in Chapter 3.

**Table 2-4. Topic coverage**

| Topic | Number of articles |
|---|---|
| Disorder type: Clinical | 8 |
| Disorder type: Non-clinical, wellbeing | 40 |
| Geographic regions: UK | 18 |
| Geographic regions: North America | 13 |
| Geographic regions: Europe (non-UK) | 6 |
| Geographic regions: Australia /New Zealand | 11 |

Note: Not all articles were coded under every category.

# 3. How are 'mental health' and 'wellbeing' understood in research environments?

This chapter explores how the concepts of mental health and wellbeing are discussed and studied in the literature. It covers:

- General characteristics of the evidence base including populations studied; conditions, factors and outcomes studied; and measurement tools used
- Explicit definitions of mental health and wellbeing
- Limitations of the evidence base in general

The majority of the literature identified through our searches focused on workplace stress and organisational psychology rather than specific mental health conditions, or even clinical mental health more generally. The literature is also focused almost exclusively on academia, with many studies covering all university staff, which will include both researchers and other non-research staff. Some studies focused more specifically on researchers, and a more limited group looked at particular groups of researchers – typically PhD students, reflecting the wider focus on (typically undergraduate) students in the literature around this topic.

The majority of the information is based on self-reported survey data using measurement scales around mental wellbeing, which usually were not triangulated with other objective indicators, such as absence data. This presents a number of challenges. The first issue is whether mental health can appropriately be characterised as a continuum from mental wellbeing to mental illness. Level of correlation between commonly used measurement scales (Knifton & Quinn, 2013) and the correlation with common mental health conditions of some of these scales (as set out below) supports this view. However, this does not account for the spectrum of mental health conditions, and though common mental health disorders such as depression and anxiety may be well characterised by such scales, more serious (e.g. psychotic) mental illness is a lifelong condition not necessarily aligned with measurement of wellbeing (Knifton & Quinn, 2013). The second issue is the fact that such self-reported scales depend on subjective reporting. It would be preferable to have objective measurement of wellbeing and/or mental health but this is costly and not feasible for large-scale studies. The literature for this population (and most others) therefore relies heavily on self-report. Though there are a range of approaches used to determine the extent of stress or burnout in the populations surveyed, there are four key measures observed across a number of studies, and we outline each of these in turn below.

The first measure is the **General Health Questionnaire** (GHQ) (Goldberg, 1972; Goldberg and Williams, 1988), a screening instrument which is intended, through a series of questions, to identify psychological distress in respondents. It can also identify those at risk of developing a common psychological disorder (particularly depression, though also anxiety), though a psychiatric interview would be necessary for diagnosis. The most commonly used format is a series of 12 items (GHQ-12) where the number of items which a respondent identifies with indicating a number of symptoms. An example of an item is: 'Have you recently felt under strain?' where responses are requested on a four-point scale ranging from 'not at all' to 'much more than usual' (Kinman, 2008). Different studies use different scoring methods and cut-off points for caseness, making comparison difficult. The GHQ-12 has been validated for use with a wide range of populations (Werneke et al. 2000), and shown to be correlated with clinical assessment of common mental health conditions (Hardy et al. 1999). Overall, the GHQ instrument is used in a range of studies on psychological distress in the HE sector (Levecque et al. 2017; Kinman, 2008; Kinman, 2006; Pignata and Winefield, 2015; Winefield, 2003; Winefield, 2008; Winefield, 2014). Levecque et al. (2017) provide a useful summary of the different GHQ measures used and results obtained in a number of studies in this sector since 2000.

Another widely used approach (in Jacobs 2007; Jacobs, 2010; Hayter, 2011; Tytherleigh, 2005; Tytherleigh, 2007) is the **ASSET model** of sources of stress at work (Cartwright & Cooper, 2002). The ASSET model is an organisational screening tool intended to capture job stress on a set of subscales corresponding to likely contributory factors and indicators. It also captures information on employee attitudes/commitment to their organisation and levels of job satisfaction, which are two of the outcomes of job stress described in the literature as discussed below. The ASSET model has been shown to have good convergent validity with the GHQ-12 measure (Johnson & Cooper, 2003).

An important approach which has been used in several studies (Kinman & Court, 2010; Kinman & Wray, 2016) including, notably, the University and College Union (UCU) survey of HE staff in the UK (Kinman & Wray, 2013), is the **HSE indicator tool**, a survey instrument designed to help employers measure occupational hazards in relation to workplace stress. Evidence suggests that the HSE indicator is correlated with mental wellbeing as measured with the GHQ-12 (Guidi et al. 2012) and with general (Kerr et al. 2009) and job-related (Main et al. 2005) anxiety and depression. The HSE standards are also a set of national standards which act as a baseline against which measurements can be assessed (Cousins et al. 2004). The tool consists of 35 items across seven categories:

- Demands: such as workload, pace of work and working hours;
- Control: level of autonomy over working methods, pacing and timing;
- Peer support: the degree of help and respect received from colleagues;
- Managerial support: supportive behaviours from line managers and the organisation itself (e.g. availability of feedback and encouragement);
- Relationships: levels of conflict within the workplace (e.g. bullying behaviour, harassment);
- Role: role clarity, whether employees think their work corresponds to overall organisational aims;
- Change: how well organisational changes are managed and communicated (Kinman, 2013).

Finally, several studies (Padilla & Thompson, 2016; Mauno et al. 2014; Navarro et al. 2010; Shanafelt et al. 2009; Gabbe, 2008) use the **Maslach Burnout Inventory** (MBI) (Maslach & Jackson, 1981), a set of questions intended to capture burnout, defined as a prolonged response to chronic emotional and interpersonal job stressors. In this approach, burnout is characterised as consisting of three dimensions: emotional exhaustion, cynicism and inefficacy or reduced personal accomplishment (Maslach & Jackson 1981; Maslach et al. 1996; Maslach et al. 2001). There is evidence of the clinical validity of this tool for detecting burnout (Schaufeli et al. 2001). Different studies may use all or some of these components depending on their focus; for instance, Padilla et al. (2016) focus exclusively on the emotional exhaustion subscale in their analysis.

These tools are used to describe the levels of stress among members of the academic workforce and identify contributory factors within the workplace. However, the literature offers limited explicit insight into what sets the research environment apart from other workplaces, or into how mental health, stress and wellbeing are defined in that environment. It should also be noted that, counterintuitively, there is evidence that occupational studies typically demonstrate higher levels of common mental health conditions than population prevalence studies which include individuals not in employment (Goodwin et al. 2013), though based on the protective factors around being in work for mental health, the converse would be expected (Li & Sung, 1999; Waddell et al. 2006). This may be because measures such as the GHQ-12 are sensitive to contextual factors, or that participants over-report when they know they have been recruited as part of a particular occupational group (Goodwin et al. 2013). This suggests that prevalence from surveys discussed here may well be over-reported (at least relative to population-level data) and that comparisons to other occupational groups may be more revealing than comparisons to population-level prevalence.

One study (Shutler-Jones et al. 2011) has analysed the range of definitions of wellbeing, identifying multiple definitions used in the wider literature and characterising these in the context of the sector through a national consultation in the UK. The authors found that wellbeing in the HE sector is defined more broadly as:

*…a holistic agenda, encompassing all aspects of the staff experience and underpinning everything we do. Notably, it could also be used to describe the key principles of being a good employer and/or good leadership and management* (Shutler-Jones et al. 2011, 20).

However, they also note that interpretations differ across the sector, and that not all organisations use the word 'wellbeing' per se, instead using alternative terms such as 'Healthy Working Lives', 'Positive Work Environment' or 'Quality of Working Life', or even not directly characterising this area as a separate 'agenda', but rather incorporating concerns around the working environment and wellbeing of staff into wider practice on a day-to-day basis (Shutler-Jones et al. 2011).

There is limited focus on mental health outcomes themselves, perhaps because broader data sets on this are typically not available, as discussed below. Rather, a number of studies look at the potential outcomes of stress and reduced wellbeing among researchers. The main outcomes identified are levels of job satisfaction, retention/commitment to the organisation (and to research as a career more generally), and productivity. These different outcomes were characterised in a variety of ways. Taking organisational commitment as an example, this outcome was measured by Reevy and Deason (2014) using the Affective

Commitment Scale (ACS) (Allen & Meyer, 1990), by Pignata et al. (2015) using five items from Porter, Steers, Mowday, and Boulian's (1974) scale, and by Jacobs et al. (2010) using parts of the ASSET tool described above (Cartwright & Cooper 2002). A similar diversity of measures and tools were used for the other outcomes, which can make comparability and potential meta-analyses across data sets more challenging.

Since the evidence gathered shapes the way mental health and wellbeing are defined and understood in this context, it is also important to identify areas that have not been explored. One notable gap is evidence on researchers in non-academic contexts. There are a few studies covering researchers in hospitals and medical centres, but otherwise almost all the literature is based in the university context. Very little is known about stress, wellbeing and mental health in other research populations – such as in research institutes or in industry.

Another limitation of the evidence base is that many studies treat the academic workforce (and indeed, in many cases, the university workforce – including non-academic staff) as a homogenous group, when in reality it reflects a diversity of working environments and contexts, particularly by career stage where many of the potentially significant factors such as job security, level of control, autonomy, and work-life balance may vary substantially. The one exception is PhD students, a group on which a number of studies focus specifically. However, it seems that postdoctoral researchers are rather neglected as a specific group in the current literature, even though their working conditions may be challenging (e.g. short-term contracts, no guarantee of progression and variable quality of management).

The wider literature focuses much more on undergraduates than faculty, and it is not clear why this should be the case. It may be that this reflects the importance of adolescence for the development of mental health conditions, or it may be that there has been wider attention given to this group because of the 'duty of care' of universities towards students who are often leaving home for the first time. However, universities also have a duty of care towards their staff as an employer and it seems that there is scope and need for a better understanding of the mental health needs of this population, reflecting on the characteristics of this particular working environment as distinct to other workplaces.

Main findings:

- **Conditions studied:** Most of the literature focused on workplace stress and staff wellbeing, rather than specific mental health conditions or clinical mental health more generally.
- **Definitions**: One study that reviewed definitions of wellbeing in the wider literature, and gathered inputs through a national consultation, concluded that wellbeing in the UK HE sector is 'a holistic agenda, encompassing all aspects of the staff experience and underpinning everything we do.'
- **Tools used**: Studies mainly reported survey data, gathered to assess stress levels and identify contributory factors within the university workplace. The main tools used were the General Health Questionnaire, ASSET model of sources of stress at work, HSE indicator tool and Maslach Burnout Inventory.
- **Populations studied:** The literature focused almost exclusively on academia, with many studies covering all university staff – researchers and non-research staff. Some studies focused specifically on researchers. A limited group focused on a particular group of researchers – typically PhD students, while postdoctoral fellows were rarely considered as a specific group.
- **Outcomes studied**: Outcomes resulting from poor wellbeing received less attention. When they were discussed, job satisfaction, retention, commitment to the organisation and productivity were considered.

Limitations of the evidence base:

- The literature offered little insight into what sets the research environment apart from other workplaces, or into how mental health, stress and wellbeing are defined within the research environment.
- Many studies treat the university workforce as a homogenous group and do not account for the diversity of working environments and contexts that exist within universities.
- Some studies did not distinguish researchers from other staff, meaning variability that could arise based on career stage received limited attention. Some studies focused on PhD students but postdoctoral fellows were not studied as a group.

# 4. What is currently known about researchers' mental health and wellbeing compared to other populations?

## 4.1. Evidence on the prevalence of stress and mental health conditions

**This section describes the evidence gathered from the literature on the prevalence of stress and mental health conditions. It covers:**

- An overview of the evidence base on condition prevalence in research environments specifically, and general limitations;
- Key findings from the literature for both staff and postgraduate students;
- The existence of stigma surrounding mental health in universities and other factors that could affect reporting of conditions.

Despite widely reported anecdotal evidence and press coverage of a 'mental health crisis' in academia (Shaw, 2014), there is limited published evidence regarding the prevalence of specific mental health conditions among researchers. The majority of the findings on the prevalence of mental health issues identified through this review relate to the experience of work-related stress (and the risk of having or developing a mental health condition as a result of exposure to identified stressors) among academic staff and postgraduate students in the university setting. Studies varied in the degree to which they used validated measures to establish 'cases' of the condition under study. When validated measures were used, the criteria or cut-off scores often differed between studies, further hampering the interpretation and synthesis of the findings. Nevertheless, there is a broad consensus across literature that work-related stress and the risk of mental illness are issues that affect the research community.

