Psychosocial Risks and Interventions for Mental Ill-health in the Workplace – A Meta-Review of the Evidence

Summary of updated literature review:

Workplace psychosocial risks and interventions

In 2020, SafeWork NSW commissioned the University of Sydney to update its 2017 literature reviews with new evidence. Key findings are summarised below.

Workplace risk factors for mental ill-health

- Workers are 30-35% more likely to develop mental ill-health where their job entails high levels of emotional conflict and physical demands, and

- 20-25% more likely to develop mental ill-health where they have low levels of control or autonomy (e.g. on decisions about how they work).

- Workers are at increased risk of depression, co-morbidities and burnout if they perceive their efforts aren't recognised or rewarded enough.

- There's a relationship between job insecurity (a worker's perception of their role continuing or their chances of being employed) and depression and anxiety.

- There's an association between workplace bullying and suicidal ideation and behaviour.

- High work volume and long working hours are common predictors of occupational stress and burnout in public hospital emergency doctors.

- Shift work increases the overall risk of depressive symptoms especially in women.

- USyd found no recent reviews of temporary work and its effect on mental health, despite the changes in casualisation.

Workplace protective factors for mental ill-health

- Transformational leadership, a high quality of relations-oriented and task-oriented leadership behaviour, and a high quality of leader-follower interactions are associated with positive employee mental health.

- Personality traits of employees, such as self-efficacy and conscientiousness, are key factors in enhancing their work ability and return to work.

- Workplace interventions to prevent or reduce mental ill-health

- There is less evidence about systemic interventions designed to minimise risks, or for integrated approaches, compared to individual interventions.

- However, workplace mental health experts reinforce the need for multilevel interventions to respond to the mental health 'journey' of employees.

- When designing and managing work to minimise harm, interventions focussed on increasing control, decision-making and autonomy have been most tested.
- There is less compelling but emerging evidence that perceptions of organisation in terms of its social climate, culture and justice in the workplace have an effect.
- When building organisational resilience through good management, **manager and leadership training** improve manager attitudes, knowledge and behaviours.
- USyd identified a marked increase in evidence for digital interventions, including **CBT-based and mindfulness-based programs**.
- There is strong evidence for preventing and reducing symptoms using **telephone, face to face and digital CBT**.
- There is also strong evidence for recovery and return to work through **individual placement and support programs** for people with more severe mental illness.
- Some interventions may be ineffective or require more evaluation, including workplace physical activity programs, nature-based interventions, aromatherapy and massage and expressive art therapy.

Spotlight on risk and protective factors for clinical healthcare occupations during infectious outbreaks and pandemics

Risk factors

- Demographic factors – higher levels of distress are seen in workers who are younger, more junior, have dependent children, or have an infected family member.
- Contact with infected patients – staff in contact with infected patients had greater levels of stress and distress than other staff.
- Team support – poor social support and social isolation were associated with increased stress, anxiety, depression and insomnia.
- Workplace preparedness – poorer role clarity and training/preparedness was associated with poor mental health.
- Individuals differences - lower self-efficacy is a risk for stress, anxiety, depression and insomnia.

Protective factors

- Good quality management – clear communication, practical and psychological support, effective leadership, and managerial support for clinicians and their families were associated with better outcomes.
- Favourable working conditions – access to adequate personal protection and rest were associated with reduced illness.

Psychosocial Risks and Interventions for Mental Ill-health in the Workplace - A Meta-Review of the Evidence

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This Literature Review provides a high-level summary of; a) the workplace psychosocial risk factors for mental ill-health and b) of the strength of evidence for interventions designed to reduce workplace mental ill-health, and issues arising when appraising and implementing these interventions.
This review is an update of two previous reviews conducted by Prof Glozier in 2017.

Executive Summary

This meta-review presents the current state of the evidence for
- psychosocial risks and protective factors for workplace mental ill-health, and
- the effect of interventions to prevent or reduce this.

We present the evidence synthesised in systematic reviews and meta-analyses where this is available, supplemented by the evidence from controlled trials where there are no reviews.

We present frameworks to enable risks to be identified and assessed in the domains of an individual's work and job design, employment status, and interpersonal behaviour. These are influenced by group and organisation wide factors such as culture and degree of exposure to risks. There are several benchmarking tools now available that enable organisations to assess these risks.

The evidence is presented for primary, secondary and tertiary (treatment) interventions for workplace mental health, using a framework where the target can be specified. The interventions reviewed range from those delivered at organisational, managerial, group and individual levels, to prevent harm, promote the positive and manage illness. Given the current pandemic we specifically highlight reviews of healthcare worker risks during infectious outbreaks and interventions delivered to healthcare workers.

There is a relative paucity of evidence for systemic interventions designed to minimise the risk factors identified, or for integrated approaches, when compared to the large body of evidence for specific focused interventions targeted at employees and managers, mainly due to the constraints of organisational studies. However public health approaches and expert opinion consistently reinforce the need for multilevel interventions in tackling this area.

We caution against comparing the specific effects of different interventions due to the enormous variability in organisational and country settings, study design (ranging from pre-post evaluations to large scale cluster randomised trials with active controls) and mental health outcomes assessed. However, we identify several types of intervention that seem either ineffective or require more evaluation before recommending them when there are many other effective interventions.

Contents

Background

Conceptual Framework

A framework is a conceptual or analytical tool that people can refer to and apply when taking action to address complex problems such as mental health at work. Frameworks provide a structure for identifying risks and prioritising interventions. There are a number of ways that mental health at work has been conceptualised and we review three of the dominant approaches.

La Montagne and colleagues proposed a three pronged approach that systematically integrates the approach to mental health in the workplace by reducing work related risks to mental health, promoting the positive aspects of work and organisations that facilitate wellbeing, and responding effectively to mental ill-health (LaMontagne et al., 2014).

Figure 1: The three threads of the integrated approach to workplace mental health (LaMontagne et al., 2014)
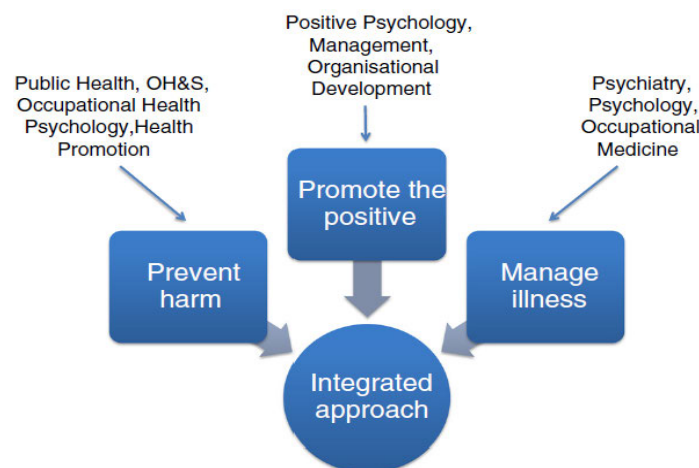
Preventing harm is focussed upon '*job stressors prevention and control of risks*' and is distinguished by its emphasis on primary or universal prevention, and the need to intervene at the level of the organisation as well as the individual.

Promoting the positive is not just attempting to reduce negative aspects of mental ill-health but takes a strengths-based or positive approach to enhancing wellbeing.

Managing Illness. The final prong encompasses "secondary and tertiary level' workplace interventions 'that aim to address mental health problems or disorders in the workplace, commonly use psycho-education and aim to improve mental health literacy or develop skills for early intervention and the promotion of help-seeking' (LaMontagne, et al. 2014).

Other frameworks have focused on the people who are the targets of interventions. Specifically, the level at which the intervention is targeted:

Primary interventions – a preventative approach targeted at all members of the workforce either through improving the design of work or personal behaviour change.

Secondary interventions – targeted at specific people (e.g. those with elevated risk) or types of risks (e.g. suicide); offering early intervention.

Tertiary interventions – targeted at people who are unwell, and perhaps off work and focused on the transition back to work.

Another group of frameworks focus on the **emphasis of the intervention**: For example;

Modification of the organisation as the target of change.

Modification of behaviour of individuals, either workers or managers.

Modification of specific groups of employees or different levels within the organisation that are seen as most critical – for example, front-line employees or senior leaders?

In addition to these overarching frameworks there are also notable frameworks from SafeWork Australia **Work-related psychological health and safety: A systematic approach to meeting your duties. 2018" and the** Future of Work Institute (FOWI), at Curtin University.

We present the frameworks that are used to guide the structure of each of the two sections at the beginning of Parts A and B.

Language

The language and terms used in describing workplace mental health vary widely across frameworks, disciplines, and countries. In English speaking countries) the terms psychological health or psychological health and safety are common; while in Australia, 'workplace mental health' or 'good/ill mental health' are favoured. Other terms (such as prevent or promote) are used with different meanings. Memish and colleagues (2016) advocate: '…that future developers clearly define and justify the language used'.

Throughout this review we use the term 'mental ill-health' to capture the range of outcomes including high levels of stress, depressive or anxiety symptoms, common mental disorder, and the diagnostic categories of depression and anxiety used in the original papers. Where the outcomes are of burnout, other specific disorders (e.g. Post-Traumatic Stress Disorder), or consequences (e.g. sickness), this is made explicit.

For the scope of this review, all studies included in 'healthcare professionals' are clinical staff (i.e. clinicians, nurses) working in public hospitals.

Specifying the framework used and making the language consistent will help any organisational approach to workplace mental health.

Assessing the 'strength' of risk factors and intervention effects

In assessing the impact of risks and interventions we refer to "effect size" a term used to describe the magnitude of the change in mental health associated with a risk factor or produced by an intervention, rather than statistical significance. The advantage of the effect size is that it is not reliant on sample size so makes comparisons between studies clearer. The effect size is usually reported as Cohen's d or Hedge's g. The synthesis of the research in this review use two main types of impact depending on how the outcome is reported in the research.

a) Where the outcome is a category relative risk (RR), or Odds Ratio (OR) - This represents the increase in probability of either (i) a negative outcome e.g. "depressed" associated with a risk factor or (ii) the increased risk for a positive outcome e.g. not depressed" associated with an intervention.

b) Where the outcome is a score on a measure e.g. of "stress symptoms" there are a number of ways this is reported in the literature: (i) SMD = standardised mean difference or MCS mean change score is the change in this score in the employees who are assigned to the intervention and those who are assigned to the control. (ii) Pearson's r, the correlation or association between the intervention and the outcome.

There are "rules of thumb" that guide research in terms of the magnitude of the effect, although the importance of the effect size depends on the outcome that is being investigated (e.g. relatively small effect sizes can be important if the outcome is critical). In general, an effect size of 0.01-0.19 is considered very small, 0.20-0.49 is considered small, 0.50-79 moderate and >0.80 large.

Search Methods

We conducted an updated meta-review of reviews for workplace mental health in the literature. Meta-reviews systematically collate and grade the evidence acquired through other review papers. As such they are subject to the same biases inherent in the underlying reviews. We further updated the literature searches of the most recent meta-review previously reported to Safework (see; below) by conducting a search strategy (outlined in Appendix A) with start date June 2017 (the end date of the previous review) and the end date of Aug 2020 to establish whether there were further published reviews. This was supplemented by searches of the Cochrane Collaboration database, citations of the meta-reviews through PubMed, abstract searches of the major public health, mental and occupational health journals and further requests to key informants in the subject area.

The information provided in this report is a combination of two previous reports (see; below) conducted in 2017 and the new evidence identified in this update. The tables at the end of each of the sections will identify the new evidence.

1) Glozier. N. (2017) Review of evidence of psychosocial risks for mental ill-health in the workplace. 26 Sept 2017. *SafeWork.* Catalogue No. SW09005

2) Glozier. N. (2017) Review of evidence of interventions to reduce mental ill-health in the workplace. 26 Sept 2017. *SafeWork.* Catalogue No. SW09006

Part A: Workplace Psychosocial Risk and Protective factors for mental ill-health

We have evaluated the current evidence for psychosocial risks for workplace mental ill-health in a unifying model (adapted from Harvey, Modini 2016) in which we identify different types of risk according to how they are assessed and underlying concepts they map onto: the components of an individual's job design, their occupation or employment status, and social aspects of the workplace, with civility and respect being the desirable state. Each of these is addressed in turn, with reference to the attached tables outlining the evidence. However, beyond the standard psychosocial risks of the workplace itself are many other risk factors that are known to influence mental ill-health of employees e.g. Biological (genetic, physical illness), psychological (personality, childhood abuse and neglect) and social (relationships, discrimination, other traumatic experiences). The only algorithm for identifying the risk of mental ill health of employees (Fernandes et al 2017) has shown how important these factors are but commonly such "confounding" factors are not considered in workplace risk factor research. Although many studies control for (take into account) health, demographic and behavioural factors, other psychological and social characteristics are often seen as either a 'black box' or discounted. Given that many of the psychosocial risk factors seem at face value to reflect core underlying constructs such as coping styles or autonomy and self-efficacy this seems a limitation of the evidence.