Research relating to staff in higher education and research examining the prevalence of mental health problems among postgraduate students differed somewhat with respect to the conditions studied, and the methods and measures used to study them. Studies tended to focus to a greater degree on occupational stress and burnout, while evidence on the prevalence of specific mental health conditions was only found in relation to graduate students. Thus, evidence relating to these populations is considered separately below, taking the different sources of evidence in turn.

### *4.1.1. Prevalence of stress and mental health problems among academics and other university staff*

Occupational stress and burnout

Much of the evidence on the mental wellbeing of university staff has come from the field of occupational health and is based on surveys on work-related stress and stressors. Based on the findings of a large-scale survey of members of the UCU,[6] including 14,667 in the HE sector, Kinman and Wray (2013) reported that 73 per cent of the sample agreed or strongly agreed with the statement, 'I find my job stressful', half indicated that their general level of stress was high or very high, and more than one third said they often or always experienced levels of stress they found unacceptable. Only 2 per cent of the sample reported that they never experienced unacceptable levels of stress at work. Stressors investigated in that study are discussed further in Section 4.3.

Burnout, defined as a 'prolonged response to chronic emotional and interpersonal job stressors', is assessed in terms of three dimensions: emotional exhaustion, cynicism, and inefficacy or reduced personal accomplishment (Maslach & Jackson, 1981; Maslach et al. 1996; Maslach et al. 2001). The leading measure of burnout is the MBI (see Chapter 3). In a study investigating burnout among a large sample of university faculty (N = 1,439) across 42 randomly selected doctorate-granting research universities in the US (Padilla & Thompson, 2015), 27 per cent of the participants indicated that they experience burnout often (4) to very often (5), as assessed using the emotional exhaustion subscale of the MBI. This is much higher than an estimated prevalence of 'severe burnout' (when symptoms are experienced approximately once a week or daily; scores 3.50–6) of only 2.4 per cent in a study of job-related burnout in working Finnish populations aged 30–64 (final sample = 3,276) (Ahola et al. 2005). A systematic review of the literature on burnout in university teaching staff specifically found levels (particularly emotional exhaustion) that were comparable with 'high risk' groups such as healthcare workers (Watts & Robertson 2011).

### Psychological distress and the risk of having or developing a mental health disorder

A further body of research has employed the GHQ (see Chapter 3). This evidence is summarised in Chapter 4. Studies varied with respect to the cut-off used to define the case, requiring 2 (GHQ2+), 3 (GHQ3+) or 4 symptoms (GHQ4+). The findings indicate that the percentages of university staff with a risk of having or developing a mental health problem were usually higher than for other working populations regardless of threshold used. For the GHQ3+, there were four studies, of which three found prevalence above 40 per cent while the fourth found prevalence of 24 per cent for men and 27 per cent for women. By comparison, studies of psychiatrists and doctors using the GHQ3+ cut-off found prevalence figures of 25-31 per cent (McManus et al. 1999). The three studies using the GHQ4+ obtained prevalence figures of 32–42 per cent, considerably higher than a figure for the Dutch working population, where overall prevalence for a GHQ4+ threshold was 23 per cent (Bültmann et al. 2002). For the GHQ2+, one study found a prevalence of 44 per cent, which is lower than the 52 per cent prevalence obtained in a study of senior general practitioners (Appleton et al. 1998).

A review across different occupational groups using GHQ measures (Goodwin et al, 2013) suggested that academics are among the occupational groups with the highest levels of common mental disorders

[6] The UCU is a large UK trade union and professional association for academics, lecturers, trainers, researchers and academic-related staff working in further and higher education.

(alongside social services staff and teachers). The review estimated the prevalence of common mental disorders among academics and teachers at 37 per cent, compared with a prevalence of about 19 per cent in the general population (Goodwin et al. 2013). This is supported to some extent by analysis of the 2000 UK Adult Psychiatric Morbidity Survey which showed that the prevalence of mental health disorders was highest amongst managers and administrators, teaching professionals, other associate professionals, clerical and secretarial occupations, and 'other' sales and personal service occupations. However, the prevalence of psychological disorders was higher in primary and secondary teachers compared to higher education teachers (Stansfeld et al. 2003).

**Table 4-1. Studies investigating psychological distress among university staff using the GHQ-12**

| Author, year of publication, title | Population and location | Type of study and sampling strategy | No. of participants | RR | Sample characteristics | GHQ2+ | GHQ3+ | GHQ4+ |
|---|---|---|---|---|---|---|---|---|
| Winefield and Jarret (2001) Occupational stress in university staff | All staff, University of Adelaide | Cross-sectional study | 2040 | 57% | | 44% | | |
| Kinman (2001) Pressure points: A review of research on stressors and strains in UK academics (see also Kinman and Jones, 2003; see also Kinman et al. 2006) | Academic and academic-related staff from UK universities | Random sampling | 782 | 37% | 66% male 69% between 41–60y | | 53% | |
| Emslie et al. (2002) Gender differences in mental health: Evidence from three organisations | White collar workers from a university in the UK | Cross-sectional study | 1641 | 67% | 62% male Mean ages: 44y for men, 39y for women | | Men 24%, women 27% | |
| Winefield et al. (2003) Occupational stress in Australian university staff: Results from a national survey | Australian university academic staff | Cross-sectional study | 3711 | 25% | | | 43% | |
| McClenahan et al. (2007) The importance of context specificity in work stress research: A test of the demand-control-support model in academics | UK academics | Cross-sectional and non-random (lecturers and senior lecturers) | 166 | 23% (but not all respondents included in current study) | 63% male Mean age 44y | | | 32% |
| Kinman (2008) Work stressors, health and sense of coherence in UK academic employees | UK academics | Cross-sectional study. Random sample of 1000 UK academic employees working full time | 465 | 47% | 59% male Mean age 46y | | | 43% |

| Author, year of publication, title | Population and location | Type of study and sampling strategy | No. of participants | RR | Sample characteristics | GHQ2+ | GHQ3+ | GHQ4+ |
|---|---|---|---|---|---|---|---|---|
| Kinman and Jones (2008) Effort-reward imbalance and overcommitment: Predicting strain in academic employees in the UK | UK academics | Cross-sectional study. Random sampling | 844 | 22% (but not all respondents included in current study) | 59% male 77% aged 40y or more | | 49% | 42% |

Adapted from Goodwin et al. (2013).

## Specific mental health conditions

While the findings based on the GHQ-12 described above indicated that between 32 and 42 per cent of academic employees were 'at risk of having or developing a common psychiatric disorder' (based on meeting four or more criteria; GHQ4+), we did not find any studies reporting on the prevalence of specific conditions within this population. However, a survey conducted in 2014 by *The Guardian* newspaper (Shaw, 2014) specifically targeted academic staff who had experienced mental health problems and provides data on the relative frequency of different conditions within the sample. Depression, panic attacks and eating disorders were the most frequently reported conditions, experienced by 75 per cent, 42 per cent and 15 per cent of the sample, respectively (Table 4-2).

**Table 4-2. Relative prevalence of different mental health conditions within a sample of academics who report having experienced mental health problems**

| Mental health condition | N | Frequency within sample |
|---|---|---|
| Depression | 1909 | 75% |
| Panic attacks | 1082 | 42% |
| Eating disorder | 389 | 15% |
| Self-harm | 280 | 11% |
| Obsessive compulsive disorder | 276 | 11% |
| Alcoholism | 273 | 11% |
| Post-traumatic stress disorder | 238 | 9% |
| Other mental health problem | 171 | 7% |
| Bipolar disorder | 106 | 4% |
| Drug addiction | 56 | 2% |
| Schizophrenia | 9 | 0% |

Source: Shaw (2014)

### *4.1.2. Prevalence among postgraduate students*

#### University-commissioned needs assessments

One source of evidence on the mental health needs of graduate students is needs assessments conducted or commissioned by individual universities. A number of examples of needs assessments of this type, all of which were conducted in the US, are presented in Table 4-3 (Tsai & Muindi, 2016). There are a range of methodological shortcomings associated with many of these studies, such as small sample size, use of non-validated measures and, for most, the possibility of non-response bias. Despite variation in the methods used and target populations (with respect to. e.g. subject specialty and student type), there was a consistent finding across most of the studies that just under half of the graduate students surveyed reported significant emotional or stress-related issues, including depression and anxiety. However, occupational studies tend to indicate higher levels of mental health conditions among respondents than studies of general populations (Goodwin et al. 2013) and this tendency may also apply to these studies.

One notable needs and utilisation assessment, driven by graduate students and conducted in 2004 by the University of California at Berkeley, found that 45 per cent of respondents reported having an emotional or stress-related problem in the past year (Hyun et al. 2006). In a follow-up study, published by the University's 'Graduate Assembly' and based on a survey administered ten years later in 2014, almost half (47 per cent) of PhD students at the institution met criteria for depression based on a validated scale (a

ten-item shortened form of the Center for Epidemiologic Studies Depression Scale (CES-D) (The Graduate Assembly, 2014).

Findings of a survey of postgraduate researchers, conducted by the Students' Guild of the University of Exeter in the UK in 2015 (Else, 2015), were broadly similar to those of the US studies. About 40 per cent of 165 respondents indicated that they believed that studying for a doctorate had worsened their physical and mental health and 85 per cent stated that their work caused them stress, with the proportion of students agreeing with this statement increasing in the latter years of a PhD. It is likely that there are further reports of this type on mental health, relating to other institutions, that have not been formally published.

**Table 4-3. Published studies on the mental health of graduate and postdoctoral trainees**

| Authors and year | Institution surveyed | Postgraduate or postdoctoral | Sample size | Main findings |
|---|---|---|---|---|
| Hyun et al. (2006) | UC Berkeley, US | Postgraduate | 3,121 | 45% self-reported emotional or stress-related problems. |
| Hyun et al. (2007) | UC Berkeley, US | International postgraduate | 551 | 44% self-reported emotional or stress-related problems affecting wellbeing or academic performance in the last year. |
| Han et al. (2013) | Yale University, US | International postgraduate (Chinese) | 130 | 45% reported symptoms of depression, 29% reported symptoms of anxiety. |
| Garcia-Williams et al. (2014) | Emory, US University | Postgraduate | 301 | 34% were classified with moderate to severe depression.<br>7% reported thoughts of suicide, 2% with plans for suicide. |
| The Graduate Assembly (2014) | UC Berkeley, US | Postgraduate (biosciences) | 790 | 43–46% were considered depressed. PhD students fared worse than Master's students. |
| Gloria and Steinhardt (2014) | University of Texas at Austin, US | Postdoctoral | 200 | 13% were flourishing, 58% were languishing and 29% were depressed. |
| Smith and Brooks (2015) | University of Arizona, US | Postgraduate | 309 | 50% of doctoral students reported 'more than average' stress and 23% reported 'tremendous' stress |

Adapted from Tsai and Muindi (2016).

## Psychological distress and the risk of having or developing a mental health disorder

While the findings of the institutional surveys described above provide an indication of the scale of the issue of mental health and wellbeing, for graduate students, the degree to which they are useful in establishing the prevalence of mental health problems is limited because they are prone to reflecting characteristics of the specific institution under study, and because they have tended to rely on non-validated measures. One recent study (Levecque et al. 2017), has sought to overcome these issues by using the GHQ-12 to assess the prevalence of mental health problems in a representative sample of PhD

students in Flanders, Belgium (N = 3,659) before comparing this group to three other samples: 1) highly educated people in the general population (N = 769); 2) highly educated employees (N = 592); and 3) higher education students (N = 333). Fifty-one per cent of the PhD students reported least two symptoms on the GHQ-12 (GHQ2+; indicative of psychological distress), 40 per cent reported at least three symptoms (GHQ3+), and 32 per cent experienced four or more (GHQ4+) and were considered to be 'at risk of having or developing a common psychiatric disorder'.

Leveque et al. (2017) found the prevalence of having or potentially developing a common psychiatric disorder was 2.43 times higher in PhD students than in the highly educated group in the general population, 2.84 times higher than in highly educated employees and 1.85 times higher than in higher education students. These figures are roughly comparable to those reported in other studies of university staff (Table 4-1).

### Specific mental health conditions

In addition to this evidence on the prevalence of mental health problems in general terms, we identified a small number of studies that examined the prevalence of specific mental health conditions among postgraduate students. Two of the institutional surveys of postgraduate students described under the section on 'university needs assessments' above also incorporated valid screening tools for specific mental health conditions.

The University of Berkeley Survey (The Graduate Assembly, 2014) incorporated the ten-item shortened form of the Center for Epidemiologic Studies Depression Scale (CES-D), which is widely used in psychiatric epidemiology (Radloff, 1977). About half (47 per cent) of PhD students and 37 per cent of master's students met the threshold to be classified as 'depressed' (10 out of 30 on the scale). While the authors acknowledged the risk of response bias and highlighted that the classifications used do not represent clinical diagnoses, they nevertheless highlighted the findings as concerning for the academic community.

In a survey from Emory University in the US, Garcia-Williams et al. (2014) utilised a different screening instrument for mental health conditions, the PHQ-9 (Spitzer et al. 1999), which, although not equivalent to clinical diagnosis, has been validated against diagnostic categories. Depression categories ranging from 'no depression' to 'severe depression' were created based on the total score (0–27). Only 3 per cent of the sample population (301 postgraduate students at a US university) had no depressive symptoms, while 27 per cent were classified with minimal (1–4), 35 per cent with mild (5–7), 23 per cent with moderate (10–14), 9 per cent with moderately severe (15–19) and 2 per cent with severe depression (20–27). In addition, more than half reported feeling nervous, irritable, stressed, anxious, lonely, or having fights/arguments.

One further published study, conducted via a web-based survey administered to a random sample of graduate and undergraduate students (N = 2,843) at a large public university in the US, also assessed depressive and anxiety disorders using the PHQ-9 (Eisenberg et al. 2007). In this study, the authors took steps to address the issue of non-response bias by using administrative data to construct non-response weights and by conducting a brief non-respondent survey. The estimated prevalence of any depressive or anxiety disorder was 13 per cent for postgraduate students, lower than that among undergraduates (16 per

cent). Fourteen per cent of undergraduates and 11 per cent of graduate students screened positive for major or other depression, 4 per cent of undergraduates and 4 per cent of postgraduate students screened positive for current panic disorder or generalised anxiety disorder, and 3 per cent of undergraduates and 2 per cent of postgraduate students reported suicidal thoughts in the past 4 weeks.

The rates of specific mental health conditions among graduate students reported by Eisenberg et al. appear to be considerably lower than those reported in the Berkeley and Emory studies, and this could reflect differences in the degree to which non-response bias was addressed in each study. Comparison of the prevalence rates reported across the three studies is also complicated by differences between the instruments, cut-off scores and criteria used to define cases of particular conditions along with differences in the sampling approach and populations studied.

### *4.1.3. Discrepancy between prevalence estimates and official reports*

Despite the high estimates of prevalence of work related stress and psychological distress or risk of developing a mental health problem, UK national statistics indicate that only 6.2 per cent of staff disclosed a mental health condition to their university (The Equality Challenge Unit, 2012), though an estimated one in six UK working-age adults (about 17 per cent) experience symptoms of mental ill health at a given time (Department of Health 2014). Part of the reason for this discrepancy might be the stigma associated with mental health conditions that persists within workplaces.

A survey of staff and students at two universities in Australia showed that although attitudes towards mental health were broadly positive, the majority of participants would not inform their employer of their mental health condition, and this 'silence' around mental health is reflected more widely in the results (Wynaden et al. 2014). This is supported by a recent survey in the UK which showed that among a group of over 2,500 UK academics who had experienced a mental health problem, only a third had spoken to anyone in a senior position (e.g. a line manager or research supervisor) about their mental health issues, and of those that did, more than a third reported that they were not offered any emotional or practical support (Shaw, 2014). In addition, only 37 per cent had made any of their colleagues aware of their mental health problems, though most who did found colleagues to be supportive. This pervasive silence around mental health in research may be one of the reasons why evidence in general, and around prevalence in particular, is thin. It also reflects wider evidence about the high level of presenteeism in high-skilled, white collar occupations more generally (e.g. Eurofound, 2012).

Main findings:

- **Evidence overview**: Most studies focus on work-related stress, while some measure the risk of having or developing a mental health condition; there is very little data on the prevalence of specific mental health problems among university staff, but there is more data of this type on postgraduate students. Different tools and methods are used across studies, making comparability difficult.
- **Stress and burnout among university staff**: Data indicates that the majority of university staff find their job stressful. Levels of burnout appear higher among university staff than in general working populations and are comparable to 'high-risk' groups such as healthcare workers.
- **Specific mental health conditions among university staff**: Little data is available on the overall prevalence of mental health conditions among university staff, though a survey conducted by UK newspaper *The Guardian* found that depression was most commonly reported, followed by panic attacks and eating disorders.
- **Risk of having or developing a mental health problem**: The proportions of both university staff and postgraduate students with a risk of having or developing a mental health problem, based on self-reported evidence, were generally higher than for other working populations.
- **Stress and depression among postgraduate students**: Large proportions (>40 per cent) of postgraduate students report symptoms of depression, emotional or stress-related problems, or high levels of stress.
- **Reporting of mental health conditions**: It appears that mental health problems are under-reported, perhaps reflecting stigma that exists around mental health problems in workplaces, including universities, as well as pervasive presenteeism, which has been identified in high-skilled white collar occupations in general.

## 4.2. Personal factors that contribute to mental health outcomes in the research workplace

**This section explores the personal factors that can influence mental health experiences of researchers. It covers:**

- Demographic factors, such as gender, age, disability, ethnic minority status and sexuality
- Intrinsic factors such as personality and personal perceptions

### *4.2.1. Gender*

Gender emerged as a key determinant of wellbeing or mental health. Men reported fewer issues than women (Catano, 2010; Eisenberg, 2007; Kinman & Wray, 2013; Hendel & Horn, 2008; Hogan et al. 2014; Lindfors, 2009; McCoy et al. 2013; Opstrup & Pihl-Thingvad, 2016; Stupinsky et al. 2015),[7] particularly in relation to occupational stress, although a minority of the studies in the sample found that gender did not have a significant effect (Kinman, 2008; Kinman & Jones, 2008; Pop-Vasileva et al. 2011; Tytherleigh et al. 2007).

Some sources observed that men and women showed similar levels of stress but were sensitive to different factors. For example, Tytherleigh et al. (2007) found that men were more distressed than women by stressors associated with salary and benefits. Hogan et al. (2014) found that women reported that they were faced with higher organisational expectations to work long hours, that women's work intensity tended to be higher than men's, and that women exhibited lower work enjoyment and job involvement than men. There were conflicting findings regarding the amount of organisational support women received, with some reporting more organisational support for women (Hogan et al. 2014) and others reporting that women perceived their organisational work environments as non-supportive with regard to career development (Michailidis, 2008). Issues related to sexism in the workplace were mentioned by one study in the sample, bringing light to issues such as individualised competition and performance metrics, with women reporting a lack of recognition, respect and equal opportunity, as well as the devaluation of their work (Mountz, 2016).

Both male and female researchers contend with work-family conflict, but the gender difference is notably more pronounced in terms of interference of family with work (in contrast to the other way around) for women (Fox et al. 2011). Women reported an inability to 'switch off' at home, as well as especially stressful relationships with children or spouses/partners (Michialidis, 2008). Fox et al. (2011) found that in men, family characteristics such as being married and having children tended to be predictors of family interfering with work. Hogan et al. (2014) also found that men with children reported working longer, as opposed to shorter hours, whereas having children did not have an observable effect on female academics' work hours.

Jacobs et al. (2010), in a study on university staff, found that women working in roles that were considered traditionally male (i.e. women in 'gender-incongruent' roles) reported higher levels of work-

[7] According to the World Health Organization, risk factors for mental ill health such as depression are overrepresented in women in general (WHO, n.d.).

related stress, poorer health and lower organisational commitment, as compared to either men working in gender-incongruent roles or people of either gender working in gender-congruent roles. It was noted, however, that traditionally female roles have lower complexity, responsibility and job control compared to traditionally male roles, so women who take on gender-incongruent roles are typically faced with increased complexity and challenge and as a result may report higher levels of stress, whereas men in gender-incongruent roles, who displayed lower levels of stress, were generally also in less demanding roles (Jacobs et al. 2010).

### *4.2.2. Age*

The study revealed contradictory findings regarding age as a determinant for work-related ill health. Some studies found that levels of perceived stress tended to rise with age (Kinman & Wray, 2013), whereas some studies concluded that the youngest and oldest age brackets felt similar levels of psychological strain (Carr, 2014; Reevy & Deason, 2014), and reported fewer psychological health symptoms compared to those in the 30–59 age categories (Catano, 2010). Alternatively, some studies found that age was not significantly associated with mental health (Levecque et al. 2017; Opstrup & Pihl-Thingvad, 2016).

### *4.2.3. Other personal attributes*

Other personal attributes discussed include disability and minority status. Disability was found by one study to be an indicator of poorer wellbeing and significantly higher levels of work-life conflict and stress (Kinman & Wray, 2013). One study in the sample indicated that ethnicity/race had significant impact across a wide range of stressors and coping strategies (El-Ghoroury et al. 2012). Another reported that non-heterosexual respondents reported worse health outcomes than heterosexual respondents (Hawley et al. 2016).

### *4.2.4. Personality and perceived personal competence*

Some studies found that personality and perceived personal competence were positively correlated with feelings of personal fulfilment (Navarro et al. 2010). Professional development, resulting in better job competence, can also help mitigate stress (Opstrup and Pihl-Thingvad, 2016). Consistent with this idea, Hargreaves et al. (2014) found that among PhD students, important stressors were a lack of confidence in one's ability to conduct research to the necessary standard and the feeling of being disappointed in one's abilities. Meanwhile, researchers exhibiting a self-critical from of perfectionism were found to experience poorer wellbeing (Flaxman et al. 2012; Mark & Smith, 2012). Anecdotally, a newspaper article about rising suicide rates on campuses also attributed the deaths to the 'culture of perfection' in universities, especially among faculty members (Scelfo, 2015).

Summary

**Gender** was the key personal factor that emerged as a determinant of mental health (or its reporting), with women reporting more exposure to stress than men, as well as greater challenges around work-life balance.

The results on whether **age** is a determinant of mental health were inconclusive, and sometimes difficult to disentangle from discussions about career stage and seniority.

Other attributes such as **disability**, **ethnic minority status and sexuality** were mentioned in a small number of articles in the sample, and these articles indicated that these personal factors generally increase stress.

There was also evidence of **personality and perceived competence** impacting on mental health in terms of self-critical personalities being more susceptible to stress, though it is also possible they are more aware of it or more willing to report it. However, it was unclear whether stress was a result of working conditions in the research environment, or whether research settings attracted particular types of individuals.

## 4.3. Environmental factors that can influence mental health in the research workplace

**This section explores the environmental factors that can influence mental health in the research workplace. It covers:**

- Both the positive and negative elements of the (academic) research environment that can influence workers' wellbeing, with comparison to other work environments
- Factors which are specific to the research environment which can affect mental health

In addition to the personal factors discussed above, factors in the work environment may affect workers' wellbeing and stress. As discussed in Section 3, the HSE (2017) identifies six areas of work as the main sources of stressors:

1. Demands (including workload and work patterns);
2. Control (the extent to which a worker can control how they work);
3. Support (provided by the organisation, manager and colleagues);
4. Relationships (and promotion of acceptable behaviour in the workplace);
5. Role (workers' understanding of their role; having conflicting roles); and
6. Change (how changes in the organisation are managed and communicated to staff).

These areas broadly reflect the environmental factors covered in the studies reviewed. While these are considered to be areas where stress can arise, the effects can be complex, with positive elements in one area buffering negative ones in another. Some factors can have both positive and negative effects, depending on what other factors are present.

In the subsections that follow, we review findings from the literature that relate to each of these six areas and consider findings related to specific factors that can arise in research roles. The references on which this section is based are largely survey-based, meaning that they are subject to self-reporting and sampling biases. Also, some were not specific to researcher populations; rather, they cover university or academic staff more widely.

### *4.3.1. Demands, workload and work patterns*

#### Working hours and workload

Data on the number of hours worked by academic and research staff in HEIs showed that the majority (78 per cent) reported working more than 40 hours per week, while 40 per cent reported working more than 50 hours per week (Tytherleigh et al. 2005). According to Tight (2010), academics have worked about 50 hours per week on average in the UK since the 1960s, when the figure increased from about 40 hours per week. These data and data gathered by Kinman and Court (2010) indicate that large proportions of HEI staff are exceeding the limit of 48 hours per week imposed by the EU's Working Time Directive (European Commission, 2017).

In the survey by Kinman and Wray (2013), 79 per cent of higher education workers reported 'always' or 'often' having to work very intensively, while more than half reported having too much to do and having to work very fast (always or often), and 50 per cent reported feeling pressured to work long hours (always

or often). These findings indicated that HEI staff have lower wellbeing in this respect than workers in other industries (Kinman & Wray, 2013).