Figure 2 Unifying model for conceptualising and assessing risks for workplace mental ill-health
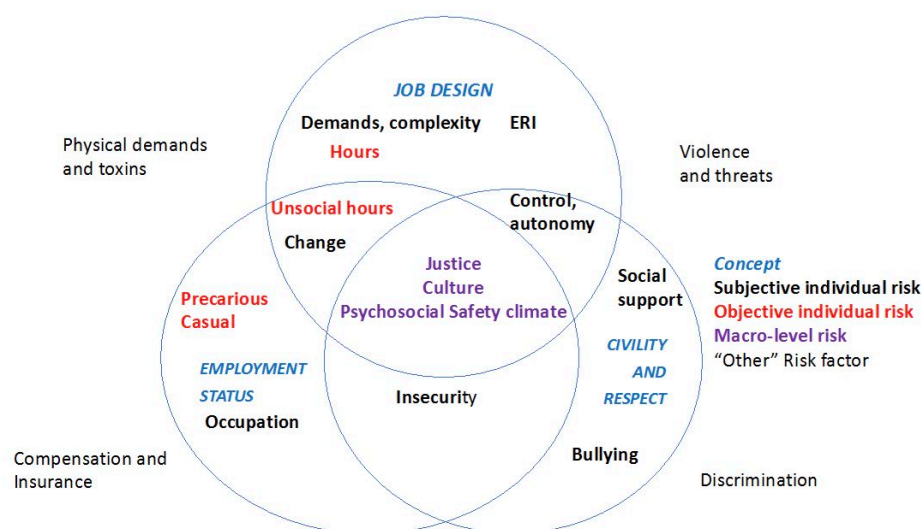
Several individual factors have been consistently identified as risks for mental ill-health in reviews, including limited job control or decision latitude, excessive demands, an imbalance between effort and reward, bullying, long hours, shift work and role conflict. Further, evidence suggest that poor management or leadership has a negative effect on employee's mental health. There is less compelling, but emerging, evidence that perceptions of the organisation in terms of its social climate, culture and justice in the workplace also influence mental ill-health

In the next section we provide a brief description of each of the subjective individual psychosocial risk factors and a summary of the evidence with details of each of the studies in the table that follows.

Subjective individual psychosocial risk factors

High levels of Job Demands

Job demands are all physical, psychological, social or organisational aspects of a job where continuous effort, be it physical or psychological is required (Schaufeli and Bakker, 2004). For example, job demands include the number and duration of tasks at work and the pressure to complete them within a prescribed time, it might also include where there are competing requirements or where attention or emotion regulation needs to be sustained over long periods.

People reporting that their job entails high levels of demands (usually defined as those 25% of workers reporting the greatest demands) are 30-35% more likely to develop mental ill health, with a high level of consistency in the effects reported from several reviews (which do not necessarily contain the same original papers).

Low levels of Job Control

Low job control, is a lack of control over one's workload or pacing or low participation in decision making. In other words, where the employee has little agency in their workplace.

Low levels of control or decision latitude (or "autonomy") at work increase the risk of mental ill-health by 20-25%. Similarly, those with high levels of decision latitude have a 25% lower risk of such problems. Again, these effects are consistently found in several reviews.

Low Social support

Low workplace social support is when individuals perceive that their well-being is not valued by workplace sources, such as supervisors and the broader organisation in which they are embedded (Kossek et al., 2011) or where there are few colleagues or supervisors in the workplace they can turn to for emotional or instrumental (practical) support. There is less consistency in the evidence for low levels of either colleague or supervisor support being a risk factor. Theorell (2015) suggests there is limited evidence to support this, whilst the other four reviews (with fewer studies in each) reported a 24-44% increased risk with no differences in whether the lack of support was perceived to come from colleagues or supervisor (Nieuwenhuijsen et al., 2010).

Job strain

Jobs where there is a combination of high demands (increased workload/time pressure) are combined with low control (minimal decision-making or autonomy) and low social support are characterised as 'high strain' and this combination bears the greatest risk of illness and reduced well-being. Compared to those in high control, employees in low demand jobs have 75-100% greater risk of later mental ill-health.

In their review of job strain, Madsen and colleagues identified 14 longitudinal studies, although only six were peer-reviewed. Job strain was associated with an increased risk of clinical depression in both published (RR = 1.77) and unpublished datasets (RR = 1.27) (Madsen et al., 2017).

A recent meta-review by Harvey et al found four moderate-quality reviews and a meta-analysis of nine studies that provided good evidence for a prospective association between high job demand (OR 1.39), low job control (OR 1.23), low social support (OR 1.32) and poorer employee mental ill health. (Harvey et al., 2017).

A meta-analysis of risk for job-related anxiety identified seven cross sectional studies. Results indicate that higher job control and supervisor support are negatively related to job-related anxiety (r= -0.13; r= -0.19), whereas, higher job demands are positively correlated with job-related anxiety (r= 0.28) (Asif et al., 2018).

Effort Reward Imbalance (ERI)

Like job strain, ERI is a composite construct that reflects employees who exert considerable effort (i.e., they expend high levels of energy to meet job demands) but experience insufficient rewards (i.e., they have low status jobs, lack of promotion prospects, job insecurity) (Siegrist, 1996). The two reviews which estimated an effect (Nieuwenhuijsen et al., 2010, Stansfeld and Candy, 2006) showed near doubling of risk of mental ill health amongst those who felt they were insufficiently rewarded for the effort demanded by their job. Narrative reviews (Theorell et al., 2015, Siegrist, 2008) suggested a moderate effect. Rugulies and Madsen conducted a meta-analysis on eight prospective cohort studies and found that seven of the eight showed an increased risk of depressive disorders among employees that experienced ERI (OR=1.49) (Rugulies et al., 2017).

A review of public hospital emergency doctors found two prospective studies showing that perceived excessive effort and insufficient reward contribute to psychological morbidity and burnout (Basu et al., 2017). No effects were presented in this review.

Organisational change

Organisational change can include downsizing, relocation, mergers, and workload changes. Research in this area is usually opportunistic (i.e., the research is taking place while these changes occur) (Bamberger et al., 2012). Only one review with lower quality evidence systematically investigated organisational change and eleven of the seventeen studies demonstrated a negative relationship between organisational change and mental ill health although the effect was weaker in prospective studies, suggesting that the impact of such change may be time limited.

Perceived Job insecurity

Perceived job insecurity is a perceived characteristic of the individual's current role continuing, or chances of being employed, whether reflecting reality or not.

Insecurity increases the risk of subsequent mental ill health by about 30% in the two reviews that reported an effect size (Stansfeld and Candy, 2006, Kim and von dem Knesebeck, 2016). Theorell suggested the effect was limited, Neiuwenhuisen found an effect only in men, and Kim et al suggested stronger effects in people under 40 years. In a meta-analysis of 18 cross-sectional and longitudinal studies a relationship between job insecurity and depression (r = 0.21), and anxiety (r = 0.17) was found (Llosa et al., 2018).

Role stressors

Role stressors include three facets: 1) role conflict, where there are conflicting demands or role expectations, 2) role ambiguity, where there is uncertainty about what actions to take to

fulfil the expectations, and 3) role overload, where time available and resources are inadequate to meet expectations and obligations of the role (Örtqvist and Wincent, 2006)

There is a small amount of strong evidence for the effects of role stressors, specifically role conflict or role ambiguity, on an individual's mental ill-health. The review by Schmidt and colleagues (Schmidt et al., 2014) found over 20 cross sectional studies showing a moderate correlation however there was only one prospective study available to include. This weakens the evidence as there is the potential for reverse causality – in cross-sectional studies – with employees with poorer mental health rating their job as having higher role stressors..

Bullying and interpersonal conflict

There are significant variations in how bullying and conflict is defined in studies, with this behaviour characterised as incivility and social undermining to abuse and physical violence. Workplace bullying may be related specifically to tasks and role; for example, being assigned meaningless tasks, micromanaging or unreasonable deadlines (Ortega et al., 2009) or inter-personal, and take the form of gossiping, persistent criticism, or social exclusion (Ortega et al., 2009, Agervold, 2009, Nielsen et al., 2012). Bullying is not limited to one single event, but rather a persistent experience over a period of time (commonly operationalised as six months).

There have been several reviews of variable quality of the impact of interpersonal conflict in the workplace, which can, if prolonged, become bullying. The results are commonly reported as correlations making interpretation and comparisons to other risks difficult. Theorell and colleagues estimated a near tripling of risk for later ill-health from defined bullying but limited evidence of an effect for conflict alone (Theorell et al., 2015). Verkuil and colleagues analysed a range of different mental health outcomes. The impact of bullying was considerably stronger in cross sectional studies, with people who reported bullying also reporting PTSD or burnout. In prospective studies the effect was stronger for depression compared to anxiety or stress (Verkuil et al., 2015). As some of the evidence is from cross-sectional studies there is also the potential for reverse causality. In addition, bullying may also spill over to other factors in the work environment (e.g. climate, culture, decreased social support). More work is needed to understand the processes by which one may lead to another.

The most recent review exploring associations between workplace bullying and suicidal ideation and behaviour identified seven cross-sectional and 1 longitudinal study. All eight studies found a significant positive association between workplace bullying and suicidal ideation, and one study showed a positive association with suicidal behaviour (Leach et al., 2017).

Table 1. Summary of Subjective individual risk factors

Risk Factor	Reviews identified	Study design	Number and Types of studies included	Mental health outcome	Strength of evidence for association with outcome	Meta-analysis of data?
Job demand-control support (JDCS)	Theorell et al 2015	Prospective studies	19 High decision latitude	Depressive symptoms	Moderately strong	(OR) 0.73 (0.68-0.77)
			14 Job strain		Moderately strong	(OR) 1.74 (1.53-1.96)
			10 Job demand		Limited	N/A
			17 Low support at the workplace 8 Low supervisor support 6 Low co-worker support		Limited	N/A

	Nieuwenhuijsen et al 2010	Prospective cohort	3 Job demand	Stress-related disorders	Strong Relationship less clear in women	(OR) 1.35 (1.22-1.50)
			2 Low job control			(OR) 1.22 (1.10-1.36)
			2 Low co-worker support 3 Low supervisor support			(OR) 1.24 (1.13-1.37) (OR) 1.24 (1.13-1.35)
	Netterstrom et al 2008	Longitudinal	3 Job strain	Depression	Moderate	RR estimates approx. 2.0
			2 Job demand			N/A
			2 Low control			N/A
			4 Social support			RR estimates approx. 0.6
	Stansfield & Candy 2006	Longitudinal	3 Job strain	Common mental disorder	Moderate-Strong High quality	(OR) 1.82 (1.06-3.10)
			6 Low control / decision latitude			(OR) 1.23 (1.08–1.39)
			8 High demands			(OR) 1.39 (1.15–1.69)
			8 Low support			(OR) 1.32 (1.21-1.44)
			4 Low decision authority			(OR) 1.21 (1.09-1.35)
	Bonde 2008	Longitudinal	5 Job strain	Depressive disorder or symptoms	Low quality	N/A
			9 Low control / decision latitude			(OR) 1.20 (1.08-1.39)
			9 High demands			(OR) 1.31 (1.08-1.59)
			6- Social support			(OR) 1.44 (1.24-1.68)
	Madsen et al 2017 *	Longitudinal	6 Job strain (peer reviewed)	Depression	Moderate-Strong High quality	(RR = 1.77)
			8 Job strain (unpublished data)		Low quality	(RR = 1.27)
	Harvey et al 2017 *	Prospective	4 JDCS	Common mental health	Moderate quality	N/A
		Longitudinal	9 JDCS		Moderate quality	N/A
			low job control			(OR=1.23)
			high psychological demands			(OR=1.39)
			low occupational social support			(OR=1.32)
	Asif et al 2018 *	Cross sectional	7 JDCS	Anxiety	Moderate quality	N/A
			low job control			(r= 0.13)
			high psychological demands			(r= 0.28)
			low occupational social support			(r= 0.19)
High effort-reward imbalance (ERI)	Theorell et al 2015	Prospective	3 Effort/reward imbalance	Depressive symptoms	Limited	N/A
	Nieuwenhuijsen et al 2010	Prospective cohort	3 Effort/reward imbalance	Stress-related disorders	Strong	(OR) 1.98 (1.78-2.20)
	Stansfield & Candy 2006	Longitudinal	2 Effort/reward imbalance	Common mental disorder	Strong	(OR) 1.84 (1.45-2.35)
	Siegrist 2008	Prospective cohort	4 Effort/reward imbalance		Moderate	N/A
	Basu et al 2017 *	Prospective cohort	2 Effort/reward imbalance	psychological morbidity and burnout	Limited	N/A
	Rugulies et al 2017 *	Prospective cohort	8 Effort/reward imbalance	Depression	Strong	(OR=1.49) 7/8 studies showed

						increased risk
Organisational change	Bamberger et al 2012	Cross-sectional	2 Downsizing 1 Restructuring 3 Job changes	Mental health problems	Low quality Mixed results	11/17 observed a negative relationship; association weaker in the longitudinal studies, suggesting a time-effect
		Longitudinal	3 Downsizing 2 Company mergers 3 Restructuring 1 Job changes			
Job insecurity	Theorell et al 2015	Prospective	7 Job insecurity	Depressive symptoms	Limited	N/A
	Stansfield & Candy 2006	Longitudinal	3 Job insecurity	Common mental disorders	Moderate	(OR) 1.33 (1.06-1.67)
	Nieuwenhuijsen et al 2010	Prospective cohort	1 Job insecurity	Stress related disorders	Some evidence for men but not women	N/A
	Kim et al 2016	Prospective observational cohort	20 Job insecurity; unemployment	Depressive symptoms	Strong	(OR) 1.29 (1.06-1.57) Job insecurity higher OR than unemployment. Effect strongest <40 yo.
	Llosa et al 2018 *	Cross-sectional; 1 Longitudinal	18 Job insecurity	Depression Anxiety	Moderate	(r = 0.21) (r = 0.17)
Role stress	Schmidt et al 2014	Case-control, cross-sectional; 1 longitudinal	20 Role conflict	Depression symptoms	Moderate but significant positive associations	r=0.287 (0.246-0.327)
			27 Role ambiguity			r=0.278 (0.233-0.322)
Workplace conflict and bullying	Theorell et al 2015	Prospective	3 Workplace conflicts	Depressive symptoms	Limited	N/A
			3 Workplace bullying			(OR) 2.82 (2.21-3.59)
	Verkuil et al 2015	Cross-sectional	48 Workplace bullying	Overall Mental health	Moderately strong Significant positive association However, the magnitude of the observed variations remains weak to moderate	r=0.36 (0.32–0.40)
			19	Depression		r=0.29 (0.23–0.34)
			12	Anxiety		r=0.28 (0.24–0.32)
			7	PTSD		r=0.46 (0.37–0.55)
			21	Stress		r=0.34 (0.26-0.41)
			6	Burnout		r=0.51 (0.39-0.62)
		Longitudinal	22 Baseline exposure to workplace bullying	Mental health complaints		r=0.21 (0.13-0.29)
			7	Depression		r=0.36 (0.17-0.56)
			4	Anxiety		r=0.17 (0.08-0.25)
			15	Stress		r=0.15 (0.10-0.20)
			11 Mental health at baseline	Exposure to workplace bullying		r=0.18 (0.10-0.27)
			4	Depression		r=0.13 (-0.02-0.28)
			3	Anxiety		r=0.15 (0.04-0.26)*
			7	Stress		r=0.22 (0.12-0.31)
	Leach et al 2017 *	Cross sectional	7 Workplace bullying	Suicidal ideation	Limited	N/A
		Longitudinal	1	Suicidal		N/A

				behaviour		

Note * = new studies identified in this updated review

Objective individual risk factors for individual-level outcomes

In the next section we provide a brief summary of the recent evidence for individual objective risk factors with details of each of the studies in the table that follows.

Long Hours of Work

Theorell's review found six studies that showed an effect of long working weeks on depressive symptoms, however what constituted a 'long working week' was not defined by the authors. A systematic review (Watanabe et al., 2016) of "overtime" (effectively hours of work longer than a standard 40 hour week) showed that for those who worked over 50 hours there was a 25% increased risk but this was not statistically significant. Many of these studies came from North East Asia where the expected hours of work may be greater.

By contrast (Milner et al., 2015) used 12 waves of the Household, Income and Labour Dynamics in Australia (HILDA) study to show that working more than 49 or more hours per week did lead to poorer mental health compared to a 35-40 hour working week (49-50hrs: MCS -0.52) (60hrs +: MCS=-0.47). In addition, tthe risk was greater in higher compared to lower skilled occupational groups and for women.

A review of public hospital emergency doctors found eight prospective cohort studies that identified high work volume and long working hours as common predictors of occupational stress and burnout (Basu et al., 2017).

Shift Work

A BMJ review (Kecklund and Axelsson, 2016) of the health impacts of shift work found no effects of shift work on mental ill-health. An earlier narrative review found no association with mental disorders in the few studies in this area (Vogel et al., 2012). However, Angerer and colleagues in their review identified 9 high quality longitudinal studies. In this review they found the effect of shift work differed by type of occupation. Three of four studies on night-time shift work in the health professions (almost exclusively nursing) revealed no association of shift work with depression over an observation period of two years. On the other hand, five studies on night-time shift work in occupations outside the health sector, with observation periods of two or more years, found a 42% increase of the risk of depression among night shift worker (Angerer et al., 2017).

This finding was supported by a meta-analysis of seven longitudinal studies which found that shift work was associated with increased overall risk of adverse depressive symptoms (SMD = 1.33), and the risk was higher in women (OR = 1.73) (Torquati et al., 2019).

Temporary / precarious work

A review of 14 prospective studies found that temporary (although this was not well defined) employees had a 25% greater risk of psychological morbidity than permanent employees, but less sickness absence (Virtanen et al., 2005). It is difficult to interpret these findings in the context of Australia where temporary (or casual) employees are not given access to sick leave. We found no more recent reviews of this risk factor despite the ongoing casualisation in the workplace and the potential for mental ill-health.

Table 2. Summary of Objective individual risk factors

Risk Factor	Reviews identified	Study design	Number and Types of studies included	Mental health outcome	Strength of evidence for association with outcome	Meta-analysis of data?
Long hours of work	Theorell et al 2015	Prospective	6 Long working weeks (not defined)	Depressive symptoms	Limited for long working weeks (for women only)	N/A
	Watanabe et al 2016	2 nested case-control; 5 prospective cohort	7 Overtime work	Major depressive disorder; major depressive episode	Small, non-significant Effect remains inconclusive	RR=1.075; 0.834-1.387; p=0.575
	Milner et al 2015 HILDA	1 longitudinal cohort	12 annual waves of data collection Working less or more than standard FT hours	Overall mental health and wellbeing	Study used a causally robust methodology	Diff in MCS scores: -0.52; -0.74—0.29; p=0.001 (49-59h) -0.47; -0.77—0.16, p=0.003 (60+h)
	Basu et al 2017 *	Prospective cohorts	8 high work volume and long working hours	Occupational stress and burnout	Limited	N/A
Shift work	Kecklund & Axelsson, 2016	Reviews	38 meta-analysis 24 systematic reviews	Depression	No review available	N/A
	Angerer et al 2017 *	Longitudinal	9 studies; 5 other occupations 4 health professionals (not included in meta)	Depression	Strong, high quality	42% increase of the risk of depression
	Torquati et al 2019 *	Longitudinal	7 night-time shift work	Depression	Moderate evidence in females only	(SMD = 1.33). female shift workers 2x more likely than female non–shift workers (OR = 1.73)
Temporary/ precarious work	Virtanen et al	14 Prospective; 2 retrospectives; 11 cross-sectional	27 Temporary employment	Psychological morbidity	Low quality	(OR) 1.25 (1.14-1.38)
				Sickness absence		(OR) 0.77 (0.65-0.91)

Note * = new studies identified in this updated review

There has been an emerging focus on the development of "mentally healthy workplaces" and the multi-level components of this. Key to the concept is an appraisal of aspects of the workplace as a whole rather than specific aspects of an individual's job, role or relationships. The macro-risks are viewed as aggregated multi-level aspects of their workplace as a whole, similar to how social capital is used to capture societal trust or reciprocity.

Organisational justice

This construct captures the fairness of rules and social norms within an organisation and contains three components

Relational justice; the level of respect and dignity received from management.

Informational justice; the presence or absence of adequate information from management about workplace procedures.

Distributive justice; the distribution of resources and benefits, including pay and promotions, and the methods and processes governing that distribution (procedural justice) have not been evaluated.

Although one large study (Nieuwenhuijsen et al., 2010) found a 50% and 75% increased risk for mental ill health from for low relational and procedural justice respectively, other reviews suggested more limited effects (Theorell et al., 2015, Ndjaboué et al., 2012) but did not provide an effect size.

Team Climate

Team climate reflects the shared perceptions or norms within a team. Theorell and colleagues in their review of team climate identified four papers assessing the association of poor team social climate with mental health outcomes. In three of these studies there was an approximately 50% increased risk of indicators of later mental ill health.

Psychosocial Safety Climate (PSC)

PSC is the shared perception amongst employees that senior management have prioritised employee mental wellbeing by creating a psychologically healthy workplace (Dollard and Bakker, 2010). (Dollard and Bakker, 2010). Like other climate measures it captures individual perceptions of the workplace that are specifically expected to affect psychological health and aggregates these to the team or organisational level based on statistical evidence that these views are shared. There is evidence that PCS moderates the association between risks and mental ill-health in cross-sectional studies (Dollard et al., 2012b), and one prospective study suggest it is useful in identifying workplaces where there are higher risks of future mental ill-health (Dollard et al., 2012a). However, no reviews were identified only individual level longitudinal studies.

Table 3. Summary of Macro-level risk factors

Risk Factor	Reviews identified	Study design	Number and Types of studies included	Mental health outcome	Strength of evidence for association with outcome	Meta-analysis of data?
Organisational injustice	Theorell et al 2015	Prospective	5 Low justice 5 Low procedural justice 3 Low relational justice	Depressive symptoms	Limited	N/A
	Nieuwenhuijsen et al 2010	Prospective cohort	1 Low procedural justice	Stress-related disorders	Strong	(OR) 1.78 (1.59-2.00)
			1 Low relational justice			(OR) 1.51 (1.35-1.69)
	Ndjaboue et al	Prospective	7 Low relational justice	Mental health	Low quality No meta-analysis	N/A
			3 Low relational justice	Sickness absenteeism		
			6 Low procedural justice	Mental health		
			3 Low procedural justice	Sickness absenteeism		
			2 Low distributive justice	Psychosocial health, depressive symptoms, sickness absenteeism		
Team climate	Theorell et al 2015	Prospective Cross-sectional	2 Poor social climate	Depressive disorder; use of antidepressant medication	Limited	N/A
			2 Poor social capital		Limited	N/A
Psychosocial Safety Culture	No reviews identified only individual level longitudinal studies					

Surprisingly little systematic evidence exists evaluating potential protective factors, with almost all studies implicitly assuming that the "better" end of the spectrum of whichever factor is being assessed is the normal state. For instance, the effect of high demands, low control or poor PSC is generally estimated compared to employees with the "best" outcome on each of these rather than evaluating whether these employees have lower risks for mental ill health than this with average ratings. Studies are beginning to explore protective factors at an organisational level such as, good-quality supervision and favourable working conditions although there have been too few studies for evidence synthesis of the many positive psychological approaches. The two areas where we have found evidence was for leadership style in organisations and individual characteristics of employees.

Supportive leadership and favourable working conditions

Montano et al. (2017) undertook a review and found that transformational leadership, a high quality of relations-oriented and task-oriented leadership behaviour, as well as a high quality of leader-follower interaction are associated with positive employee mental health. However, no effects were presented.

Protective individual characteristics for return to work

Nigatu and colleague (2017) systematically reviewed prognostic factors for return to work of employees with common mental disorders. Eighteen cohort studies met the inclusion criteria and were included in the analysis. Self-efficacy was found to be a key factor in the enhancement of work ability and return to work (Montano et al., 2017).

Another review by Ervasti at al. (2017) reviewed factors influencing return to work after depression-related absence. In 11 studies only one personality factor, conscientiousness was associated with a higher rate of return to work (Ervasti et al., 2017).

Table 4. Summary of Protective factors

Risk Factor	Reviews identified	Study design	Number and Types of studies included	Mental health outcome	Strength of evidence for association with outcome	Meta-analysis of data?
Supportive leadership	Montano et al 2017 *	review of systematic review	5 Reviews	Common mental health	No available outcome data	N/A
Personality traits	Nigatu et al 2017 *	Cohort	18 Return to work	Return to work for mental health conditions	Limited	N/A Results: Self-efficacy enhanced work ability and return to work
	Ervasti et al 2017 *	Cohort	11 Return to work	Return to work for mental health conditions	Limited	N/A Results: conscientiousness enhanced return to work

Note * = new studies identified in this updated review

Risks and protective factors for mental ill-health in healthcare occupations during infectious outbreaks and pandemics

Pandemics such as the coronavirus disease (COVID-19) crisis places additional pressure on healthcare professionals and on the healthcare system in general. Research conducted during SARS, MERS & now COVID-19 is presented below. These studies are focused on clinical health professionals rather than other healthcare staff.

Risk Factors for Mental Ill-Health	
Demographic factors	Higher levels of psychological distress are seen in health care worker who are younger, more junior, are parents of dependent children, or have an infected family member (Kisely et al., 2020).
Contact with infected patients	Staff having contact with infected patients had greater levels of both acute or post-traumatic stress and psychological distress than staff in other areas (Kisely et al., 2020)
Team support	Poor social support and social isolation were associated with increased stress, anxiety, depressive symptoms, insomnia in HCW during COVID-19 (Spoorthy et al., 2020) and SARS (Brooks et al., 2018)
Workplace preparedness	Poorer occupational role clarity and training/preparedness was associated with poor mental health during SARS (Brooks et al., 2018).
Individual differences	Lower self-efficacy is a risk for stress, anxiety, depressive symptoms, insomnia in HCW during COVID-19
Protective factors	
Good Quality Management	Clear communication, and both practical and psychological support were associated with reduced mental health morbidity (Kisely et al., 2020). Effective leadership and managerial support for clinicians and their families were highly protective against negative psychological outcomes (Galbraith et al., 2020).
Favourable working conditions	Sufficient access to adequate personal protection and adequate rest, were associated with reduced morbidity (Kisely et al., 2020).
Implementation of anti-stigma interventions	Workplace interventions that reduce mental health stigma and promote sharing and support for colleagues with psychological difficulties might improve help-seeking behaviour and attitudes (Galbraith et al., 2020).

Part B: Interventions to prevent or reduce workplace mental ill-health

There is a disconnection between the evidence base of interventions designed to reduce workplace mental ill-health and our knowledge of the main risk factors for workplace mental ill health. Almost all of the high-quality evidence arises from the evaluation of specific interventions, mostly designed to enhance individual resilience and wellbeing, detection and help seeking, reduce symptoms, or manage those who are at risk or unwell. Evidence based interventions designing work to minimise harm tend to focus on improving control and autonomy, with limited evidence for interventions tackling other individual risk factors for workplace mental ill-health such as excessive demands, effort reward imbalance, organisational culture or managing organisational change. The evidence base for effective interventions tackling one of the strongest workplace risks, bullying and harassment, is disappointing. There is limited systematic estimates of the strength of the effects of many interventions from controlled trials, and where available, the effects seem to be of small to moderate strength.

Conversely there is widespread acceptance that to reduce mental ill-health in employees in the complex systems that are organisations, integrated, multilevel interventions need to be developed, implemented, and evaluated, and those that are effective scaled up or tailored for different organisations. Interventions that create mentally healthy workplaces may not be the same as those that reduce symptoms and consequences mental ill-health.

Over the past two decades we have developed a framework (Petrie et al, 2017) that considers the interaction of employees with their organisational context over time that we believe provides a useful framework within which organisations can design, implement and evaluate intervention strategies to create mentally healthy workplaces, and we will now assess the evidence for interventions at each of these levels.

Strategies for intervention:
1. Designing work to minimise harm
2. Building organisational resilience through good management
3. Enhancing personal resilience
4. Promoting and facilitating early help seeking
5. Supporting recovery and return to work

The strategies are presented in an employee's mental health 'journey' showing the potential transition from a healthy worker to an ill worker requiring a period of sickness absence (Henderson, Harvey et al. 2011) and return to healthier states. The framework spans the levels of intervention, with mental health strategies that can be delivered on an individual, team and/or organisational level. As with LaMontagne's model the framework proposes that optimal workplace mental health is best facilitated by the implementation of an integrated approach at individual, team and organisational level.