Opstrup and Pihl-Thingvad (2016) found that long working hours were correlated with self-reported job stress and a survey of Canadian postgraduate students in psychology also found that weekly hours worked was a significant predictor of depressive symptoms for researchers (Peluso et al. 2011).[8]

However, researchers respond differently to different types of work demands; spending a large percentage of time on research was negatively correlated with stress level (Opstrup & Pihl-Thingvad 2016). To explain this finding, Opstrup & Pihl-Thingvad (2016) refer to Semmer et al. (2007), who argued that tasks like doing interesting research affirm one's professional role and are not perceived as stressors even though they might be stressful. On the other hand, administrative tasks, which are seen as 'illegitimate' tasks that may undermine the researcher's primary role and stats, do cause stress (Semmer et al. 2007).

Torp et al. (2016), in a small study of researchers in Norway, also found that high demands were not problematic if they were tied to research, but administrative tasks were viewed negatively. They found that having the opportunity to perform high-quality research was the most important factor associated with wellbeing and presence at work, while doing meaningful work was also important. They concluded that it is important for organisations to provide environments that enable researchers to concentrate on what they consider to be their core tasks (Torp et al. 2016).

#### Work-life conflict

Work-life conflict is a source of stress related to workload; data from Kinman and Wray (2013) showed that work demands were the strongest predictor of work-life conflict. In that survey, the majority of respondents reported that their ideal level of work-life separation would be greater than what they experienced at the time of reporting (Kinman & Wray, 2013). Tytherleigh et al. (2005) also found that work-life conflict and work overload were sources of stress for higher education staff, but that the stress levels associated with these stressors were lower than for individuals working in other areas.

Among PhD students in a Belgian study, work-life conflict was identified as the most important predictor of mental health problems, followed by work demands (Levecque et al. 2017). This factor was also identified as important in a UK study of PhD students, which found that 'having a high workload that impacts on your private life' was a bothersome issue for respondents (Hargreaves et al. 2014).

### *4.3.2. Control over approach to work*

Evidence confirmed that job control is important for researchers' wellbeing, as it is for other workers. Torp et al. (2016) found that autonomy is highly appreciated by researchers, even when bounded by tight project deadlines. Opstrup and Pihl-Thingvad (2016) found that lack of freedom and independence at work was negatively correlated with stress and had a stronger correlation than any other factor they looked at. They drew a link between autonomy and other potentially supportive elements, noting that 'freedom

[8] This was only the case among respondents in research programmes (not for those training in clinical, counselling or education programmes).

and independence are not merely objective working conditions; they also represent recognition of individual researchers and support their self-esteem through work' (Opstrup & Pihl-Thingvad, 2016, 47). Among PhD students, low job control was also found to be a predictor of mental health problems (Levecque et al. 2017).

However, there were mixed findings about the extent to which job control is an issue for workers in academic settings. Tytherleigh et al. (2005) found that not being involved in decisions related to one's own job was a source of stress, and found higher education staff reported having more stress related to this factor than workers in other settings. However, Kinman and Wray (2013) found that, compared to workers in several other industries, higher education workers have higher levels of control over how they work, with the majority reporting that they (always or often) have some say over the way the work (78 per cent), that they can decide when to take a break (74 per cent), or that their working time can be flexible (67 per cent).

### *4.3.3. Support provided by the organisation, manager and colleagues*

#### Job security

Job security, combined with a concern that one's job would change in future, was identified as the primary source of job stress for higher education staff by Tytherleigh et al. (2005), who found it to be a significantly higher source of stress than for staff from the comparator dataset. Job insecurity was also found by Opstrup and Pihl-Thingvad (2016) to be a stressor for Danish researchers. For PhD students, job security could be seen as relating to future career prospects, and uncertainty about one's next career step was associated with stress (Hargreaves et al. 2014).

Curiously, job insecurity was a concern among respondents in the study by Tytherleigh et al. (2005) despite the fact that information about respondents' employment histories indicated that the majority had been in their jobs for several years. The authors noted that respondents may nonetheless perceive insecurity, and that this perception is more relevant for wellbeing. Indeed, evidence indicates that job insecurity and the use of successive short-term contracts, particularly among early-career researchers, has become widespread in academia (Council for Science and Technology, 2007). The finding of perceived insecurity is consistent with that of Kinman et al. (2006), who found what they considered to be high levels of perceived job insecurity among respondents to surveys of UK academics conducted in 1998 and 2004,[9] despite the respondents being employed primarily on permanent contracts. Differences that could arise due to contract type were explored in a later study by Kinman and Wray. They compared the wellbeing of staff on permanent contracts with that of staff on fixed-term, variable hours or zero-hours contracts and did not find significant differences, except that those with permanent contracts reported having more work demands (Kinman & Wray, 2013).

Consistent with the concerns they identified about job security, Tytherleigh et al. (2005) found that HEI staff did not feel that their organisation had a high level of commitment to them and did not feel valued and trusted by their organisation. This was more pronounced among HEI staff than among those

[9] In the 2004 study, more than 20 per cent of respondents had felt insecure in their jobs in the last five years.

working in other sectors; among HEI staff, it was more pronounced among academic and research staff (Tytherleigh et al. 2005). The reverse was also true; staff members also felt a low level of commitment to their organisations (Tytherleigh et al. 2005).

### The role of personal and professional development

Related to the idea that tasks seen as contributing to one's core role cause less stress (discussed in 4.3.1), issues of personal development were highlighted. The Danish study also showed a negative association between self-reported stress and opportunities for personal and professional development (Opstrup and Pihl-Thingvad, 2016). Torp et al. (2016) also found that having the opportunity to fulfil one's own potential and produce useful outputs was important for researchers' wellbeing.

The importance of professional development is also relevant for PhD students. Levecque et al. (2017) found that aspiring to an academic career was associated with better mental health, even for respondents who felt that they had low chances of succeeding on this career track, as was the belief that their PhD work was helping them prepare for a career outside academia. A 2014 survey of PhD students in the UK found that the second most bothersome issue for them was frustration about research results and a lack of progress (Hargreaves et al. 2014).

### Support from managers and colleagues

Studies confirmed the importance of supportive management as a mitigating factor for stress. Opstrup and Pihl-Thingvad (2016) found that self-reported stress among Danish researchers was lower among those who felt that they had supportive management. Torp et al. (2016) also found there is a need for researchers to receive social support from colleagues and managers (in the form of informative, evaluative and instrumental support). Among PhD students, Levecque et al. (2017) found that those whose supervisors provided less support – using a 'laissez-faire' leadership style – were at significantly higher risk of experiencing psychological distress as compared to those whose supervisors had more inspirational or autocratic styles. Peluso et al. (2011) also found that among postgraduate students in psychology in Canada, dissatisfaction with the research advisory relationship was a significant predictor of depression symptoms.

Moeller and Chung-Yan (2013) looked at how different types of social support in the workplace – that provided by managers or colleagues in the form of emotional, instrumental, informational or appraisal support – can influence other sources of work stress for professors.[10] They found that all forms of support from department heads (managers) helped to offset the effects of large workloads, while the only form of colleague support that had this effect was instrumental support (i.e. help with work). By contrast, support from colleagues exacerbated stress that arose when staff felt they were excluded from decision-making processes in their organisation (Moeller & Chung-Yan, 2013).

Kinman and Wray (2013) identified support provided by line managers as one of the four areas where the wellbeing disparity was highest between workers in higher education workers and those in comparison industries. They found there was substantial variation in the responses they received in both areas,

[10] The study was conducted on a sample of professors at one Canadian university.

indicating that support provided by managers is not consistent across institutions and that workers' experiences with colleague support vary considerably (Kinman & Wray, 2013). In terms of receiving supportive feedback from their managers on their work and being given help on work problems by their managers, smaller proportions of UK HEI staff reported that they experienced this always or often (23 per cent for feedback and 35 per cent for help with problems) than reported that they experienced it seldom or never (44 per cent for feedback and 35 per cent for help with problems) (Kinman & Wray, 2013). The majority of respondents (58 per cent) reported that they get help and support they need from colleagues, but less than half (40 per cent) reported that their colleagues help them if work gets difficult and half of the respondents said they receive the respect they deserve from their colleagues (Kinman & Wray, 2013). Receiving recognition from peers was found by Opstrup and Pihl-Thingvad (2016) to mitigate stress among researchers.

### *4.3.4. Relationships and workplace behaviour*

Both the survey by Kinman and Wray (2013) and that of Tytherleigh et al. (2005) found that higher education workers' wellbeing in the area of relationships and behaviour of colleagues was poorer than for workers in other areas. Kinman and Wray (2013) found slightly less than half of respondents (46 per cent) reported never being subject to personal harassment at work, while 8 per cent said this occurs always or often. Just over half (52 per cent) reported never being subject to bullying at work, while 8 per cent said it occurs always or often (Kinman & Wray, 2013). Tytherleigh et al. (2005) found that colleagues 'not pulling their weight' was a particular challenge related to relationships.

Among PhD students, conflicts in teams were not seen as being significantly associated with mental health (Levecque et al. 2017), though the supervisor relationship is clearly important, as discussed in the previous subsection.

### *4.3.5. Clarity and consistency of roles*

Role clarity and consistency were less often discussed in the literature. However, one relevant finding from Opstrup and Pihl-Thingvad (2016) is that researchers may find non-research tasks stressful because they do not view them as being central to their research role. There is also some evidence that being able to spend more of one's time on research than on other tasks may be beneficial for wellbeing. Comparing higher education systems in 19 countries, Shin and Jung (2014) found that academics working in systems where they were expected to balance teaching and research reported lower job satisfaction than those in systems where the emphasis was on either teaching or research. Opstrup and Pihl-Thingvad (2016) observed that spending a larger percentage of one's time on research was associated with reduced stress. Also, Kinman and Wray (2013) found that research-only staff reported lower levels of work-life conflict and had better wellbeing overall than staff who did no research or a combination of research and teaching in all but two areas: support from colleagues and role clarity.

Kinman and Wray (2013) identified role clarity as an area where wellbeing among higher education staff is lower than among workers in comparison industries. Overall, the data indicated that most respondents had a clear understanding of what was expected of them at work and how to do their jobs, but had less

clarity about how their work fit into the organisation's overall aims and about what the goals and objectives of their own department were (Kinman & Wray, 2013).

### 4.3.6. Management and communication of change

Findings from the surveys by Kinman and Wray (2013) and Tytherleigh et al. (2005) indicate that change management is an area where higher education workers have notably lower wellbeing than their counterparts in other industries. In the former survey, nearly half (49 per cent) of respondents said they seldom or never had sufficient opportunity to question managers about changes; the majority (67 per cent) said staff are seldom or never consulted about changes; and 59 per cent said they are seldom or never clear about how changes made will work out in practice (Kinman and Wray, 2013). Tytherleigh et al. (2005) found that not being told about changes taking place in their organisation was a significant source of stress, as was not being involved in decisions affecting their own jobs (which also relates to job control). In addition, about half of respondents were concerned that their institution introduces changes that are not backed by a clear rationale for why the changes are needed (Tytherleigh et al. 2005). Levecque et al. (2017) found that for PhD students, closed decision-making processes in the team were associated with students experiencing greater psychological distress.

### 4.3.7. Factors underlying stress in the UK higher education sector

Discussing why UK academic staff (researchers and others) may feel stress and pressure, several studies (e.g. Kinman & Wray, 2013; Kinman et al. 2006; Tytherleigh et al. 2005) cited changes that have occurred in the UK higher education sector from the 1990s onwards. Kinman and Wray (2013) asserted that demands on academics have increased as student numbers increased, tuition fees were introduced, and universities have come under increasing pressure to compete – for students, research funding and rankings – resulting in more pressure on, and tracking of, staff performance. Shin and Jung (2014) also noted that the reforms in the UK and elsewhere have brought increased work demands on academic staff – to do more paperwork, more teaching and more entrepreneurial activities – while reducing job security through a shift away from tenured employment and towards contract-based employment. Rapid change can itself be a source of stress, as noted by Shin & Jung (2014).

However, little evidence explicitly linking this sort of change to an increase in reported stress was found in the course of the present review. One study exploring these changes found that academics' workloads have not increased overall since the 1960s, though there has been an increase in administrative demands (Tight, 2010). Kinman and Wray (2013) referred to evidence that there has been a general increase in workplace stress among public sector workers during recent decades.

Shin and Jung (2014) explored how system factors could affect job stress and satisfaction among academics, based on a study of 19 higher education systems internationally.[11] Overall, academic life in the UK is characterised, according to the study, by relatively low autonomy, pressure to perform in both teaching and research, the highest job stress among the countries studied, and a low level of job

[11] The data analysed was gathered in the international Changing Academic Profession survey of 2007–2008.

satisfaction (Shin & Jung, 2014). They found that performance-based management – where pre-determined indicators are used to assess faculty and performance is often tied to resource allocation – is a significant predictor of job stress (but not job satisfaction or lack thereof) (Shin & Jung, 2014). The lack of correlation between performance-based management and job satisfaction can be explained, according to Shin and Jung, through findings from other studies showing that, in general, job satisfaction is linked more closely to 'intrinsic' factors (such as academic freedom, shared governance and faculty empowerment) than to extrinsic ones (such as salary and management reforms). Intrinsic versus extrinsic factors are discussed further in Section 0.