Figure 3. Diagram of the mental health 'journey' of an employee, workplace mental health strategies and level of intervention
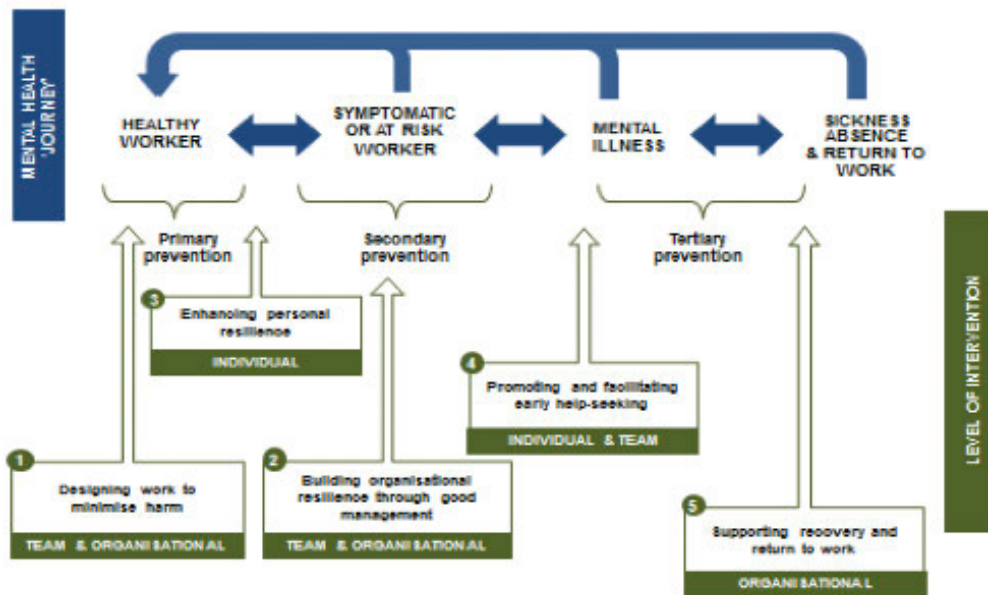
Primary prevention interventions

Primary interventions are those that are delivered 'universally' i.e. available or provided to all employees regardless of risks or health. The results are summarised in Table 5.

Strategy 1: Designing and managing work to minimise harm

Addressing macro-level risks for individual outcomes (e.g. Organisational culture, Psychosocial Safety Climate (PSC))

There have been no controlled intervention studies evaluating interventions specifically designed to change organisational culture, the perception of justice, or the psychosocial safety climate. We are unaware of any planned controlled interventions testing these theoretically attractive approaches, or if it is even possible given the concepts are an appraisal of many aspects of the whole organisation, the difficulty in providing macro level interventions to only some employees, and reputational concerns.

Increasing Employee participation in Work and Job Design

A review by Egan and colleagues of controlled and comparison group interventions suggested consistent findings that employee participatory strategies designed to improve (the perception of) employee control over work such as problem solving committees, education workshops and stress management committees reduced symptoms of mental ill-health, although no RCTs (Randomised Controlled Trials) were identified (Egan et al., 2007). One RCT published since showed no improvement in mental health in the intervention group, but a decline in the health of the control group, associated with increased absence (Tsutsumi et al., 2009).

Flexible working conditions

The Cochrane review by Joyce et al, 2010 found that interventions designed to increase employee control and choice over their work patterns and shift schedules had a positive effect on mental health (Joyce et al., 2010), with one study finding reduced sickness absence (Bond and Bunce, 2001). Again, there were no RCTs identified.

Interventions aimed at reducing specific psychosocial risks

Workplace psychosocial risk reduction intervention studies have led to inconsistent findings. However, a better understanding of the methodological quality, content and context of these interventions could contribute to explain their varying effectiveness. Brisson and colleagues identified three high quality RCT studies examining psychosocial workplace interventions, including the identification of work constraints and the development of specific action plans aimed at improving effort-reward imbalance, reducing demands and increasing control. Reductions of 7-10% were observed in the prevalence of high job strain and low job control but no significant improvements in effort-reward imbalance, high psychological demands, or level of social support were observed (Brisson et al., 2016). There was no evaluation of any subsequent mental health outcomes

We found no RCTs in health care workers but one large pre-post study of various job design interventions in nurses including; individual-group (e.g. employee benefits, job mobility programmes), worker–environment (e.g. training in task-related issues, social skills training), organisational (e.g. new protocols for workplace conflicts) decreased job demands and emotional exhaustion, and increased levels of social support, decision latitude and skill discretion at follow-up (Duhoux et al., 2017).

Table 5. Summary of Strategy 1 designing and managing work to minimise harm

Intervention	Reviews identified	Number and Types of studies included	Symptom reduction	Occupational / other outcomes	Meta-analysis of data?
Employee participation	Egan et al 2007	12 prospective with non-RCT controls No RCTs identified	Limited Psychosocial health improvements when employee control improved	Remains unclear	No
Flexible working conditions	Joyce et al 2010	Controlled pre-post No RCTs 6 flexible working conditions: 4 Self-scheduling; 1 Overtime; 2 Gradual retirement; 1 Involuntary PT; 1 Flexitime; 1 Fixed-term contract	Limited Likely positive effect for interventions oriented towards the worker and increasing worker control over working conditions	Limited to one study reported; remains unclear	No
Job design	Brisson et al 2016	3 RCTs Action plans – staff training, clarification of roles, social support,	Limited or not assessed	Job strain and job control improved No change in effort-reward imbalance, psychological demands, or level of social support	No
	Duhoux et al 2017 *	1 pre-post; across 81 organisations Intervention focus; individual-group, worker–environment, whole organisation	Decreased stress (emotional exhaustion)	Decreased job demands Increased levels of social support, decision latitude and skill discretion	No

Note * = new studies identified in this updated review

Strategy 2: Building organisational resilience through good management

Resilience is commonly conceptualised as the ability to negotiate, manage and adapt to significant sources of stress, change, adversity or trauma (Windle et al., 2011). Although a "buzzword' of modern workplaces it is usually conceived as an individual ability and something that needs to be developed by employees. We extend this to include leadership and manager training and delivery of organisation-level education programs which aim to increase resilience of the members of a team or organisation.

Manager and/or leadership training

Gayed and colleagues (2018) conducted a meta-analysis of the impact of manager training on the mental health of employees reporting directing to them. Ten controlled trials were identified. Training managers in workplace mental health led to improved managerial knowledge (SMD=0.73), attitudes (SMD=0.36), and self-reported behaviour in supporting employees experiencing mental health problems (SMD=0.59). However in the five studies that examined the impact of this manager training on psychological distress among employees, no effect was found (Gayed et al., 2018).

Team/workgroup support interventions

We identified only one published randomised controlled trial of an intervention designed to improve support at work (Ahola et al., 2012). This Finnish study showed a week-long workplace support intervention led to an improvement in depressive symptoms in the intervention group.

Change management interventions

We have found no reviews or controlled studies of interventions designed to improve the management of organisational change and effects on mental health.

Mental health education – anti-stigma programs

Anti-stigma programs aim to improve knowledge about mental ill-health and reduce stigmatising attitudes and discriminatory behaviours. Hanisch and colleagues reviewed 16 studies, five of which were RCTS and seven others had some form of control; almost all were in the public sector (Hanisch et al., 2016). Some of these studies were of Mental Health First Aid (see below). Diversity in interventions apparently precluded meta-analysis but the majority showed a small positive effect on employees' mental-health knowledge. Results related to attitudinal change were mixed, but positive overall; nine studies reported improvements in participants' attitudes. All types of anti-stigma interventions reported consistent significant positive impact on employees' supportive behaviour (affirmative behaviour, reduced discriminatory behaviour), self-efficacy to deal with someone with mental illness, and likelihood of advising people to seek professional help, and readiness to help, which would seem to be likely to be beneficial. However, there is minimal evidence that any changes were sustained.

None of these studies evaluated or reported any impact of such anti-stigma interventions upon the mental health of their employees in the organisation.

Another review in secondary school teachers identified eight studies, representing six unique training programs. Two were RCTs examining Mental Health First Aid via group-based training (see below). Six were a range of face-to-face group training and reporting pre-post

cohort results. Five reported the post outcomes. A significant increase in mental health knowledge was reported, ranging from (Cohen's d=1.16 – 3.10) and attitudes (Cohen's d=0.36 – 1.18). Only one study examined the long-term effects on behaviour change, specifically the intention to help oneself or colleagues with mental health related issues which showed positive effect (Cohen's d=0.46) (Anderson et al., 2019).

Anti-bullying programs

The Cochrane review (Gillen et al., 2017) assessing the trial evidence for workplace anti-bullying interventions such as Civility, Respect, and Engagement in the Workforce (CREW) identified five RCTS. The two CREW RCTs showed a very small to small decrease in incivility (defined as unacceptable workplace behaviours, based primarily on interactions with work colleagues) in the workplace (mean difference (MD) 0.17; 95% CI 0.07 to 0.28). This appeared confined to supervisor incivility with no change in co-worker incivility. A large five-site cluster-RCT conducted in the UK public sector (Health and Police) with over a thousand participants evaluating the effectiveness of a combination of policy communication, stress management training, and negative behaviour awareness training found no significant reduction in bullying or victimisation, although there were some positive trends and no negative effects (Hoel, 2006).

Table 6. Summary of Strategy 2 building organisational resilience through good management

Intervention	Reviews identified	Number and Types of studies included	Symptom reduction	Occupational / other outcomes	Meta-analysis of data?
Manager and leadership training	Tsutsumi 2011	7 Controlled studies Supervisor training	Moderate Evidence for supervisor training on mental health; no evidence of long-term effect	Overall effect on organisation may be limited without a certain extent of participation by supervisors	No
	Duhoux et al 2017 *	2 pre-post half-day group-based and six-weeks of individual supervision	Evidence for supervisor training on mental health; decreases stress 43% and burnout by 63%	N/A	No
	Gayed et al 2018 *	10 controlled and RCT trials	Evidence for supervisor training on mental health; no change in psychological distress among reporting employees	Improvements in managers mental health; knowledge (SMD=0.73), attitudes (SMD=0.36), and self-reported behaviour in supporting employees (SMD=0.59)	Yes
Team/workgroup support interventions	Ahola et al 2012	1 prospective; across 17 organisations randomly assigned field experimental study	Reduced depression Reduced depression among those with job strain at baseline	N/A	No
Mental health education and anti-stigma	Hanisch et al 2016	16; 5 RCTs; 11 quasi-experimental; 7 incl control	10-effective 2 mod-high quality studies reported positive impact on mental health; some reported sustained changes over time	11 Increased knowledge	No
			Mixed effectiveness, 9 reported improvement 4/6 low-mod bias reported sig positive effects	14 Changing attitudes	
			3 high quality All 11-studies sig positive impact	11 Supportive behaviour	
	Anderson et al 2019 *	6 pre-post all face-to-face group training	N/A	Increased mental health; knowledge and attitudes. Only one study showed positive behaviour change (intention to help oneself or colleagues with mental health concerns)	No
Bullying interventions	Gillen et al 2017	5 RCTs	Multi-level interventions: no change in bullying victimisation, 2 studies small increase in civility	One study found decrease in number of days absent during the previous month	No

Note * = new studies identified in this updated review

Workplace mental health promotion

Two early reviews of a wide range of workplace health promotion programs (which included some components of other intervention types) showed small improvements in employees depression and anxiety (SMD=0.28 and 0.29 respectively) (Martin et al., 2009) and a 39% increase in the likelihood of good mental health outcomes (Kuoppala et al., 2008). There was a high degree of variability in the interventions and they were unable to identify the more effective components of the interventions.

A very recent review of evidence for workplace-based interventions that promote mental health and wellbeing among healthcare workers identified 60 articles (Gray et al., 2019). Unfortunately,, the authors did not present quantitative findings due to high variability of interventions. However, they highlighted beneficial intervention design features. First, the importance of aligning the underlying reason, strategy, and/or theory with the structure and content of the intervention. Second, the importance of the engagement of employees across the organisation. Third the need for interventions to be sustained to effect on employees' mental health.

Cognitive Behavioural Therapy (CBT) based primary prevention programs

Note: all CBT interventions described in this section (both face-to-face and digital) were delivered universally to employees regardless of risk or health so are considered a primary intervention.

Reviews of CBT programs suggest a strong pre-post effect on depression and burnout in uncontrolled studies (Bhui et al., 2012).

When such programs are evaluated in RCTs (Tan et al., 2014), only a very small effect is observed on preventing depressive symptoms (SMD 0.12 (0.02- 0.22), quite possibly reflecting the limited improvement that those in good mental health could show (i.e., ceiling effect).

A recent review of six RCTs found only small differences in depressive symptoms between interventions and control or care as usual and no effects in two of the trials (Wan Mohd Yunus et al., 2018).

Digital CBT programs for employees

Three recent meta-analytic reviews were identified. All studies were delivered universally to employees without any mention of the employees being at-risk or being symptomatic. The three studies have overlapping studies and different inclusion and exclusion criteria.

1) In 12 RCTs utilising digital CBT interventions to increase psychological wellbeing a small positive effect on pooled mental health outcomes (Hedge's *g*=0.25) was found (Carolan et al., 2017).

2) A meta-analysis of six RCT studies found very small to small positive effects in reducing stress (Hedge's *g*=0.19) and depression (Hedge's *g*=0.12) but no effects on reducing anxiety (Hedge's *g*=0.06) (Stratton et al., 2017).

3) A review and meta-analysis of 11 RCTs evaluating individual eHealth CBT interventions in employees found a moderate reduction in stress (Hedge's *g*=0.40). and very small effects on depression (Hedge's *g*=0.18), and anxiety (Hedge's *g*=0.18) (Phillips et al., 2019).

Digital stress management programs for employees

A meta-analysis identified four RCT studies, which revealed no effect in reducing stress (Hedge's *g*=-0.04) (Stratton et al., 2017).

Mindfulness-based programs

There is very strong interest in this area currently and narrative reviews of mindfulness based intervention studies, including RCTs (Ravalier et al., 2016, Lomas et al., 2017, Ivandic et al., 2017, Janssen et al., 2018), suggest consistent short term positive effects on a range of mental health outcomes, possibly stronger for "stress" than anxiety or depressive symptoms.

However, one systematic review assessed the effectiveness of brief interventions only (lasting from one session of 30 minutes to four weekly sessions) identified 11 individual-level brief interventions and concluded that there were no effects (Ivandic et al., 2017).

Two meta-analyses were identified. First a review of 23 RCTs, 19 of which were face-to-face group sessions, and four individual self-paced interventions. Beneficial effects were reported for stress, anxiety and psychological distress (Hedge's *g*=0.56, 0.62, 0.69). No evidence was present for effects on burnout or depression (Bartlett et al., 2019). Next, a large review of 119 group and individual level mindfulness-based and Acceptance and Commitment Therapy (ACT) interventions showed moderate effectiveness in reducing employee depression, anxiety and stress symptoms in RCT studies (Cohen's *d*=0.42, 0.58, 0.47), in single arm designs (Cohen's *d*=0.46, 0.45, 0.62), and in quasi-experimental designs (Cohen's *d*=0.46, 0.32, 0.59) (Slemp et al., 2019).

Mindfulness-based and ACT programs for healthcare professionals

Five systematic reviews of universal mindfulness interventions delivered to health professionals were identified. The reviews examined a mix of RCTs, quasi-controlled trails, and pre-post cohort studies of both face-to-face individual and group based interventions (Duhoux et al., 2017, Ghawadra et al., 2019, Lamothe et al., 2016, Murray et al., 2016, Rudaz et al., 2017). Consistent results were reported for improvements in stress, one study reported positive outcomes in depression and anxiety, and half reported benefits for burnout. No long-term effects were examined.

Three meta-analytic reviews in healthcare professionals were identified. The first meta-analysis of mindfulness and relaxation techniques for clinicians identified three studies, two single group, and one quasi-controlled trial. Only one of the three trials reported a positive reduction in stress post-intervention (Cohen's *d*=0.44) (Clough et al., 2017). Demonstrating the explosion in this area only 2 years later a meta-analysis of 24 pre-post single sample, 12 RCTs, and 6 controlled trials showed mindfulness had large effects on reducing symptoms of anxiety in controlled trials, pre-post and RCTs (SMD=1.01, 0.31, 0.49), reducing depression in pre-post and RCTs (SMD=0.29, 0.55), and stress in pre-post and RCTs (SMD=0.58, 0.42) respectively (Lomas et al., 2019). The final meta-analysis quantified the effectiveness of mindfulness-based interventions on distress, well-being, mental and physical health, and performance in healthcare professionals and healthcare professionals in training. Thirty-eight studies were included in the analyses, 31 were RCTs or controlled trials, and seven were pre-post studies. Interventions were delivered via facilitated group

sessions or self-paced. Overall, the interventions had moderate positive effects on anxiety, depression, psychological distress, and stress (Hedge's g=0.47, 0.41, 0.46, 0.52) (Spinelli et al., 2019).

Digital mindfulness interventions

Two meta-analyses evaluated primary prevention mindfulness-approaches delivered to individual employees via digital means - eHealth interventions. Stratton et al. (2017) identified six RCT studies, which revealed a moderate positive effect size in reducing stress (Hedge's g=0.68) and small positive effects in reducing depression and anxiety (Hedge's g=0.34, 0.21) (Stratton et al., 2017). Another review identified three RCT studies and found a similar moderate reduction in stress (Hedge's g=0.64) (Phillips et al., 2019).

Workplace physical activity programs

Nine studies investigating the effects of a single component physical activity on occupational stress (seven RCTs, two pre-post intervention studies). In total, four out of the nine studies used at least one of multiple varieties of yoga practices as part of the intervention program, one via web-based delivery. The other five studies integrated other individualised forms of physical activity interventions e.g., endurance training and Tai Chi. The review found mixed effects. Four showed positive effects on stress reduction, three of which were yoga interventions, with a moderating factor suggesting that intervention length should consist of at least 12 hours of practice. Five studies showed no effects. These studies used workplace and at home designed physical activity programs, and a yoga and tai chi intervention (Bischoff et al., 2019).

Nature based interventions

A systematic review identified ten nature-based interventions. Nature-based interventions were described as; direct nature exposure (e.g., being in a park, being surrounded by indoor plants, having natural window views) or through indirect nature contact such as technological nature (e.g., acoustical). Six RCTs were identified and categorised into 'green exercise' and 'nature savouring' interventions. Mixed effects were observed. two 'nature savouring' studies found positive effects in reducing anxiety and depression, one study suggesting effects were higher in women. The other four studies showed no effect. One of green exercise and one of nature savouring observed a reduction in stress, and one study reported no effects on depression (Gritzka et al., 2020).

Aromatherapy and massage interventions

A systematic review identified ten studies, five RCTs, one non-randomised control trial, and three pre-post studies evaluating the effectiveness of aromatherapy and massage on relieving stress in nurses. This review concluded that the evidence did not support aromatherapy, massage and aromatherapy massage as effective for reducing job-related stress of nurses (Li et al., 2019).

Expressive art therapy

A review of arts-based interventions to address psychological stress in healthcare professionals including art, music and storytelling-based interventions identified 14 studies. Two studies were RCTs, and the others were a variation of group-based pre-post or quasi-experimental designs. No quantitative evidence was provided synthesising results. However, authors report that improved outcomes were found in 13 of 14 studies reviewed and the

greatest improvements were seen in stress and anxiety outcomes at post-intervention use. Mixed results were reported for burnout, well-being, compassion fatigue and quality of life (Phillips and Becker, 2019).

Table 7. Primary prevention Interventions for enhancing personal resilience

Intervention	Reviews identified	Number and Types of studies included	Symptom reduction	Occupational / other outcomes	Meta-analysis of data?
Workplace mental health promotion	Kuoppala et al 2008	14 RCTs; 22 cohort	Weak association with improved mental health	Moderate May have effect on absenteeism	No
	Martin et al 2009		Small, positive effect	Limited evidence available	Yes
CBT-based stress management programs	Bhui et al 2012	11 Meta-analyses; 12 narrative reviews	Produced larger effects at the individual level (reduced stress and symptoms)	No influence	No
	Carolan et al 2017 *	12 RCTs (combined CBT and mindfulness based) Digital interventions	Small positive improvement in pooled mental health (g=0.25)	N/A	Yes
	Phillips et al 2019 *	11 RCTs Digital interventions	small positive improvement in; 11 studies stress (g=0.40), 9 depression (g=0.18), 8 in anxiety (g=0.18)	N/A	Yes
	Richardson & Rothstein, 2008	Treatment and control; 55 interventions	Significant change	No notable improvements In absenteeism	No
	Seymour & Grove, 2005	1 RCT	Moderate	N/A	No
	Stratton et al 2017 *	6 RCTs CBT 4 RCTs Stress management Digital interventions	CBT; Small positive improvement stress (g=0.19), depression (g=0.12). No improvement anxiety (g=0.06). Stress Mx small negative impact stress (g=-0.04)	N/A	Yes
	Tan et al 2014	RCTs of CBT based stress management	Positive effect on depression; (SMD=0.12)	N/A	Yes
	Wan Mohd Yunus et al 2018 *	8 RCTs 7 f2f sessions either individually or in groups and one was telephone.	6/8 depressive symptoms improved. No differences in 2 studies. Only one study evaluated medium term follow-up	N/A	No
Mindfulness programs (MBSR, MBCT, mindfulness meditation and variants)	Bartlett et al 2019 *	23 RCTs; 19 face-to-face group sessions, 4 individual level self-paced	Improvement in stress, anxiety and psychological distress (Hedge's g=0.56, 0.62, 0.69)	N/A	Yes
	Clough et al 2017 *	3 studies; 2 single group, 1 quasi-CT Clinicians	limited evidence. Only one study reported a reduction in stress (Cohen's d=0.44)	N/A	Yes
	Duhoux et al 2017 *	3 pre-post studies f2f individual and group	Reduction in stress, burnout and improved general health	N/A	No
	Ghawadra et al 2019 *	9 studies in nurses;	Reduced stress, anxiety, and depression	N/A	No

		2 RCTs 3 quasi-CTs 4 pre-post cohort studies. All f2f 7 individually delivered 2 group interventions			
	Ivandic et al 2017 *	11 unspecified studies Brief one off or 1/week for 4 weeks	No significant changes in mental health	N/A	No
	Janssen et al 2018 *	23 studies; 13 RCTs 10 quasi-CTs (MBSR)	Reduced stress, distress, depression, anxiety, and occupational stress	N/A	No
	Lamothe et al 2016 *	19 studies; healthcare professionals 9 RCTs 5 quasi-CTs 5 single-arm Group and individual f2f programs	18/19 decrease in stress. Half of the interventions found a reduction in burnout and anxiety. No significant evidence for depression reduction	N/A	No
	Lomas et al 2017	Inclusive review	Anxiety 4/6 studies positive effect Stress 8/11 studies positive Depression 4/7 studies positive Burnout 1/8 studies positive	N/A	No
	Lomas et al 2019 *	42 studies; 24 pre-post 12 RCTs 6 CTs	Improvement in anxiety in CTs, pre-post and RCTs (SMD=1.01, 0.31, 0.49), depression in pre-post and RCTs (SMD=0.29, 0.55), and stress in pre-post and RCTs (SMD=0.58, 0.42)	N/A	Yes
	Murray et al 2016 *	1 CT GPs f2f group training	Reductions in burnout, and overall mood state	N/A	No
	Phillips et al 2019 *	3 RCTs Digital	moderate reduction in stress (Hedge's g=0.64)	N/A	Yes
	Ravalier et al 2016	10 studies; 5 RCTs - 3 mindfulness 2 meditation	Positive results in most studies both RCT and pre-post	N/A	No
	Rudaz et al 2017 *	24 studies; 9 RCTs 15 pre-post cohort studies f2fgroups and individually	Limited evidence for stress and mindfulness no improvement in burnout, self-compassion and psychological wellbeing	N/A	No
	Slemp et al 2019 *	119 studies; group and individual level mindfulness-based and ACT	Improvement in depression, anxiety and stress in RCTs (Cohen's d=0.42, 0.58, 0.47), in single arm (Cohen's d=0.46, 0.45, 0.62), and in quasi-experimental designs (Cohen's	N/A	Yes

	Spinelli et al 2019 *	38 studies; 31 RCTs or CTs 7 pre-post f2f group or individual self-paced	*d*=0.46, 0.32, 0.59) moderate improvements in anxiety, depression, psychological distress, and stress (Hedge's *g*=0.47, 0.41, 0.46, 0.52)	N/A	Yes
	Stratton et al 2017 *	6 RCTs Digital	moderate improvement in stress (Hedge's *g*=0.68) and small improvement in depression and anxiety (Hedge's *g*=0.34, 0.21)	N/A	Yes
Nature based interventions	Gritzka et al 2020 *	6 RCTs 3 green exercise or 3 nature savouring	2/3 nature savouring improved anxiety and depression 1/3 green exercise improved depression 2/3 green exercise and 1/3 nature savouring improved stress	N/A	No
Aromatherapy and massage interventions	Li et al 2019 *	9 studies; 5 RCTs 1 CT, 3 pre-post	No improvement in any studies for stress	N/A	No
Expressive art therapy	Phillips & Becker 2019 *	14 studies; 2 RCTs, 14 pre-post or quasi-experimental study	13/14 improvements in stress and anxiety. Inconclusive results in burnout, well-being, compassion fatigue and quality of life	N/A	No
Workplace physical activity programs	Bischoff et al 2019 *	9 studies; 7 RCTs, 2 pre-post 4 yoga 5 others physical	4/9 improved stress (3 were yoga), 5/9 no improvement	N/A	No

Note * = new studies identified in this updated review

Secondary prevention evidence

Secondary prevention interventions are those targeted at employees with specific risk factors e.g. high-risk occupations (e.g. emergency services), described as "selective" or those with emerging symptoms (at-risk of developing mental health conditions) described as "indicated": to improve wellbeing and prevent mental ill-health through enhanced coping and resilience.

Strategy 3: Secondary Prevention for Enhancing personal resilience and reducing stress symptoms in indicated occupational groups

CBT based resilience training

Given that an individual's level of resilience predicts future mental health problems in first responders (Wild, 2016) enhancing resilience would seem a good target for indicated interventions. Beneficial effects of resilience training such as pre- stress inoculation training (SIT) (Hourani, 2011) have been shown. The majority of studies demonstrate increased levels of resilience using either cognitive behavioural therapy or mindfulness techniques, with preliminary evidence that approaches incorporating both cognitive behavioural therapy and mindfulness, may produce greater effects (Sood et al., 2014). Luken showed that such approaches can reduce burnout in employees, predominantly health care workers. (Luken, 2016).

Secondary prevention psychological programs for healthcare professionals

Systematic reviews of CBT for healthcare professionals

Clough and colleagues (2017) identified 10 trials, examining the use of CBT in reducing stress in doctors. Reductions in stress varied from no effect to very large effects (effect sizes ranging Cohen's d=0.02–1.70). The one RCT that used an active control showed no effect in reducing stress, depression, or increasing quality of life or job satisfaction. One study in this review reported moderate reduction in job-related stress (Cohen's d=0.65) at 12-month follow-up which was maintained up to 3-years later (Clough et al., 2017).

A review of interventions to improve psychological wellbeing in general practitioners identified two controlled trials using CBT programs. Both were group based face-to-face training programs. No improvements were observed in reports of work related distress in either study (Murray et al., 2016).