Tytherleigh and colleagues (Tytherleigh et al. 2005; Jacobs et al. 2010) explored stress levels among staff at different types of institution, namely newer (post-1992) and older (pre-1992) institutions. This comparison could help shed light on how changes in approaches to management have affected staff because these groups of institutions to some extent face different management and performance pressures, and have different histories and cultures (Jacobs et al. 2010). Tight (2010) observed that research occupies a less prominent position in new institutions than in older ones. Newer institutions were found to be more stressful overall than older ones (Jacobs et al. 2010), although staff at older institutions reported greater challenges related to work-life balance and job security (Tytherleigh et al. 2005). More work is needed to understand why these differences arise.

### *4.3.8. Risks related to researching sensitive topics*

Emotional risks from exposure to disturbing subject matter are another aspect of mental health risk for researchers discussed in the literature (Bloor et al. 2008; Bloor et al. 2010; Coles et al. 2014; Dickson-Swift et al. 2009; Taylor et al. 2016; Sampson et al. 2008). This sort of work can result in vicarious trauma, a form of secondary trauma that can arise through engagement with the accounts of individuals who have suffered trauma (Bloor et al. 2008; Taylor et al. 2016). Vicarious trauma was discussed in the literature as it relates to areas such as nursing research (Taylor et al. 2016), public health research (Dickson-Swift et al. 2009) and studies of sexual violence (Coles et al. 2014). While Bloor et al. (2010) identified PhD students and junior researchers as being most likely to suffer this sort of harm, Kiyimba and O'Reilly (2016) noted that it is important to keep in mind that all staff who are involved in a study could be affected, including those who carry out transcription services.

Researchers who carried out a project commissioned by a node of the UK's National Centre for Research Methods observed that 'in the course of the very proper concern of researchers to protect research participants from harm, researchers have neglected to protect themselves' (Bloor et al. 2008, 2). The study focused on both emotional and physical risks, and the researchers found that emotional harm was more often reported by study participants. Participants in the study reported that the issue had been severe enough to prevent projects from being completed. The researchers concluded that this type of harm remains relatively rare, but occurs more often than is reported (Bloor et al. 2008). They also found that when problems of this kind do arise, existing institutional measures available to address them are often not put to use (Bloor et al. 2008). Consistent with the idea that there may be insufficient support of this type, Kinman & Wray (2013) found that 20 per cent of respondents reported always or often being supported through emotionally demanding work, whereas 44 per cent said this happens seldom or never.

The authors of studies on this topic consistently concluded that this type of risk needs to be given greater consideration in research design and oversight (Bloor et al. 2008; Coles et al. 2014; Dickson-Swift et al. 2009; Kiyimba & O'Reilly, 2015). Bloor et al. (2010) reported that risk management for researchers in universities is much weaker than in other fields where similar risks arise, such as media and aid organisations.


Summary

**Six aspects of work are recognised as impacting on workers' stress, according to the HSE**: work demands, job control, change management, work relationships, support provided by managers and colleagues, and clarity about one's role. These aspects of the work environment can be sources of stress or they can help counteract it. Findings from studies of university staff and researchers were consistent with this understanding of factors that contribute to stress in workplaces in general. Factors including job autonomy, involvement in decision making and supportive management were linked to greater job satisfaction among academics, as was the amount of time spent on research. Opportunities for professional development were also associated with reduced stress.

**UK higher education staff report worse wellbeing in most of the six aspects, as compared to staff in other sectors**. In large-scale surveys, UK higher education staff have reported worse wellbeing than staff in other types of employment (including education, and health and social work) in the areas of work demands, change management, support provided by managers and clarity about one's role. The only area where higher education staff reported higher wellbeing in these surveys was in job control, though other studies produced mixed findings about this factor. Wide variability was seen among respondents in areas such as support provided by managers and colleagues. Job insecurity (real or perceived) appears to be a challenge, and may be felt by early-career researchers in particular.

**PhD students face similar challenges to other researchers and higher education staff.** The main factors associated with development of depression and other common mental health problems in PhD students are high levels of work demands and work-life conflict, low job control, poor support from the supervisor and a closed decision-making culture. Believing that PhD work is valuable for one's future career is important, as is having confidence in one's research abilities.

**Some studies suggested that changes to the UK higher education system had brought increased job stress.** These studies discussed changes that had occurred in the UK higher education system from the 1990s onwards, and had resulted in increased emphasis on accountability, efficiency and performance management. Study authors suggested that these changes could have brought about increases in job stress for staff working in this system. However, data explicitly linking the changes to an increase in stress are limited, perhaps due partly to a lack of comparable data from before the 1990s.

**Staff who can devote a large proportion of their working time to research have better wellbeing**. Studies found that spending a larger percentage of one's time on research was associated with reduced stress, and that research-only staff reported lower levels of work-life conflict and had better wellbeing than other HEI staff.

**Research on emotionally challenging topics can put staff wellbeing at risk.** Studies showed that staff involved in research on sensitive topics, such as trauma or abuse, may be emotionally affected by the material they encounter in their work and should receive greater support to mitigate the negative impacts of this work.

## 4.4. Outcomes related to poor mental health and wellbeing for individual researchers, their institutions and the research system

**This section explores the potential outcomes related to poor mental health and wellbeing in the research workplace. This covers:**

- Outcomes for the individual, including effects on job satisfaction, level of commitment to the institution, and productivity
- Outcomes at an institution and sectors level in terms of the potential costs of poor mental health

Unchecked, mental health problems can have significant consequences for the individuals in question, the institutions they work for, and for the research system as a whole. The literature identifies three main potential outcomes of problems in mental health and wellbeing in the workplace: reduced job satisfaction, reduced levels of commitment (to the institution, and to their work as a researcher in general), and reduced productivity.

In terms of productivity, respondents to a survey of HE employees who had poorer work-related wellbeing and who experienced unacceptable levels of stress tended to report higher levels of sickness absence (Kinman & Wray, 2013). Based on broader evidence around behaviours of employees in similar professions, we can assume that levels of presenteeism are even higher. This is supported by evidence from Jacobs (2007), which shows that perceived commitment from the organisation to the employee and low levels of stress relating to work-life balance are associated with a better RAE[12] rating.

Work related stress can lead to lower levels of commitment to not just the institution but research as a whole. The most obvious outcome of this would be higher levels of turnover, seen, for example, in a survey of medical school deans, 33 per cent of whom reported they would step down in the next two years (Gabbe, 2008), and amongst PhD students, where dropout levels can be as high as 30–50 per cent (Stubb et al. 2012). However, signs can also be manifested as negative attitudes in the workplace and counterproductive workplace behaviours such as cynicism, incivility and sabotage (Kinman & Jones, 2001; Spector et al. 2005). Work-related stress can also impact on life outside of work, limiting the ability of researchers to perform their family and social roles, and leading to irritability, withdrawal and sleeping difficulties (Kinman & Jones, 2008).

Effects on job satisfaction are more difficult to pin down. Although extrinsic factors around pay, job security and working hours can negatively impact on job satisfaction, this is to some extent balanced by the satisfaction that academics gain from the intrinsic factors associated with their work such as the intellectual stimulation and opportunities to use their initiative (Kinman & Jones, 2008; Kinman & Wray 2016; Winefield et al. 2003). As a result, the majority of academics are moderately satisfied with their jobs, despite the high level of workplace stressors observed (Kinman & Jones, 2008; Winefield et al.

[12] The Research Assessment Exercise (RAE) is a national assessment of the quality of research which has been conduted in the UK based on peer review of research outputs (typically manuscripts, books and journal articles). Ratings are available at an institutional level. The RAE has now been replaced by the Research Excellence Framework (REF). The data used in the study corresponds to the 2001/2 RAE – the analysis of stress data is for a survey conducted the same year (Jacobs 2007).

2003), and indeed, workplace stress and satisfaction levels in the sector are not necessarily correlated (Shin & Jung, 2014).

The impacts of these outcomes on institutions and the sector can be significant. Work by Shutler-Jones (2011) attempted to quantify this as part of a business case for the need to tackle workplace wellbeing and engagement. Noting the overall costs of sickness absence to the sector of £270 million, they suggest that investment in wellbeing programmes have been shown elsewhere to reduce sickness absence by 30–40 per cent (PricewaterhouseCoopers, 2008). Whether this is transferable to the sector is unclear, but if even a fraction of this benefit could be achieved there could be significant implications for institutions. It is also important to note the more hidden costs of presenteeism – which broader studies suggest could cost as much as two to seven times more than absenteeism (Main et al. 2005). Again, this would need to be verified for the sector but the evidence on prevalence and stigma suggests that presenteeism is likely to be a significant problem in academia. Putting together these numbers, Shutler-Jones et al. (2011) estimate possible costs to the sector of poor performance, presenteeism and absenteeism resulting from issues around wellbeing and engagement could be in excess of £500 million per year for the UK HE sector.

The imperative for action on mental health issues in the case of early-career researchers, particularly PhD students, is also clearly set out by Levecque et al. (2017), who notes three key reasons for the need to address such issues, beyond the moral imperative to support individual wellbeing. These are the significant contrition that PhD students make to scientific advancement through their work, which may be impacted by mental health problems (Danna and Griffin, 1999), the impact on the functioning of the research teams they are part of (e.g. Goh et al. 2015a; Goh et al. 2015b), and the impact on the supply of talent to the research industry, since this may impact on dropout and/or the decision not to subsequently pursue a career in research (Podaskoff et al. 2007). All of these will likely have impacts on the scientific and economic advancement of the country in question (Rindermann & Thomson, 2011), and more broadly on the progress of research overall.


Summary

**Outcomes at the individual level:** Job stress and poor workplace wellbeing can impact on individuals in a number of ways:

- Job stress and poor workplace wellbeing can contribute to reduced productivity – through absence and, more importantly, through presenteeism, where researchers attend work despite being unwell, and are less productive.

- It can lead to lower levels of commitment to their research and to institutions – which can be seen in high levels of turnover, and through negative attitudes in the workplace.

- Effects on job satisfaction are less clear because issues may be offset by satisfaction researchers gain from intrinsic factors, such as the intellectual stimulation of their work.

- Effects can spill over into personal and family life.

**Outcomes at the sector level:** The overall effects of these negative outcomes on the sector have not been fully quantified, but estimates drawing on broader experience suggest that the costs could be high. An estimate from Shutler-Jones et al (2008) which has several caveats and entails several assumptions, suggests that the costs to the UK HE sector could be more than £500 million per year (c. 5 per cent of the sector). Costs to the economy and the country more widely could also be significant due to the lost potential for scientific advances and impacts on the availability of research talent if PhD students fail to complete their studies or choose to leave research subsequently.

# 5. What interventions are used to support researchers, and what evidence is there of their effectiveness?

**This section explores the interventions that have been evaluated in the literature to address mental health and wellbeing in the research workplace. This covers:**

- The range and nature of interventions discussed and the ways in which they can be classified
- The quality and outcomes of evaluations of those interventions that have been conducted

As in the wider workplace environment, documentation and evaluation of interventions to support mental health and wellbeing in the research workplace are limited. Overall, most studies focus on interventions restricted to addressing workplace stress and wellbeing, rather than responses to specific (or general) mental health conditions as clinically defined. In addition, evaluation methods are of mixed quality, with many providing fairly poor evidence around the effectiveness of interventions. Furthermore, most interventions have only been tried in specific settings (e.g. one university, and typically with small groups of participants), which calls into question their wider generalisability to the sector. Finally, many interventions are targeted at university staff (and sometimes also students) as a whole, rather than being specific to the needs of researchers. However, some evidence on interventions that have been used is available, and in some cases this is accompanied by some evaluation evidence. The available evidence on interventions in the sector is presented in this chapter.

One of the key studies in this area is the work of Hayter et al. (2011), which describes a set of 13 interventions piloted and evaluated across 12 UK institutions. This piece of work, commissioned by HEFCE, was focused on improving the wellbeing and engagement of university staff and in particular providing a structure and guidance around how such interventions could be evaluated. It set out the following typology of types of intervention that can be used to address wellbeing in the workplace:

- Primary interventions: These are interventions that set out to reduce the causes of stress or poor wellbeing (i.e. tackling the enablers and barriers). These are potentially very effective but can be difficult to introduce because they require changes to organisational processes. For example, this could include changes to job design, working practices, work schedules, or introduction of strategies and policies or stress risk assessments.
- Secondary interventions: These are interventions that set out to manage or reduce the impact or causes of stress or poor wellbeing. They are 'response directed' and are intended to help employees cope with the work environment. This could be through wellbeing events, or through identifying training or development needs.