A review of interventions delivered to primary care nurses identified one RCT of a CBT-based group-based intervention that included a five-day course. After the course, nurses reported reduced burnout and increased use of psychotherapy, however, no changes were observed in mental health outcomes compared to the control group (Duhoux et al., 2017).

Meta-analytic Reviews of therapy for healthcare professionals

A Cochrane review of 19 RCTs of psychological interventions to foster resilience in healthcare professionals was identified (Kunzler et al., 2020). The interventions were combined resilience interventions (e.g. mindfulness and cognitive-behavioural therapy) versus control. Most interventions were performed in groups, with high training intensity of more than 12 hours or sessions and were delivered face-to-face. There was no effect in five RCTs on anxiety (SMD=0.06). A small effect was observed pooled from 14 studies on

depression (SMD=0.29), and a moderate effect in 17 RCTs on stress (SMD.0.61). Further, small positive effects were found in increased resilience and wellbeing (SMD=0.45 and 0.14)

Another analysis identified two RCT studies using CBT approaches on reducing mental health in physicians with large pooled effects (SMD=0.79) (Petrie et al., 2019).

Coaching programs

Some small RCTs of workplace coaching have demonstrated improvements in well-being, and reductions in depression and stress (Grant, 2009). A Cochrane review of psychological interventions to foster resilience in healthcare professionals identified one RCT of resilience coaching. This study demonstrated a very small to small effect on mental health (Hedge's g=0.14). (Kunzler et al., 2020).

Workplace physical activity programs

A review by Brown and colleagues found 4 RCTs (and more controlled trials) of physical activity interventions in the workplace (Brown et al., 2011) for high risk groups. There were consistent positive effects on mental ill-health and wellbeing. Only one of the five trials that evaluated effects on presenteeism or absenteeism showed a positive effect.

Table 4. Summary of Strategy 3 (b) secondary interventions for enhancing personal resilience

Intervention	Reviews identified	Number and Types of studies included	Symptom reduction	Occupational / other outcomes	Meta-analysis of data?
CBT resilience training for high-risk occupations	Luken & Sammons 2016	8 RCTs	6/8 studies showed evidence for reduced job burnout	N/A	No
	Clough et al 2017 *	10 RCTs CBT in reducing stress in doctors. One with active control	improvements in stress in 9/10 studies. One study showed moderate improvement remained at 1- and 3-year follow-up One RCT; no effects, used an active control	No improvements found in quality of life or job satisfaction.	No
	Duhoux et al 2017 *	1 RCT study CBT for primary care nurses. Five-day group-based	Reduced burnout and increased use of psychotherapy. No changes in mental health outcomes	N/A	No
	Kunzler et al 2020 *	19 RCTs CBT to foster resilience in healthcare professionals Majority in f2f groups, with > 12 hours of sessions	5 measured anxiety, no improvement (SMD=0.06). 14 depression, small improvement (SMD=0.29). 17 stress, moderate improvement (SMD.0.61)	Small improvement in enhancing resilience (SMD=0.45) and wellbeing (SMD=0.14)	Yes
	Murray et al 2016 *	2 controlled trials CBT for GPs Both group-based f2f	No improvements in work-related distress in either study	N/A	No
	Petrie et al 2019 *	2 RCTs; CBT in physicians	Large improvement in pooled mental health (SMD=0.79)	N/A	Yes
Coaching	Kunzler et al 2020 *	1 RCTs (not specific to coaching interventions)	Small improvement pooled mental health (Hedge's g=0.14)	N/A	Yes
Workplace physical activity programs	Brown et al 2011	4 RCTs	All four RCTs showed positive effects on mental health outcomes	Most studies no effect on presenteeism or absenteeism	No
	Bhui et al 2012	23 studies; 11 meta-analyses 12 narrative rev.	N/A	Mixed evidence of any benefit for absenteeism	No

Note * = new studies identified in this updated review

Strategy 4: Indicated secondary prevention for employees with emerging symptoms and promoting and facilitating early help-seeking

Psychological therapy

A meta-analysis was identified examining clinical 'prevention' interventions in the workplace for employees with depressive symptoms. The review identified 15 RCTs of which, 10 were CBT interventions. The CBT interventions were delivered via telephone (two), digitally (five), email (two), or face-to-face (one). Meta-analysis showed that interventions delivered via telephone had the greatest reductions in depressive symptoms (SMD=0.80) followed by digital interventions (SMD=0.36) and finally in-person interventions (SMD=0.17). Two RCTs were physical exercise interventions, one was ACT, one PST and one was resilience training. Medium effect sizes were found for both CBT- and non–CBT-based interventions (SMD=0.44; 0.32 respectively) (Nigatu et al., 2019).

A meta-analysis of digital CBT interventions targeted to employees with mental health symptoms identified five RCT studies, which revealed no or very small significant positive effects in reducing stress (Hedge's g=0.05), depression (Hedge's g=0.11), or anxiety (Hedge's g=0.15). The same review identified two RCTs examining digital stress management interventions for those with mental health symptoms which revealed moderate significant positive effects in reducing stress (Hedge's g=0.68), small positive effects in reducing depression (Hedge's g=0.34), and small but non-significant effects in reducing anxiety (Hedge's g=0.34) (Stratton et al., 2017).

Well-being checks / health screening

There are no reviews in this area. An Australia study found this approach to be cost-effective with increased employee well-being (Whiteford et al., 2005). However, a mandated screening process is not without risks, especially when false positive rates (identifying well people as unwell) are high, and may lead to stigma, discrimination or labelling, temporary distress, or unnecessary intervention and there have been few published studies of such processes.

Mental Health First Aid (MHFA)

Originally developed and implemented in Australia, MHFA is a standardised educational program developed to combat mental health problems and suicide in the general public by increasing mental health literacy, improving attitudes / reducing stigma, and stimulating helping behaviours (Kitchener and Jorm, 2002). The program is based on scientific evidence and/or expert consensus. The only workplace review was evaluated in teachers. A meta-analysis estimating the effects of the MHFA programme on mental health knowledge, attitudes towards people suffering from mental health problems, and help-related behaviours exhibited by secondary school teachers participating in the MHFA programme identified 2 papers, both RCTs. There were moderate to large effects on improving knowledge (Cohen's d=0.57 – 1.15) and one study showed moderate effects on improving attitudes towards anxiety and depression (Cohen's d=0.73; 0.77). Both studies showed no effect in actual helping behaviours of teachers at post-intervention and follow-up. Both RCTs measured teacher's mental health as an outcome. Neither study reported a significant improvement in mental health (Anderson et al., 2019).

Peer support schemes

Peer support schemes provide mental health training to a small group of employees who are expected to provide such support to other employees and to help identify those who might

require professional assistance, rather than engage in counselling themselves. To date, peer support schemes have mainly been implemented in high-risk occupations such as emergency services, but there is increasing interest in their use in other work situations such as construction (Gullestrup, 2011). Early RCTs found no impact of peer support on reduced symptom levels (Whybrow, 2015). However non-randomised studies have shown potential benefits, including increased perceived support, reduced barriers to help seeking and possible reductions in sickness absence.

Workplace counselling

There is very widespread provision of workplace counselling services, often through Employee Assistance programs. The most recent systematic review of the effectiveness of workplace counselling found some evidence for improving mental ill-health (McLeod, 2008) although it is again largely limited by low quality studies and weak assessment methods, with the good trial evidence only coming from programs provided by highly trained clinical psychologists.

Table 5. Summary of Strategy 4 promoting and facilitating early help-seeking

Intervention	Reviews identified	Number and Types of studies included	Symptom reduction	Occupational / other outcomes	Meta-analysis of data?
Psychological Therapy	Nigatu et al 2019 *	15 RCTs 10 CBT telephone digital f2f 5 non-CBT PST ACT physical exercise resilience	CBT reducing depression: telephone large improvement (SMD=0.80), small in digital (SMD=0.36) and f2f (SMD=0.17). Moderate improvement in depression for both CBT- and non–CBT- (SMD=0.44; 0.32)	N/A	Yes
	Stratton et al 2017 *	6 RCTs 4 digital CBT 2 digital stress management	CBT: No significant reductions in stress, depression or anxiety Stress Mx: Moderate improvement in stress (Hedge's g=0.68), small in depression (Hedge's g=0.34). No improvement anxiety	N/A	Yes
Wellbeing checks / health screening	No review	Low quality - Screening followed by intervention associated with benefit in symptom reduction and occupational outcomes in some settings.	But risk associated with regular screening: false positives, distress, stigma, focus on symptoms etc. (only effective strategy if post-screening procedures are in place)	N/A	N/A
Mental health first aid (MHFA)	Anderson et al 2019 *	2 RCTs school teachers	Neither study reported a significant improvement in mental health	moderate to large improvement in knowledge. 1 / 2 studies showed improvement in attitudes. No improvements in helping behaviours	Yes
Peer support schemes	Whybrow et al 2015	13 studies; 3 reviews, 8 quant, 3 qual	N/A	TRiM may have a positive effect on organisational functioning and may reduce organisational sickness absence rates after traumatic events.	No
Workplace counselling	McLeod, 2010	128 studies; incl wide range of research designs	Limited, generally effective alleviating psychological symptoms	Sig impact on sickness absence Mod effect on attitudes to work	No

Note * = new studies identified in this updated review

Tertiary prevention (treatment) evidence

Confusingly termed, tertiary "prevention" interventions are those aimed at people who are already unwell, either at work or off sick. The focus of much policy, regulation, insurance, rehabilitation and clinical treatment is the successful return to the workplace of people who have taken sickness absence due to their mental ill-health or keeping those who are unwell functioning. The need to have work focussed interventions is now widely recognised in the field of serious mental illness (Harvey et al., 2013), although possibly less so for those with more common conditions such as depression and anxiety.

Strategy 5: Supporting recovery and return to work

Facilitating return to work through supportive interventions

A meta-synthesis of qualitative research suggested that support from supervisors and colleagues, as well as working time adjustments like partial sickness absence may facilitate the return to work of people with mental ill-health (Anderson, 2012). Australian guidelines based on a Delphi consensus study have been developed to provide workplaces with assistance in supporting the return to work of mentally unwell employees (Reavley, 2012). The limited evidence that is available shows that although interventions such as supervisory support for those off sick may increase return to work rates generally (Nieuwenhuijsen et al., 2008), such interventions can have a negative effect on those absent for mental ill health (Nieuwenhujsen, 2004).

A recent Cochrane review identified three RCTs examining interventions to improve return to work for depressed people. These work-directed interventions (such as multi-component work intervention incorporating work modification and support) reduced sickness absence in the medium term (SMD=0.40). However, no long-term effect on return to work or effects on depressive symptoms were observed (Trivedi, 2018).

Individual placement and support (IPS) programs

These programs are generally provided for people with more severe mental illness. Eight of 11 RCTs found IPS to be superior to traditional vocational rehabilitation in vocational outcomes, demonstrating double the rates of competitive employment and job tenure, more hours worked, higher total income, and improved quality of life for participants (Noyes et al., 2018). Further weight is added for the use of IPS by Modini and colleagues exploring the effectiveness of IPS programs compared to traditional vocational rehabilitation, and meta-analytic findings of 17 RCTs show that IPS is more than twice as likely to result in competitive employment (RR=2.40 95% CI 1.99–2.90) (Modini et al., 2016).

Work focussed psychological therapy

A review of six RCTs found that non-work focussed CBT had no effect on return to work for those with mental health conditions (Cullen et al., 2018).

A Cochrane review (Nieuwenhuijsen, 2014) assessing specific psychological interventions aimed at improving the return to work of people with depression suggested that adding a work-directed psychological intervention (i.e. treatment focussed specifically on an aspect of work or returning to work) to clinical care reduced the number of days on sick leave, as did enhancing primary or occupational care with cognitive behavioural therapy or a structured telephone outreach and care management program that included medication. In a similar review for those with adjustment disorders, Arends and colleagues found that problem solving therapy (PST) helped people achieve an earlier part time return to work, but did not

achieve faster return to full time and sustained work (Arends et al., 2012). CBT also did not improve the return to work rates. Improving primary care through quality improvement programs for general practitioners did not reduce sickness absence in three studies. There is promising evidence that work focused psychological interventions can be effective at improving occupational outcomes for individuals with PTSD (Noordik et al., 2010) (Stergiopoulos et al., 2011), and obsessive compulsive disorder (OCD) (Noordik et al., 2010) although these effects have not yet been demonstrated outside of the occupational health system in the Netherlands where the majority of studies have been conducted.

More recent reviews showed similar trends. A review and meta-analysis of 16 RCTs that delivered work-focused CBT via individual, group based or a mix of both to employees on sick leave showed no changes in return to work (Finnes et al., 2019). A second meta-analysis examined psychological interventions in employees with common mental health disorders. Very small positive effects in reducing sick leave were seen in fifteen studies of CBT (Hedge's g=0.15) nine PST interventions (Hedge's g=0.12), 13 return to work interventions aimed at addressing problems at work, developing problem-solving strategies for work issues, teaching graded activity or exposure and applying it to the workplace and conducting a clear plan for return to work) (Hedge's g=0.18) and in nine collaborative care interventions (psychotherapy, medication and increased follow-up on symptoms) (Hedge's g=0.12) (Salomonsson et al., 2018). Overall these CBT, PST, return to work interventions and collaborative care interventions had a small positive effect on mental health symptoms (Hedge's g=0.21) (Salomonsson et al., 2018).

Additionally, a meta-analysis found that computer-assisted cognitive remediation enhanced productivity outcomes (Noyes et al., 2018). A final meta-analysis of three RCTs show that telephone or online CBT was more effective in reducing sick leave than usual primary or occupational care in the medium term with small positive effects (SMD=0.23) (Trivedi, 2018).

Clinical interventions

Medication has not been shown to systematically improve return to work outcomes in the three studies that evaluated this (Nieuwenhuijsen K, 2014). Three RCTs compared antidepressants on reducing sickness absence. Results were inconsistent with only one study reporting improvements in work function. Selective serotonin reuptake inhibitors (SSRIs) compared with tricyclic antidepressants showed no effect on these outcomes, whereas one study found that one SSRI (escitalopram) compared with another SSRI (citalopram) reduced sickness absence (SMD=0.31) (Trivedi, 2018).

Table 6. Summary of Strategy 5 supporting recovery and return to work

Intervention	Reviews identified	Number and Types of studies included	Symptom reduction	Occupational / other outcomes	Meta-analysis of data?
Facilitating return to work through support	Nieuwenhuijsen et al 2008	3 RCTs Work focused intervention in addition to CAU	N/A	Reduced sickness absence	No
	Van Oostrom et al 2009	1 RCT	No evidence Lack of studies made it impossible to investigate effectiveness among workers with mental health problems	N/A	No
	Trivedi et al 2018 *	3 RCTs	no short- or long-term improvements on depressive symptoms	reduced sickness absence in the medium term (SMD=0.40)	Yes
Individual placement and support (IPS)	Modini et al 2018 *	17 RCTs IPS compared to traditional vocational rehabilitation supports	N/A	IPS twice as likely to result in competitive employment (RR=2.40)	Yes
	Noyes et al 2018 *	11 RCTs IPS compared to traditional vocational rehabilitation supports	N/A	8/11 improved rates of competitive employment, job tenure, more hours worked and higher total income, improved quality of life	No
Work focussed psychological therapy	Nieuwenhuijsen et al 2014	3 RCTs -Telephone or online CBT -Enhanced primary care -Structured telephone outreach and care management program	N/A	Telephone CBT most effective in reducing sickness absence Enhanced care not effective. Structured care small positive improvement	No
	Arends et al	9, reporting on 10 psychological interventions; 5 CBT 5 PST 7 RCTs; 2 cluster RCTs	N/A	Reduced time to first return to work with PST. No effect on return to full time work with either intervention	No
	Noordik et al 2010	7 studies; 4 RCTs 3 CTs	Significant positive improvement (OCD). Moderate positive improvement (PTSD)	N/A	No
	Stergiopoulos et al 2011	7 studies; 3 RCTs 3 pre-post	Improvement (PTSD)	N/A	No
	Cullen et al 2018 *	6 RCTs CBT	N/A	CBT alone offered no improvements in return to work	No
	Finnes et al 2019 *	16 RCTs CBT	N/A	No changes in return to work from sick leave	Yes
	Salomonsson et al 2018 *	15 RCTs CBT PST RTW interventions collaborative care	N/A	All interventions showed small improvements in reducing sick leave (Hedge's *g*=0.15, 0.12, 0.18, 0.12)	Yes

	Noyes et al 2018 *	2 RCTs Virtual reality cognitive training	N/A	enhanced productivity	No
	Trivedi 2018 *	3 RCTs online & telephone CBT	N/A	telephone or online CBT more effective in reducing sick leave than usual primary or occupational care small positive improvements (SMD=0.23).	Yes
Clinical interventions	Nieuwenhuijsen et al 2014	3 RCTs 11 Medications	Strong evidence for reduced symptoms	No effect or inconclusive	No
	Trivedi 2018 *	3 RCTs Medication	N/A	inconsistent - one study improvements in work function. SSRI compared with tricyclic antidepressants showed no improvement. One study found that SSRI (escitalopram) compared with another SSRI (citalopram) reduced sickness absence	No
	Salomonsson et al 2018 *	30 RCTs CBT PST RTW interventions collaborative care	pooled reduction on mental health symptoms was small (Hedge's g=0.21)	N/A	Yes

Note * = new studies identified in this updated review

Summary of evidence for interventions across the five strategies

Intervention	Number and Type of review	Overall summary of evidence
Primary Prevention		
Strategy 1 designing and managing work to minimise harm		
Employee participation	1 systematic review	Limited evidence with no RCTs. No positive individual or workplace benefits noted.
Flexible working conditions	1 systematic review	Limited evidence with no RCTs. No positive individual or workplace benefits noted.
Job design	2 systematic reviews	Some evidence in RCT and large pre-post to recommend. Positive effects in improving job strain and job control. Limited evidence for improvements in stress. No RCTs.
Strategy 2 building organisational resilience through good management		
Manager and leadership training	2 systematic reviews 1 meta-analysis	Strong positive evidence for improving managers attitudes, knowledge and behaviours. Inconclusive evidence on improving managers and direct reports mental health.
Team/workgroup support interventions	1 systematic review	Limited evidence Few interventions developed and tested. No RCTs. Positive effects for decreasing depression.
Mental health education and anti-stigma	2 systematic reviews	Effects on mental health evidence inconclusive and must be interpreted with caution. Strong evidence for increasing knowledge and attitudes. Inconclusive evidence for changes in supportive behaviour.
Bullying interventions	1 systematic review	Very low-quality evidence.
Strategy 3 (a) primary interventions for enhancing personal resilience		
Workplace mental health promotion	2 systematic reviews	Large number of RCTs. Evidence that not effective in improving clinical mental health symptoms. Evidence for possible improvement in sick leave.
CBT-based stress management programs	4 systematic reviews 4 meta-analysis	Strong evidence of effectiveness with 4 meta-analyses. F2f CBT had small effect in reducing depression moderate for reducing stress, and none in reducing

		anxiety.
		Large pooled mental health improvements in f2f for physicians.
		Small positive improvements in depression, anxiety and stress when digitally delivered.
Mindfulness programs	9 systematic reviews 7 meta-analysis	Strong evidence of effectiveness with 7 meta-analyses.
		F2F mindfulness had moderate to large effects in reducing stress, and small to moderate in reducing depression and anxiety. Digital mindfulness as effective as F2f.
		Inconclusive evidence of effects on burnout in healthcare professionals.
		Only short-term effects reported.
Nature based interventions	1 systematic review	Effects on mental health evidence inconclusive and must be interpreted with caution.
Aromatherapy and massage interventions	1 systematic review	No improvement in stress reported in any study. Not recommended for reducing stress.
Expressive art therapy	1 systematic review	Some evidence for improvements in stress and anxiety.
		Inconclusive results in burnout, well-being, compassion fatigue and quality of life.
Workplace physical activity programs	1 systematic review	Some evidence for yoga improving in stress.
		No evidence for other physical activity.

Secondary Prevention

Strategy 3 (b) secondary interventions for enhancing personal resilience

CBT-based resilience training for high-risk occupations	4 systematic reviews 2 Meta-analysis	Some moderately-strong evidence for reducing burnout, and stress in emergency and healthcare professionals.
		Inconclusive results in depression and anxiety.
Coaching	1 systematic review	Small improvement in one study. Limited evidence.
Workplace physical activity programs	1 systematic review 1 meta-analysis (one coaching intervention identified within another meta)	Some evidence for improving mental health.
		Inconclusive evidence for sick leave / absenteeism and none for presenteeism.

Strategy 4 preventing indicated symptoms and facilitating early help-seeking

Psychological therapy	2 meta-analysis	Strong evidence for preventing and reducing symptoms using telephone, f2f and digital CBT.
Wellbeing checks / health screening	No reviews	Low quality - Screening followed by intervention associated with benefit in symptom reduction and occupational outcomes in some settings. Risk associated with regular screening: false positives, distress, stigma, focus on symptoms etc. (only effective strategy if post-screening procedures are in place)

Mental health first aid (MHFA)	1 systematic review	Limited evidence for improving knowledge. Inconclusive in improving attitudes. No evidence for behaviour change or positive impact on mental health.
Peer support schemes	1 systematic review	Limited evidence. May have a positive effect on organisational functioning and may reduce organisational sickness leave rates after traumatic events.
Workplace counselling	1 systematic review	Limited evidence, generally effective in alleviating psychological symptoms. Significant impact on sickness absence. Moderate improvement on attitudes to work.
Tertiary Interventions		
Strategy 5 supporting recovery and return to work		
Facilitating return to work through support	2 systematic reviews 1 meta-analysis	No evidence for improvement in mental health symptoms. Evidence suggests reduced sickness absence in short and medium term.
Individual placement and support (IPS)	1 systematic review 1 meta-analysis	Strong evidence to suggest IPS significantly improves competitive employment in those with mental health conditions.
Work focussed psychological therapy	6 systematic reviews 3 meta-analysis	Inconclusive evidence for return to work with CBT or PST. At most, small effect in reducing sick leave. Some evidence for telephone/online CBT more beneficial for return to work.
Clinical interventions	2 systematic reviews 1 meta-analysis	Strong evidence for reducing symptoms using f2f CBT and collaborative care. Strong evidence for medications in reducing symptoms. Inconsistent in medications effects on workplace outcomes, i.e., work function and sick leave.

Policy and Regulatory Interventions

Guidelines for employers to detect, prevent, and manage mental ill-health in the workplace

An Australian group (Memish et al., 2017) systematically reviewed 20 international guidelines and found that the poorer quality guidelines lacked a focus on prevention (or only focussed on individual prevention), concentrated on the detection and treatment of mental health problems in the workplace, and did not include practical tools or advice for implementation. They made some interesting and novel observations of common failings including: *'An inconsistency in language, lack of consultation with relevant population groups in the development process and a failure to outline and differentiate between the legal/minimum requirements of a region'* and made several recommendations for how to establish useful guidelines in the future.

Regarding the teaching profession in the USA, Landsbergis and colleagues review twenty-seven empirical studies and review papers on organisational programs and policies in education (Landsbergis et al., 2017). Some evidence exists that mentoring, induction, and Peer Assistance and Review programs can increase support, skill development, decision-making authority, and perhaps job security, for teachers—and thus have the potential to reduce job stressors. However, very few policies were based on evidence. The authors remark that: *"Educators developing programs and policies that can potentially reduce job stressors among educators should:*

1. *work more closely with occupational health and occupational stress educators and researchers in order to utilise appropriate measures of job characteristics and worker health and*
2. *work more closely with labour unions to develop and evaluate programs and policies and incorporate effective programs into collective bargaining."*

A Systematic review was identified of the content and quality of workplace guidelines developed to prevent mental health problems (Nexø et al., 2018). The authors conclude that *"Few guidelines have been developed with sufficient rigor to help employers prevent or manage work-related MHP and evidence of their effectiveness remains scarce."* Seventeen guidelines were quality assessed. Guidelines mainly targeted employers.

Primary preventive guidelines recommendations for employers. All eight guidelines recommended that the employer should be responsible for implementing interventions at the organizational level. Only two guidelines reported that their recommendations were based on a systematic review.

Tertiary preventive guidelines recommendations for employers. Three guidelines recommended return to work (RTW) interventions primarily at the organisational All the guidelines stated that the organisation should prepare administrative procedures in case of sick-listing due to mental health conditions. The organisation should either appoint an RTW coordinator, instruct the first line manager to ensure engagement of the employee and coordinate goals for RTW (e.g., gradual RTW, work adjustments). To properly rehabilitate and prevent relapse, two guidelines recommended that employers implemented programs to increase health literacy of all staff and improved job design and communication competences of managers (e.g., active listening skills) for the employee on sick leave and made counselling available to resolve any workplace conflicts or provide individual disability management. Despite differences of healthcare systems, most countries experienced challenges with access to evidence-based treatment and guidelines therefore recommended that the organisations should facilitate access.

<u>Guidelines combining primary, secondary, tertiary preventive interventions recommendations for employers and management</u>. Six guidelines recommended interventions combining organisational and individual interventions at the primary, secondary, and tertiary level. The content of the primary and tertiary interventions overlapped in content but stressed the importance of targeting a wide range of organisational (e.g., risk management) and individual level factors (e.g., employee resilience or competence training). To detect mental health conditions early, one guideline suggested routine screenings, another recommended manager training to detect sign in staff. Only one guideline based their recommendations on a systematic review.

Regulatory interventions

Some years ago Guthrie and colleagues (Guthrie et al., 2010) reviewed the impact of regulatory interventions and legislative formulations, in Australia across jurisdictions, which they proposed were designed to 'exclude work-related stress claims'. A consistent finding was that compensable stress-related claims rose generally in the States and Territories over the period of 1988-2005, regardless of legislative amendments being implemented, with the exception of the Commonwealth. Any decreases in compensable stress-related claims after a legislative change were small and short term, not continuing for more than two consecutive financial years. They suggested a number of new approaches beyond the organisation itself to the wider context. This included funding non-adversarial compensation responses and adopting '*a corporate citizenship approach to the prevention and management of stress in the workplace….that extends beyond compliance with OS&H risk reduction requirements'*. Their data is now over a decade old and as legislation, the contractual landscape and many other contextual factors have changed a further similar review would be enlightening.

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Appendix A

Search criteria:

1. a review of systematic reviews and meta-reviews of the published peer-reviewed literature on the workplace factors that may contribute to mental-ill health amongst workers.

2. a review of systematic reviews and meta-reviews of the published peer-reviewed literature on the effectiveness of organisational and policy level workplace interventions that may prevent mental-ill health amongst workers.