- Tertiary interventions: These are interventions that are 'symptom directed', meaning that they aim to support stressed or unhealthy employees. This could include support and advice through counselling or occupational health services, and healthy lifestyle programmes such as gym memberships, meditation, and diet and exercise initiatives.

This is a useful classification approach, and it is important to note that the majority of interventions identified in the literature fall into the secondary and tertiary brackets – that is, they are visible interventions aiming to support researchers to deal with workplace stress, but they may not be effective in addressing the root causes of that stress.

The interventions discussed in the work by Hayter et al. (2011) and the related report from the same project by Shutler-Jones et al. (2011) range from efforts to engage employees in the wellbeing agenda and programmes aiming to improve workplace communication, to executive coaching for university managers and fitness initiatives. Several had started to show positive outcomes (though the reliability of these measures based on the evaluation techniques used may be limited in some cases). However, the timelines were limited – most of the initiatives had only been running for a limited period (e.g. less than a year) and as such it was difficult to establish longer-term outcomes at the stage at which the overarching project was finished and the results published.

Another notable paper is the review by Fernandez et al. (2016), which summarises evidence on interventions to promote mental health in the university environment. They identify 19 papers with relevant interventions, but note that the majority of these are focused on students, with only 4 targeting employees' mental health. Three of these focused on workplace policies around stress reduction (Grawitch, 2007; Pignata & Winefield, 2013; Pignata, 2014), and the fourth covered a multifaceted campus-wide mental health literacy-focused intervention (Reavley, 2014).

In addition to the interventions noted in these two studies, we also identified a further three studies aiming to promote mental health and wellbeing to academic research staff. One of these is a yoga intervention in an academic setting (Brems, 2015), another a university-wide suicide prevention programme (Indelicato, 2011), and the third a mindfulness-based stress release programme (Koncz, 2016). The overall aims and approach of the 20 interventions identified are summarised in Table 5-1. The interventions identified can be broadly classified into four groups: policy changes, communication activities, training, and health-promotion activities. Health-promotion activities include individual health assessments, provision of gym membership, mindfulness programmes, and yoga. Training broadly falls into two categories: leadership and management training (e.g. training to support managers to deal with organisational change (Hayter, 2011; Shutler-Jones, 2011), and peer-to-peer support training (e.g. suicide-prevention training – Indelicato (2011)). Communication activities also fall into two categories. One bracket here is a set of interventions aiming to improve communication between senior leadership at the institution and wider staff, promoting a more open management style and better engaging staff in organisational processes (Hayter, 2011; Shutler-Jones, 2011). The other group of interventions aim to raise awareness of mental health and wellbeing issues through (typically) institution-wide campaigns (Reavley, 2014). Policy change corresponds to efforts to change overall policy related to mental health and wellbeing issues, which may include some of the elements described for the other interventions (e.g.

improving training provision). A more specific example is the intervention aiming to improve policies and procedures around sickness absence (Hayter et al. 2011).

Details around setting, participants, evaluation approaches and outcomes are provided in Table 5-2. Broadly, most of the interventions suffer from limitation in either design (self-reported data, lack of appropriate controls), or timeline (particularly for those reported in Hayter et al. 2011) with insufficient time post-intervention to demonstrate significant outcomes. Only one (cluster) randomised trial is reported; it does not demonstrate any statistically significant outcomes. Based on the limited evaluation evidence available, the most promising interventions appear to be 'primary' interventions based on Hayter's classification – those focusing on policy change at an organisational level. However, sample sizes are too small to effectively assess some of the other intervention types, and better-quality, larger-scale evaluation data would be needed to determine whether and which of these interventions have merit even within the specific context applied, let alone at a sector level.

Although the evaluation evidence is limited, it provides an illustration of the range of types of intervention that could be (and have been) employed to address the mental health and wellbeing needs of this population. It also provides some evidence of the potential outcome measures that could be used and a sense of the challenges inherent in such evaluations, including the timelines over which evaluations should be conducted. Particularly for the UK interventions described in Hayter et al. (2011), there is significant potential to revisit those institutions to explore whether any of the interventions are ongoing, and whether longer-term evaluation data is now available (or could be collected), building on some of the baseline data already available. Additionally, it is interesting to note that the wellbeing initiative under which these pilots and evaluations were conducted, originally supported by HEFCE (with funding to 2011) has since been managed by UCEA, who have developed a wellbeing network. As part of this function, they provide a wellbeing and engagement framework for HEIs, which incorporates a number of case studies around practice which detail interventions that have been introduced at a number of institutions (in addition those described here). Evaluation data is not provided, only brief summaries of the nature of the interventions taking place across UK universities. These include a coaching and mentoring programme aiming to enhance the leadership practice within the university at the University of Hertfordshire, an analysis of the wellbeing of academic staff at Leeds Beckett University based on staff survey data, and the collaborative development of a set of values at Glasgow Caledonian University which were then embedded into operational activities. This network of activities provides scope to explore the range and effectiveness of practice around mental health and wellbeing at UK HEIs.

However, it is important to note that although many of these interventions attempt to tackle factors in the workplace that may contribute to mental health conditions, the types of intervention detailed are limited in scope. Few of the interventions tackle the underpinning work conditions of the academic environment that may contribute substantially, such as job insecurity due to short-term contracts or the limited opportunities for promotion of junior staff. This is perhaps to be expected, since such structural changes are hard to effect, but is nonetheless notable. However, it is encouraging that the need for training around management and leadership is recognised and addressed in several of these interventions.

Interventions also focus on stress and wellbeing rather than clinical mental health conditions. This fails to recognise that mental health issues will arise regardless of the environment. Few interventions here aim to

address attitudes towards mental health and the way those with mental health conditions are treated, supported and valued in the workplace. As described previously, there is evidence of a stigma around mental health in workplaces, including universities, and this is an area that warrants further consideration. More could be done to explore the effectiveness of policies, procedures, and support networks for those with mental health needs, beyond wider wellbeing initiatives intended to support the university workforce as a whole.

**Table 5-1. Summary of the aims and approaches used in interventions to support mental health and wellbeing in HEIs evaluated in the literature.**

| Source | Aim of intervention | Description |
|---|---|---|
| (Hayter, 2011; Shutler-Jones, 2011) | Improve the visibility of the University Executive Board, to clarify and communicate the institutional aims and to improve the quality of leadership at Board level. | Implementation of personal development plans, mentoring, group sessions and 360-degree feedback. Workshops with staff to increase understanding and engagement in the strategic plan, Vice-Chancellor-led open meetings, and improved online resources and communication. |
| (Hayter, 2011; Shutler-Jones, 2011) | Reduce the average sickness absence days lost per person per year due to stress, and increase overall staff satisfaction within the 'stress' category of an annual employee survey. | Stress risk assessment, briefings, training and solution groups, free gym membership, trial of 'fitbug' pedometers. |
| (Hayter, 2011; Shutler-Jones, 2011) | Improve employee communication at the University, improve communication 'horizontally' and improve communication between the faculties and the professional services. | Focus groups, pulse surveys, Vice-Chancellor-led open meetings, promoting staff benefits and improving the staff portal. |
| (Hayter, 2011; Shutler-Jones, 2011) | Build resilience during a period of major change. | Academic and non-academic middle managers participated in a programme of individual executive coaching. |
| (Hayter, 2011; Shutler-Jones, 2011) | Determine a profile of the health and wellbeing status of University staff; investigate the links between physical activity and psychological wellbeing; establish the links between physical, dietary and mental health; and assess the impact of increasing knowledge of health and wellbeing from participating in individualised assessments. | 'Health MOT' including a wide range of individual measures such as questionnaires and physical assessments. |
| (Hayter, 2011; Shutler-Jones, 2011) | Improve sickness absence management across the institution including recording of data and staff support systems around 'return to work'. | Development and implementation of a new absence procedure, training and guidance for managers, introduction of a new measure of worker absenteeism ('the Bradford Factor') and improved reporting systems. |
| (Hayter, 2011; Shutler-Jones, 2011) | Establish linkages between leadership and performance; increase the skills, knowledge and awareness of leaders and managers; increase the engagement of leaders (and all staff groups) in the University strategy; and embed a values-linked leadership approach. | Training needs assessment and subsequent development of a new programme of leadership and management; full consultative process to develop, embed and create ownership around a set of new organisational values. |
| (Hayter, 2011; Shutler-Jones, 2011) | Identify and understand the current academic contract, as perceived by staff, explore if this is broken; what factors have impacted on this; and | Series of focus groups, online surveys and one-to-one follow-up interviews. |

| Source | Aim of intervention | Description |
|---|---|---|
| | which of these it would be possible for the institution to influence in the future. | |
| (Hayter, 2011; Shutler-Jones, 2011) | Enhance the Resource Managers' ability to lead and cope with change. | Leading and coping with change training delivered to c. 50 non-academic middle managers with a significant role in managing organisational change, including practical tools to help themselves and implement with their own teams. |
| (Hayter, 2011; Shutler-Jones, 2011) | Improve resilience of senior management going through change, improve managers' impact on their staff, and improve engagement of senior management and the wider workforce overall. | Senior and middle managers (academic and non-academic) participated in a programme of resilience training. This included coping with negative pressure, the role of the manager in developing a positive working environment and supporting colleagues to frame issues positively. |
| (Hayter, 2011; Shutler-Jones, 2011) | Enhance staff engagement in the wellbeing agenda. | Launch of a new website, development of the 'Keep well at NCL' strap-line, establishing a multi-disciplinary steering group and participation in the 'Better Health at Work Award'. |
| (Hayter, 2011; Shutler-Jones, 2011) | Address the dip in performance that can occur following major change, with particular emphasis around how to create enthusiastic alignment with strategic goals. | Personal and team-based support to build individual and team resilience through a five-stage plan alongside a wider change-management programme, tailored according to the specific needs of the local area. |
| (Hayter, 2011; Shutler-Jones, 2011) | Improve staff resilience by promoting the importance of peer support. | Training sessions focusing on 'how to look out for each other'. |
| Grawitch (2007) | Explore the relationship between employee satisfaction with different workplace practices and employee outcomes. | Different workplaces policies: a) employee involvement; b) growth and development; c) health and safety; d) recognition; e) work-life balance. |
| Pignata, & Winefield (2013) | Examine the effects of awareness of stress-reduction interventions (occupational health and safety programs) on employee wellbeing. | Different workplace policies for stress reduction: a) organisational strategies (training, employee management, corporate strategies); b) individual strategies (intervention programs, valuing people, morale raising, risk analysis). |
| Pignata et al. (2014) | Examine the effects of awareness of stress-reduction interventions (occupational health and safety programs) on employee wellbeing. | Workplaces policies for stress reduction. |
| Reavley (2014) | Improve mental health literacy, facilitate help seeking and reduce psychological distress. | MindWise, a multifaceted intervention consisting of delivery of messages related to Mental health in a variety of ways: web site, Facebook, twitter, e-mails, posters, campus events, and mental health first aid training. |
| Brems (2015) | Assess feasibility and efficacy of a yoga intervention for stress reduction in an academic setting. | Once-weekly yoga sessions for ten weeks. |

| Source | Aim of intervention | Description |
|---|---|---|
| Indelicato (2011) | Provide students, faculty and staff with tools to identify, assist, and refer distressed and suicidal individuals. | Suicide-prevention training programme based on the Question, Persuade, Refer (QPR) approach (Quinnett, 1995). |
| Koncz (2016) | To reduce perceived stress, and improve workplace wellbeing and engagement. | 6-week mindfulness-based stress-release program (SRP). The SRP involves a half-day introductory session to the concepts pertaining to mindfulness, followed by five 60-minute weekly sessions. |