Description PubMed (MEDLINE)	AND OR method
Mental health terms	stress* [Tittle/Abstract] OR mental health [Title] OR mental illness [Title] OR mental disorder* [Title] OR depress* [tw] OR anxi* [tw] OR affective symptom* [sh] mood disorder*. tw OR mental health condition* [tw] OR mental health [sh] mental ill* [tw] psychological.tw
Work context terms	Employment[Mesh:NoExp] OR Occupational Groups[Mesh] OR Professional[Mesh] OR Occupations[Mesh] OR Workplace[Mesh] OR Workload[Mesh] Employment, Supported (Mesh) Health Workforce (Mesh)
Work context terms	work*[Title] OR occupation*[Title] OR employ*[Title] OR job*[Title] OR professional*[Title] OR organi?ational*[Title] OR workplace*[tw] orker*.tw, manager*.tw work place*.tw, supervisor*.tw
Search for workplace factors (under psychosocial work environment)	Social Support[Majr] OR Stress, Psychological[Majr] OR Employee Performance Appraisal[Mesh] OR Employee Grievances[Mesh] OR Bullying[Mesh] OR Communication/psychology[Mesh] OR Interpersonal Relations[Mesh] OR Job Satisfaction[Mesh] OR Occupational Stress[Mesh] OR Organi*ational Culture[Mesh] OR Personnel Downsi*ing[Mesh] OR Prejudice[Mesh] OR Return to Work[Mesh] OR Social Discrimination[Mesh] OR Social Justice/ psychology[Mesh] OR Social Support[Mesh] OR Staff Development[Mesh] OR Work Schedule Tolerance[Mesh] OR workplace violence[Mesh] demand resource*[Title] OR job security[Title] OR flexible work*[Title] OR full-time[Title] OR job insecurity[Title] OR lean production[Title] OR organi*ational change[Title] OR organi?ational change[Title] OR part-time[Title] OR shift work*[Title] OR temporary work[Title] OR work shift*[Title] OR boredom[Title] OR day-time[Title] OR harass*[Title] OR injustice*[Title] OR interaction*[Title] OR job satisfaction[Title] OR justice*[Title] OR staff development[Title] OR work satisfaction[Title] OR working hour*[Title] OR working time[Title] OR work-place

	conflict*[Title] OR work-role*[Title] OR night-time[- Title] OR decision latitude[Title] OR high demand*[Title] OR interpersonal relation*[Title] OR job control[Title] OR job demand*[Title] OR job strain[Title] OR lack of control[Title] OR psychosocial[Title] OR social network*[Title] OR support system*[Title] OR work demand*[Title] OR work strain[Title] OR workstrain*[Title] OR absenteeism[Title] OR ageism[Title] OR bullying[Title] OR coping[Title] OR discrimination[Title] OR effort reward*[Title] OR healthy work*[Title] OR homophobia[Title] OR low control[Title] OR on-the-job stress[- Title] OR presenteeism[Title] OR racism[Title] OR recovery[Title] OR recuperation*[Title] OR role ambiguity[Title] OR role-conflict*[Title] OR sexism[Title] OR silent workplace*[Title] OR skill discretion*[Title] OR social support[Title] OR stress in the work place[Title] OR support system*[Title] OR time pressure*[Title] OR victimi?ation*[Title] OR work ability[Title] OR work control[Title] OR work influence*[Title] OR work load*[Title] OR workload*[Title] OR work overload*[Title] OR work over-load*[Title] OR work stress*[Title] OR workplace violen*[Title] OR work-place violen*[Title] OR work-related fatigue[Title] OR psychosomatic[Title] OR retention*[Title] OR social network*[Title] OR turnover*[Title]
Search for organisational and individual level interventions	prevent* [tw] OR intervention* [tw] stress manag* [tw] OR program* [tw] OR polic* [tw] OR therap* [tw] OR tool [tw] OR framework [tw] OR support* [tw] OR plan [tw] OR template [tw] OR aid [tw] OR recover* [tw] OR promot* [tw] OR train* [tw] OR accommodat* [tw] OR adjustment* [tw] OR modificat* [tw] OR disclos* [tw] initiative* [tw] OR initiative* [tw]
Systematic Reviews	Systematic Review[Publication Type] OR Meta-analysis[Publication Type] OR mapping review*[Title/Abstract] OR systematic review*[Title/Abstract] OR systematic literature analysis[Title/Abstract] OR scoping review*[Title/Ab-stract] OR rapid review*[Title/Abstract] OR evidence map*[Title/Abstract] OR systematic mapping[Title/Abstract] OR Systematically review[Title/Abstract] OR Systematic literature review*[Title/Abstract] OR HTA[Title/Abstract] OR HTA report[Title/Abstract] OR HTA-report[Title/Abstract]
Limited	(english language and humans and "all adult (19 plus years)")

Description PsychINFO	AND OR method
Mental health terms	stress* [Tittle/Abstract] OR mental health [Title] OR mental illness [Title] OR mental disorder* [Title] OR depress* [tw] OR anxi* [tw] OR affective symptom* [sh] OR mental health condition* [tw] OR mental health [sh] mental ill* [tw] OR mood disorder* [tw]
Work context terms	DE "Work (Attitudes Toward)" OR DE "Occupations" OR DE "Occupational Attitudes" OR DE "Occupational Safety" OR DE "Occupational Stress" OR DE "Employment Status" OR

	DE "Personnel" OR DE "Working Conditions" OR DE "Working Space" OR exp working conditions OR exp organi?ational behavio?r OR exp Organi?ations OR exp Business Organi?ations
Work context terms	TI work* OR TI occupation* OR TI employ* OR TI job* OR TI professional* OR TI organi?ational OR work place* [tw] OR workplace* [tw] OR business* [tw]
Search for workplace factors (under psychosocial work environment)	DE "Organi?ational Climate" OR DE "Social Support" OR DE "Social Networks" OR DE "Interpersonal Relationships" OR DE "Person Environment Fit" OR DE "Organi?ational Change" OR DE "Downsi?ing" OR DE "Organi?ational Behav*" OR DE "Employee Interaction" OR DE "Organi?ational Effectiveness" OR DE "Supervisor Employee Interaction" OR DE "Working Conditions" OR DE "Job Enrichment" OR DE "Work Rest Cycles" OR DE "Work Week Length" OR DE "Workday Shifts" OR DE "Working Space" OR DE "Work Scheduling" OR DE "Job Performance" OR DE "Quality of Work Life" OR DE "Social Discrimination" OR DE "Age Discrimination" OR DE "Disability Discrimination" OR DE "Employment Discrimination" OR DE "Race and Ethnic Discrimination" OR DE "Sex Discrimination" OR DE "Diversity in the Workplace" OR DE "Harassment" OR DE "Sexual Harassment" OR DE "Bullying" OR DE "Victimi?ation" OR DE "Workplace Violence" OR DE "Psychological Stress" OR DE "Boredom" OR DE "Monotony" OR DE "Employee Turnover" OR DE "Equity (Payment)" OR DE "Employee Absenteeism" OR DE "Ageism" OR DE "Homosexuality (Attitudes Toward)" OR DE "Occupational Stress" OR DE "Racism" OR DE "Role conflicts" OR DE "Role expectations" OR DE Sexism OR DE "Psychosocial Factors" OR DE "Work Load" OR DE "Work related illnesses" OR DE "Retention" TI ((work OR job OR high) w1 demand*) OR TI "low control" OR TI "work control" OR TI "job control" OR TI (lack w1 control) OR TI "decision latitude" OR TI "work influence*" OR TI "demand resource*" OR TI "effort reward*" OR TI "time pressure*" OR TI recuperation* OR TI "work overload*" OR TI recovery OR TI coping OR TI "work abilit*" OR TI "social support" OR TI "support sys- tem*" OR TI "social network*" OR TI "emotional support" OR TI "interpersonal relation*" OR TI interaction* OR TI justice* OR TI injustice* OR TI "work satis- faction" OR TI "job satisfaction" OR TI boredom OR TI "skill discretion*" OR TI "staff development" OR TI discrimination OR TI harass* OR TI "workplace conflict*" OR TI "work strain" OR TI "job strain" OR TI "workplace violen*" OR TI bullying OR TI victimi?ation OR TI "role conflict*" OR TI "work role*" OR TI "working hour*" OR TI "work hour*" OR TI "working time" OR TI "day-time" OR TI "night-time" OR TI (shift n1 work) OR TI "temporary work" OR TI "full-time" OR TI "part-time" OR TI "flexible work" OR TI "organi?ational change*" OR TI "lean production" OR TI "job security" OR TI "job insecurity" OR TI "work schedul*" OR TI "healthy work*" OR TI homophobia OR TI ((work OR job) w1 stress*) OR TI presenteeism OR TI absenteeism OR TI "role ambiguity" OR

	TI "stress in the work place" OR TI psychosocial OR TI workload OR TI "work overload*" OR TI "work-related fatigue" OR TI psychosomatic
Search for organisational and individual level interventions	exp Health Promotion OR exp Stress Management OR occupational intervention* [tw] OR occupational therap* [tw] OR prevent* [tw] OR intervention* [tw] stress manag* [tw] OR program* [tw] OR polic* [tw] OR therap* [tw] OR tool [tw] OR framework [tw] OR support* [tw] OR plan [tw] OR template [tw] OR aid [tw] OR recover* [tw] OR promot* [tw] OR train* [tw] OR accommodat* [tw] OR adjustment* [tw] OR modificat* [tw] OR disclos* [tw] OR initiative* [tw]
Systematic Reviews (DE)	DE "Systematic Review" OR DE "Meta Analysis"
Systematic Reviews	TI "Systematic Review*" OR TI "mapping review*" OR TI "systematic literature analysis" OR TI "scoping review*" OR TI "rapid review*" OR TI "evidence map*" OR TI "systematic mapping" OR TI "Systematically review" OR TI "Systematic literature review*" OR TI "HTA" OR TI "HTA report" OR TI "HTA-re- port" OR AB "Systematic Review" OR AB "mapping review*" OR AB "systema- tic review*" OR AB "systematic literature analysis" OR AB "scoping review*" OR AB "rapid review*" OR AB "evidence map*" OR AB "systematic mapping" OR AB "Systematically review" OR AB "Systematic literature review*" OR AB "HTA" OR AB "HTA report" OR AB "HTA-report"
Limited	(human and english language and adulthood <18+ years>)

Description CENTRAL	AND OR method
Mental health terms	stress* [Tittle/Abstract] OR mental health [Title] OR mental illness [Title] OR mental disorder* [Title] OR depress* [tw] OR anxi* [tw] OR affective symptom* [sh] OR mental health condition* [tw] OR mental health [sh] mental ill* [tw] OR mood disorder* [tw]
Work context terms	DE "Work" OR DE "Work/PF" OR DE "Workload" OR DE "Work environment" OR DE "Occupational Health" OR DE "Occupational Diseases" OR DE "Named Groups by Occupation" OR DE "Occupational Exposure" OR DE "Occupations and Professions" OR DE "Women, Working" OR DE "Employment" OR DE "Burnout, Professional"
Work context terms	TI work* OR TI occupation* OR TI employ* OR TI job* OR TI professional* OR TI organi?ational OR work place* [tw] OR workplace* [tw] OR business* [tw]
Search for workplace factors (under psychosocial work environment)	DE "Stress, Psychological" OR DE "Support, Psychosocial" OR DE "Job Satisfaction" OR DE "Employee Performance Appraisal" OR DE "Employ- ee Grievances" OR DE "Social Justice" OR DE "Social Justice/PF" OR DE "Downsi?ing, Organi?ational" OR DE "Staff Development" OR DE "Organi?ational Culture" OR DE "Bullying" OR DE "Prejudice" OR DE "Discrimination" OR DE "Discrimination, Employment" OR DE "Interpersonal Relations" OR DE "Communication" OR DE "Stress, Occupational" OR DE "Workplace Violence" OR DE "Job Re-Entry"

	TI "psychosocial" OR TI "psychosomatic" OR TI "job strain" OR TI "work strain" OR TI "work demand*" OR TI "job demand*" OR TI "high demand*" OR TI "low control" OR TI "lack of control" OR TI "work control" OR TI "job control" OR TI "decision latitude" OR TI "work influence*" OR TI "demand resource*" OR TI "effort reward*" OR TI "time pressure*" OR TI "recuperation*" OR TI "work overload*" OR TI "work over-load*" OR TI "recovery" OR TI "coping" OR TI "work ability" OR TI "social support" OR TI "support system*" OR TI "social network*" OR TI "emotional support" OR TI "interpersonal relation*" OR TI "interaction*" OR TI "justice*" OR TI "injustice*" OR TI "job satisfaction" OR TI "work satisfaction" OR TI "boredom" OR TI "skill discretion*" OR TI "staff development" OR TI "discrimination" OR TI "harass*" OR TI "work-place conflict*" OR TI "workplace violen*" OR TI "work-place violen*" OR TI "bullying" OR TI "ageism" OR TI "homophobia" OR TI "racism" OR TI "sexism" OR TI "victimi?ation*" OR TI "silent workplace*" OR TI "role ambiguity" OR TI "role-conflict*" OR TI "workrole*" OR TI "working hour*" OR TI "working time" OR TI "day-time" OR TI "night-time" OR TI "shift work*" OR TI "work shift*" OR TI "temporary work" OR TI "full-time" OR TI "part-time" OR TI "flexible work*" OR TI "organi?ational change" OR TI "organi?ational change" OR TI "lean production" OR TI "job security" OR TI "job insecurity"
Search for organisational and individual level interventions	exp Self Care OR occupational intervention* [tw] OR occupational therap* [tw] OR prevent* [tw] OR intervention* [tw] stress manag* [tw] OR program* [tw] OR polic* [tw] OR therap* [tw] OR tool [tw] OR framework [tw] OR support* [tw] OR plan [tw] OR template [tw] OR aid [tw] OR recover* [tw] OR promot* [tw] OR train* [tw] OR accommodat* [tw] OR adjustment* [tw] OR modificat* [tw] OR disclos* [tw] OR initiative* [tw]
Systematic Reviews (DE)	(DE "Systematic Review" OR DE "Meta Analysis" OR DE "Scoping Review") OR (CF Y)
Systematic Reviews	TI "Systematic Review*" OR TI "mapping review*" OR TI "systematic litera- ture analysis" OR TI "scoping review*" OR TI "rapid review*" OR TI "evidence map*" OR TI "systematic mapping" OR TI "Systematically review" OR TI "Sys- tematic literature review*" OR TI "HTA" OR TI "HTA report" OR TI "HTA-report" OR AB "Systematic Review*" OR AB "mapping review*" OR AB "systematic literature analysis" OR AB "scoping review*" OR AB "rapid review*" OR AB "evidence map*" OR AB "systematic mapping" OR AB "Systematically re- view" OR AB "Systematic literature review*" OR AB "HTA" OR AB "HTA report" OR AB "HTA-report"
Limited	(human and english language and adulthood <18+ years>)