**Table 5-2. Summary of the sample population, evaluation approach and outcomes for interventions to support mental health and wellbeing in HEIs evaluated in the literature**

| Source | Location | Population | Sample size | Evaluation design | Outcome measures | Main results |
|---|---|---|---|---|---|---|
| (Hayter, 2011; Shutler-Jones, 2011) | University of Birmingham (UK) | University staff | Not specified | Pre-post | Staff survey scores. | There were significant improvements in a number of key questions. For example, 'Board visibility' increased from 16% to 28% favourable, 'Awareness of goals' increased from 53% to 56%, 'Leadership at senior level' increased from 32% to 45%, 'Effectiveness of leadership' increased from 32% to 45% and 'Confidence in the Strategic Framework' increased from 22% to 33%. |
| (Hayter, 2011; Shutler-Jones, 2011) | University of Aberdeen (UK) | University staff | Not specified | Pre-post | Average sickness absence days lost per person per year due to stress; staff survey results in 'stress' category. | Average days lost per person per year due to stress reduced by 21%. The cluster of stress-related survey questions improved by an average of 2.9% – improvement was in almost all questions. Longer follow-up needed to confirm trend, attribution not established. |
| (Hayter, 2011; Shutler-Jones, 2011) | University of Winchester (UK) | Staff | 265 (response rate 38%) | Pre-post | Staff survey results (2011 cf. 2008). | Statistically significant improvements in a number of areas. For example, 'Senior management communications' increased from 55% to 63% favourable, 'Involvement' increased from 58% to 71% and 'Engagement' increased from 86% to 90%. Attribution not established. |
| (Hayter, 2011; Shutler-Jones, 2011) | University of Leeds (UK) | Senior managers | 18 (14 intervention, 4 control) | Pre-post (control group too small for analysis) | Self-reported 'affective' responses and behavioural and cognitive changes. | Results showed statistically significant shifts in resilience and improvements in self-rated productivity recorded after the coaching period. |
| (Hayter, 2011; Shutler-Jones, 2011) | University of Chester (UK) | University staff | 62 (35 intervention, 27 control) | Pre-post (control group not used in analysis) | Affective, cognitive, behavioural (e.g. lifestyle, diet, exercise), physical (e.g. health and fitness). | No change in measures over five-month period between intervention and follow up – longer-term follow-up required. |

| | | | | | | |
|---|---|---|---|---|---|---|
| (Hayter, 2011; Shutler-Jones, 2011) | Cardiff University (UK) | University staff, prioritising managers | 745 | Pre-post | Levels/lengths of sickness absence, OH referrals. Self-reported cognitive and affective outcomes. | There was a 1.64% reduction in reported staff sickness levels over the previous year. Longer-term follow-up needed to demonstrate significance. |
| (Hayter, 2011; Shutler-Jones, 2011) | Heriot-Watt University, UK | University staff | Not specified | Pre-post | Self-reported attitudinal data (survey). | There was a significant improvement in the response rate of the employee survey (70%, up from 44%). All relevant questions improved – for example, overall satisfaction increased from 59% to 77%, positive understanding of role increased from 61% to 85% and respect at work/contribution of colleagues increased from 88% to 91%. |
| (Hayter, 2011; Shutler-Jones, 2011) | Queen Mary, University of London (UK) | Academic staff (lecturers, senior lecturers/ readers, professors) | 86 (survey – response rate 20%) 24 (interviews) | Case study | Individual cognitive and affective measures. | The intervention has led to a clearer picture of the factors which impact on commitment to the academic profession and to Queen Mary. |
| (Hayter, 2011; Shutler-Jones, 2011) | University of Bristol (UK) | Non-academic middle managers | c. 50 | Pre-post | Self-reported affective responses and behavioural and cognitive changes. | 55% of managers reported that they had applied new ways of working to avoid stressors in the workplace. Self-reported productivity also improved. |
| (Hayter, 2011; Shutler-Jones, 2011) | University of Glasgow (UK) | Senior managers and human resources managers/ advisers | 53 (17 academic) | Pre-post | Self-reported affective responses and behavioural and cognitive changes. | Improvement (self-reported) in cognitive and behavioural changes with most delegates reporting changes in at least one area and some reporting changes in many of the topics covered. |
| (Hayter, 2011; Shutler-Jones, 2011) | Newcastle University (UK) | University staff | N/A: engagement of all staff. | Pre-post | Attitudinal surveys, intranet usage, sickness absence, Occupational Health referral rates. | Not available: too soon to see changes in sickness absence, timing and focus of staff survey only provides baseline data. |

| | | | | | | |
|---|---|---|---|---|---|---|
| (Hayter, 2011; Shutler-Jones, 2011) | University of Leeds (UK) | Not available | Not available | Pre-post | Not available. | Not available. |
| (Hayter, 2011; Shutler-Jones, 2011) | Grimsby Institute for FE/HE (UK) | University staff | Not specified | Post measures only | Self-reported feedback from training. | The training evaluation demonstrated positive affective responses. |
| Grawitch (2007)** | US | University employees | 152 | Cross-sectional | Emotional Exhaustion Scale from the Maslach Burnout Inventory; General mental wellbeing was measured using the 12-item measure developed by Banks. | Satisfaction with employee involvement practices was negatively associated with emotional exhaustion (B=-0.77, p<0.001). Employee involvement (B=0.39, p<0.01), growth and development (B=0.32, p<0.01), and health and safety (B=0.23, p<0.01) were positively associated to Mental Wellbeing, whereas recognition (B=-0.21; p<0.05) and work-life balance (B=-0.19 p<0.05) showed a negative association. |
| Pignata & Winefield (2013)** | Australia | University employees | 247 | Cross-sectional | Psychological Wellbeing was measured with the GHQ-12. | Staff who were aware of stress-reduction interventions introduced at the university did not differ in psychological wellbeing (ANOVA F(2,220)=2.09, p=0.13). |
| Pignata et al. (2014)** | Australia | University employees | 869 | Pre-post | Psychological Wellbeing was measured with the GHQ-12. | Staff who were aware of stress-reduction interventions introduced at the university had lower levels of psychological strain (B=-0.11. p<0.01). |
| Reavley (2014)** | Australia | Employees | 162 participants, 255 controls | Cluster randomised trial | Psychological distress was assessed with the K-6. | There was no difference in the percentage of students who reported 'moderate to high distress' in the intervention vs the control group neither in wave 2 (25.4% vs 14.8% OR=1.84 95%CI 0.92–3.65) nor in wave 3 (17.6% vs 14.6% OR=0.94 95%CI 0.42–2.13) |
| Brems (2015) | US | University faculty, staff and students | 44 (25% faculty) | Pre-post | Perceived Stress Scale (PSS); Psychological and Physical Stress Indicator (PPSI) – developed for this study. | Results indicated a significant decrease (p <.001) post-intervention in perceived stress, dropping from 16.41 (SD = 6.26) at pre-test to 12.68 (SD = 5.61) at post-test, and in PSSI (pre-test scores were 15.92 (SD = 10.92) and post-test scores were 8.06 (SD = 5.42)). |

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|---|---|---|---|---|---|---|
| Indelicato (2011) | US | All staff and students | 247 (mostly students) | Pre-post | Self-reports of suicide-related knowledge and suicide prevention skills). | One- and three-month groups rated themselves significantly higher than the baseline group (p < .001) on all of the suicide prevention knowledge and skills dimensions. |
| Koncz (2016) | Australia | Employees | 53 (24 intervention, 29 control) | Non-randomised control group | Participant experience of psychological distress using the Kessler Psychological Distress Scale (K10); work-specific measures of employee wellness and work engagement (survey data). | Statistically significant improvement in the intervention group in the level of distress [-3.0 (95% CI -5.5 to -0.6, P¼0.02], university workplace wellbeing (2.5, 95% CI 0.5 to 4.5, P¼0.02), and vigour (0.39, 95% CI 0.65 to 3.07, P<0.01) at follow-up compared with baseline (see Table 2). There were no such changes observed in the control group. |

*Detailed evaluation report available on UCEA website.
**Summary drawn from Fernandez et al. (2016).

Summary

**Evidence on interventions is limited:** The evidence around the effectiveness of interventions to support the mental health of researchers is thin. Few interventions are described in the literature and even fewer of these have been evaluated. Where evaluations have been conducted, they are often of limited utility, either because of the evaluation design or the length of follow-up.

**Interventions described in the literature are limited in range:** Interventions typically focus on stress and wellbeing rather than clinical mental health conditions, reflecting the wider focus in the literature as described in previous chapters. In addition, the majority of interventions identified aim to support researchers to deal with workplace stress, but they may not be effective in addressing the root causes of that stress. The interventions identified can be broadly classified into four groups: policy changes, communication activities, training, and health-promotion activities.

**There is scope to build on existing efforts and networks in the UK:** Focusing on the UK specifically, a range of interventions were piloted and evaluated (to a limited extent) as part of a wellbeing initiative by HEFCE around 2009–2011. These offer scope for further investigation and potentially evaluation now that more time has elapsed. Additionally, the project, though completed in 2011, has spawned a network, now managed by UCEA, which may offer a route to identify further ongoing initiatives and potentially a space to pursue and evaluate efforts to address these issues in the HE sector.

# 6. Conclusions and future directions

## 6.1. Conclusions

The existing literature around the mental health and wellbeing of researchers is limited, meaning that it is not possible to draw robust conclusions about the mental health status and needs of researchers, or how researchers may differ from other populations in this regard. The literature is almost exclusively focused on universities, with many studies covering all university staff, which will include both researchers and other non-research staff. Some studies focused more specifically on researchers, and among those a small number looked at particular groups of researchers – most commonly PhD students, reflecting the wider focus on (typically undergraduate) students in the literature around this topic.

What evidence is available focuses primarily on describing the levels of stress among the academic workforce and identifying contributory factors within the workplace. This focus presents two main challenges. First, though the presence of common mental health conditions does correlate with some of the wellbeing scales commonly used in the literature, (Knifton & Quinn, 2013), more serious (e.g. psychotic) mental illnesses are not necessarily aligned with measurement of wellbeing. Second, the majority of the existing research is based on survey data, which may be subject to sampling and self-report biases and was not usually triangulated with objective indicators. It would be preferable to have objective clinical assessment of mental health but this is costly and not feasible for the types of large-scale surveys that make up the bulk of the evidence.

Despite these limitations, we identify key findings around prevalence, contributory factors and interventions to support the mental health or wellbeing of researchers.

**Prevalence of work-related stress and mental health problems:** Despite the high estimates in the literature (based primarily on survey data) of prevalence of work-related stress and psychological distress or risk of developing a mental health problem, UK national statistics indicate that only 6.2 per cent of staff disclosed a mental health condition to their university, though academics have been found to be among the occupational groups with the highest levels of common mental disorders with prevalence around 37 per cent, greater than estimates for general populations. It should be noted that, counterintuitively, studies of occupational groups typically demonstrate higher prevalence of common mental health conditions than studies of general populations, which include individuals not in employment (Goodwin et al. 2013). Though being in work should bring protective factors for mental health (Li & Sung 1999; Waddell et al. 2006), prevalence may be over-reported in surveys of occupational groups (Goodwin et al. 2013).

**Personal factors that contribute to mental health outcomes in the research workplace:** Gender was the key personal factor that emerged as a determinant for mental health (or its reporting), with women reporting more exposure to stress than men, as well as greater challenges around work-life balance. There was also evidence that personality and perceived competence affect mental health as self-critical personalities are more susceptible to stress. However, it was unclear whether stress was a result of working conditions in the research environment, or whether research settings attracted particular types of individuals. The results on whether age affects mental health were inconclusive, partly because age is often difficult to disentangle from discussions about rank and seniority. Other factors such as disability, sexuality and minority status were mentioned in a small number of articles in the sample, and these articles indicated that these personal factors generally increase stress. These findings are consistent with wider evidence that some groups of people have a heightened risk of poor mental health, including some minority communities, people with long-term physical conditions or disabilities, and lesbian, gay, bisexual and transgender people (Mental Health Taskforce, 2016).

**Environmental factors that can influence mental health in the research workplace:** Based on the HSE's framework, along with evidence from the wider literature, we identify six key aspects of work that can affect workers' stress levels: work demands, job control, change management, work relationships, support provided by managers and colleagues, and clarity about one's role. UK higher education staff report worse wellbeing in most of the six aspects, as compared to staff in other sectors. The only area where higher education staff have reported higher wellbeing in large-scale surveys was in job control, though even here results are mixed across studies. UK higher education staff have reported worse wellbeing than staff in other types of employment (including education, and health and social work) in the areas of work demands, change management, support provided by managers and clarity about one's role. Job insecurity is an important challenge, particularly for early-career researchers who are often employed on successive short-term contracts. Some studies suggested that changes to the UK higher education system from the 1990s onwards (e.g. increased emphasis on accountability, efficiency and performance management) had brought increased job stress, but there is no clear evidence linking these changes to an increase in stress. There is, however, evidence of protective effects from working in research. For instance, staff who can devote a large proportion of their working time to research have better job satisfaction and wellbeing.

One group of researchers at particularly high risk are those involved in research on sensitive topics such as trauma or abuse. There is evidence that they may be emotionally affected by the material they encounter in their work and should receive greater support to mitigate the negative impacts of this work.

**Outcomes related to poor mental health and wellbeing:** Job stress and poor workplace wellbeing can contribute to reduced productivity – both through absence and, more importantly, through presenteeism, where researchers attend work and are less productive. It can also lead to lower levels of commitment to their research and to institutions – which can be seen in high levels of turnover, but also in negative attitudes in the workplace. Effects on job satisfaction are less clear because of the satisfaction researchers gain from intrinsic factors such as the intellectual stimulation of their work. Several studies note that high levels of job-related stress can coexist with high levels of job satisfaction. Effects can also spill over into personal and family life. The overall effects of these negative outcomes on the sector have not been fully quantified, but estimates drawing on broader experience suggest that the costs could be high. An estimate

from Shutler-Jones et al. (2011), which has several caveats and assumptions, suggests that the costs to the UK HE sector could be more than £500 million per year (c. 5 per cent of the sector's total annual income).

**Interventions to support mental health and wellbeing in the research workplace:** The evidence around the effectiveness of interventions to support the mental health of researchers specifically is thin. Few interventions are described in the literature and even fewer of these have been evaluated. Where evaluations have been conducted, they are often of limited utility, either because of the evaluation design or the length of follow-up. Interventions typically focus on stress and wellbeing rather than clinical mental health conditions, reflecting the wider focus in the literature as described in previous chapters. In addition, the majority of interventions identified aim to support researchers to deal with workplace stress, but they may not be effective in addressing the root causes of that stress. The interventions identified can be broadly classified into four groups: policy changes, communication activities, training, and health-promotion activities. Focusing on the UK specifically, a range of interventions were piloted and evaluated (to a limited extent) as part of a wellbeing initiative by HEFCE around 2009–2011.

## 6.2. Discussion

Mental health problems can and do occur in all workplaces. What is important to establish is whether there are particular mental health needs in this setting and for this population, and whether these are adequately addressed. This can be considered from two perspectives. From one perspective, the question is in what ways does the workplace environment contribute to and exacerbate (or ameliorate) mental health issues, and to what extent can this be improved? Workplace contributory factors are the focus of the majority of the existing literature reviewed for this study. However, from another perspective, it is also important to accept that regardless of working conditions, mental health conditions will arise in the workplace population. As mental ill health cannot be eliminated, it is important to also consider the way in which staff and managers respond when it arises – is there stigma around mental health? Are appropriate mental health policies in place? Are managers and leadership equipped to respond sensitively and appropriately to mental health needs?

Though the issue is not well covered in the literature, the evidence available suggests that the HE sector overall is not well equipped to respond to and support the mental health needs of staff. As in other work environments, there is evidence of stigma around mental health issues in academia (Wynaden, 2014; Shaw, 2014). Also poorly addressed are interventions to support those with mental health conditions in this setting. Most interventions in the literature focus on workplace wellbeing and engagement, rather than policies, procedures and support for those with specific mental health needs. Research is needed to explore what the level and quality of coverage is across the sector, and to understand what support is needed for this group.

Considering the role of the working environment as a contributory factor to the mental health and wellbeing of researchers, the evidence from the literature affirms what is already known about mental health in workplaces more generally. For example, job insecurity is detrimental to mental health, whether you are a postdoctoral researcher on a short-term contract or a retail worker on a zero-hours contract. However, what is worth considering is the specific combination of workplace factors that come together

in the academic environment that may contribute to workplace stress and wellbeing. These may differ across institutions and, in particular, across career stages. PhD students face different challenges and vulnerabilities than senior staff, for example.

Taking together the evidence reviewed, the following features broadly characterise the academic[13] research environment:

- High proportions of staff on short -term contracts with limited opportunities for progression;
- Culture of long working hours with pressure to deliver and significant potential for overlap between work and home life;
- Need to balance a mix of commitments – particularly research, teaching and administration;
- Wide variation in the standard and style of leadership and supervision;
- Leaders receive little management training;
- High level of control over personal working environment and day-to-day tasks;
- Involvement in organisational decision making is often low;
- Work is stimulating and meaningful;
- For some researchers, there may be challenges specific to the nature of the research where it focuses on challenging topics (particularly for qualitative researchers engaged with those who have been through traumatic experiences).

None of these factors is in itself unique to this particular working environment. However, in bringing them together we start to see particular pressures that are specific to the research context. For example, studies note that researchers may have a high level of job stress but also a high level of job satisfaction, reflecting the rewarding nature of the work itself alongside the wider pressure and challenges of the working environment (Kinman & Jones, 2008; Kinman & Wray, 2016; Winefield et al. 2003).

Turning to interventions, it is useful to consider the level at which the interventions are aimed. Building on existing typologies of interventions in the literature (e.g. Hayter, 2011; Fernandez et al. 2016) and the analysis described above, we see interventions at three levels:

1. **Interventions intended to address those workplace factors that impact on mental health:** These are the most challenging types of interventions, aiming to address the list of factors described above that may contribute to mental health challenges in the workplace environment. At the most challenging level, this could include systemic change aimed to improve the working conditions and job security of postdoctoral researchers. At a simpler level, it could include training and incentives around effective leadership and people management for senior research staff. Some of the more simple examples of these types of policies are seen in the programme of interventions delivered through the HEFCE (now UCEA) wellbeing initiative (Shutler-Jones et al. 2011; Hayter et al. 2011), but the evaluation data available is not sufficient to determine their effectiveness.

[13] It is also important to note here that this analysis focuses on the academic workplace – researchers in industry are likely to face different challenges since the environment is significantly different. However, this group is not covered at all by the literature identified.

2. **Interventions aimed to improve policies and address stigma around mental health for those in the workplace with mental health conditions:** This is the next most challenging approach. Work could be done to better understand what policies are in place across the sector and understand whether these meet standards such as those set out in the Mindful Employer Charter (Mindful Employer, 2017). Changing practice and perceptions at the institutional level (and higher) are addressed to some extent by some of the interventions reported. For example, an initiative at Cardiff University aimed to improve sickness absence management across the institution (Hayter et al. 2011). However, the evaluation covered a limited time period and lacked a control group so the effectiveness of this intervention is unclear.

3. **Interventions aimed to provide support for groups of individuals with mental health conditions (or more generally improve wellbeing):** These are the easiest and most commonly reported types of intervention. This could range from the availability of counselling services within institutions to specific interventions for groups to improve wellbeing, such as yoga, meditation, or physical activity. Though a number of such interventions are included in the literature, most of the evidence around their effectiveness is limited in quality and scope.

## 6.3. Study limitations

There are a number of limitations to this study that should be considered. Firstly, we used a rapid evidence assessment approach, rather than undertaking a systematic review. This means that searches were constrained (for example by year of publication) in order to limit the number of search results and focus our efforts on the literature most likely to be relevant to the current UK research context. This does, however, mean that there may be relevant studies that have not been identified and included in this analysis. In addition, identifying relevant literature was challenging for this topic because of the difficulty identifying literature on the mental health of researchers, and not just the broader field of mental health research. Search terms were carefully designed to ensure that we did not produce an extremely large volume of irrelevant material, but this also means that some relevant studies may have been excluded through the search strategy. This should be at least partly addressed by the snowballing approach used, whereby relevant studies in the reference lists of included publications were also added to our body of literature for review.

In addition, the rapid review approach used means that each study was only reviewed by one researcher for inclusion and literature extraction (rather than two or more as in a full systematic review). This means that there is the potential for differences in approach across the team, and even for personal biases and preconceptions to colour the selection and analysis of material reviewed. To try and combat this we held regular team meetings over the lifetime of the project to discuss our approach and the emerging literature, and we also piloted inclusion and exclusion criteria and the extraction approach across the team to ensure consistency of approach. In addition, we drew on our expert advisors who helped provide a wider context and understanding of the field to ensure that our findings are consistent with their knowledge and understanding of the relevant issues, and that they are framed appropriately and sensitively.

Finally, the evidence presented is fundamentally limited by what is known and reported in the literature – which in this case is fairly limited. In particular, the vast majority of evidence is based on self-report through surveys, many of which were subject to non-response bias. Although many of the measures used

are well tested and validated for use in this format, this is still inferior to evidence based on objective clinical assessment, which is not available. The evidence available may overestimate prevalence relative to the population level since it is established that prevalence levels amongst occupational groups are systematically higher than might be expected, likely because of framing bias, meaning comparisons to the general population are less useful perhaps than comparisons to other occupational groups (Goodwin et al. 2013). Evidence is also limited by its focus on mental wellbeing and psychological stress, rather than clinically diagnosed mental health disorders. Many of the tools used to assess mental wellbeing (e.g. the GHQ-12) have been tested and shown to be aligned with diagnosis of common mental health conditions, but are not designed to identify serious mental health conditions. It is also important to note that the existing literature, particularly in the UK context, is somewhat dominated by a few research groups who have been particularly active in the field (reflecting the limited nature of the evidence). This means that there is a risk that this analysis is dominated by their views and interpretation of the evidence as presented in their publications. Through careful and critical analysis of the literature, we have attempted to address this potential limitation.

## 6.4. Avenues for further research

More work is needed to understand both the mental health needs of researchers and how they can be addressed. Particular gaps include the effectiveness of interventions, prevalence of specific mental health needs (rather than stress), and any evidence about researchers outside the academic setting. Several studies have started to unpick how these needs differ for different groups (particularly by career stage) reflecting the differences in their working environment, but many studies still address researchers (and often university staff in general) as a whole, thus limiting the extent to which the data can be interpreted. Based on both these gaps, and the information that is available, we suggest the following as potential initial routes for fruitful further research on this topic:

**1. Study on the prevalence of mental health conditions among postdoctoral researchers:** Recent work by Levecque et al. (2017) has shown how a focused study on the mental health needs of a limited population can still provide useful and more widely applicable information. Levecque et al. (2017) used a survey to assess the presence of psychological distress and potential psychiatric disorders in a sample of PhD students and compared the results to those of three other sample populations. Another notable study is that of Eisenberg et al. (2007), whose study surveying a sample of undergraduate and postgraduate university students to assess prevalence of depressive and anxiety disorders included steps to address the issue of non-response bias. We suggest that these approaches – the use of comparison groups and of measures to address non-response bias – could be replicated to improve the availability of evidence on prevalence. One option would be to replicate the studies for a group of PhD students in the UK. Alternatively, one under-researched group in general is the postdoctoral workforce. A similar study focusing on a small group of universities in the UK and looking at this specific population may offer some useful insights into the mental health needs and challenges of this group which makes up a significant proportion of the research workforce.

**2. Mapping mental health policies and procedures at UK HEIs:** The current standard of mental health policies and procedures across the UK is not well understood. We suggest that a mapping of the

current policies in place across institutions could be valuable, and could build on standards such as those set out in the Mindful Employer Charter (Mindful Employer, 2017).

**3. Evaluate the interventions introduced through the HEFCE wellbeing and engagement initiative:** The wellbeing initiative established by HEFCE and subsequently maintained as a network by UCEA offers a range of potential interventions that are available for further investigation and that could be used to start to pull together evaluation data. In the project reporting in 2011, many of the intervention teams noted that it was too soon to tell whether their interventions had been effective. A fruitful exercise might be to get back in touch with each of those institutions and explore how and whether those interventions have developed over the years, and whether data are now available (or could be collected) to provide more useful evaluation of the interventions introduced. The UCEA website also suggests that other interventions have been introduced since 2011 – this could be discussed and explored to see whether there is scope to better evaluate those initiatives or build on/aggregate existing evaluation data.

**4. Investigate and develop the HSE management standards as a framework for workplace mental health management in research environments:** As well as providing a set of assessment criteria for workplace stress as used in the survey by Kinman and Wray (2013), the HSE has also set out management standards that describe an approach to identifying sources of workplace stress and addressing them at an organisational level. One valuable approach might be to work through that approach with a HEI or a research organisation. This would explore the cycle between identifying issues and affected populations, making changes, and assessing the effects of these changes in a systematic manner building on an existing framework. By doing this with one or a limited number of institutions, we could establish the relevance of this to research staff, adaptations that need to be made, and the way it could be used in this context. This might provide a standard model for addressing stress in the research environment as well as standards for the sector that could be rolled out more widely. Having standards and a framework for thinking about a topic has worked effectively in other areas – for example, in starting to address gender equality through the Athena Swan awards. An alternative approach might be to build on existing mental health schemes such as 'Time to change' or 'Mindful employer'. This needs buy-in at the sector level, building on high-quality evidence that the approach is applicable and relevant, which a pilot could provide.

**5. Conduct more and higher-quality evaluations of mental health interventions and publish their results:** Broadly, better-quality evaluations are needed to identify what works in this area. There is a need for high-quality studies to test the effectiveness of interventions for researchers. Even more widely, there is limited high-quality evidence of this type available on mental health interventions. However, there are a number of fields where interventions are more widespread and interventions better evaluated – notably for GPs, teachers and social workers, all of whom work in environments that have some similarities (though also many differences) to the research workplace. We may be able to draw on these as a starting point.

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