Work and Health 2

Work-related causes of mental health conditions and interventions for their improvement in workplaces

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Mental health problems and disorders are common among working people and are costly for the affected individuals, employers, and whole of society. This discussion paper provides an overview of the current state of knowledge on the relationship between work and mental health to inform research, policy, and practice. We synthesise available evidence, examining both the role of working conditions in the development of mental disorders, and what can be done to protect and promote mental health in the workplace. We show that exposure to some working conditions is associated with an increased risk of the onset of depressive disorders, the most studied mental disorders. The causality of the association, however, is still debated. Causal inference should be supported by more research with stronger linkage to theory, better exposure assessment, better understanding of biopsychosocial mechanisms, use of innovative analytical methods, a life-course perspective, and better understanding of the role of context, including the role of societal structures in the development of mental disorders. There is growing evidence for the effectiveness of interventions to protect and promote mental health and wellbeing in the workplace; however, there is a disproportionate focus on interventions directed towards individual workers and illnesses, compared with interventions for improving working conditions and enhancing mental health. Moreover, research on work and mental health is mainly done in high-income countries, and often does not address workers in lower socioeconomic positions. Flexible and innovative approaches tailored to local conditions are needed in implementation research on workplace mental health to complement experimental studies. Improvements in translating workplace mental health research to policy and practice, such as through workplace-oriented concrete guidance for interventions, and by national policies and programmes focusing on the people most in need, could capitalise on the growing interest in workplace mental health, possibly yielding important mental health gains in working populations.

Introduction

Mental health problems and disorders are common in the working population.[1–3] This issue has substantial implications for the affected individuals, their employers, and whole of society, prompting many national and international policy and practice initiatives. In September, 2022, WHO published guidelines on mental health at work, together with a joint policy brief by WHO and the International Labour Organization.[1,2]

This paper—the second in a Series of three papers on work and health—provides an overview of the current state of knowledge, recommendations, and research needs to inform the continued development of workplace mental health policy and practice. We start by defining key terms and delineating why work and mental health are important concerns for research and practice. We then synthesise the available evidence, examining first, the causal role of working conditions in the development of mental disorders, and second, what can be done to protect and promote mental health in the workplace. We give directions for both future research and for policy and practice. We conclude that the workplace offers considerable potential to influence population mental health by preventing harm, promoting the positive aspects of work, and providing support for people with mental health problems manifesting in the workplace setting, but also argue that this only can be achieved by continued activities in research, and the development of policy and practice.

***Panel 1:* Mental health definitions**

- Mental disorders are clinical phenomena, such as depressive disorders, anxiety disorders, and schizophrenia, assigned a code in diagnostic manuals[5]
- Mental health problems include a broader range of mental health conditions, also encompassing subclinical and subthreshold disorders and conditions not recognised as medical conditions in diagnostic manuals, for example, psychological distress and burnout[6]
- Mental wellbeing is a positive construct (not framed in terms of deficits or limitations), encompassing thriving and actualisation, positive feelings, and positive social and psychological functioning[7]

Mental health in the working population

According to WHO, mental health is "a state of wellbeing, in which an individual realises his or her own abilities, can cope with the normal stresses of life, can work productively, and is able to make a contribution to his or her community".[4] Three aspects of mental health can be distinguished: mental disorders, mental health problems, and mental wellbeing (panel 1). These distinctions are important because the evidence base varies substantially for each of the three aspects, and there are differing implications of the extant knowledge for each aspect

(eg, for protection, promotion, and compensation). More details are available in the appendix (pp 2–3). Based on validated measures used in psychiatric epidemiological studies, average national estimates of the prevalence of mental disorders in the working-age population are about 15%.[3] Depressive, anxiety, and substance use disorders are the most common,[8] and have been suspected to have further increased during the COVID-19 pandemic.[9] Mental disorders and suicide are more common among workers of lower occupational grade compared with other people of working age,[10–16] which suggests that work might be an important social determinant of mental health, although selection of individuals with mental health problems into jobs of low occupational grade might also play a role.[17] The diagnosed prevalence of specific mental disorders differs depending on factors including gender, age, ethnicity, and culture. For example, depressive disorders are more frequently diagnosed in women than in men, whereas substance use disorders are more frequently diagnosed in men compared with women.[8] Research findings are inconsistent on whether these differences are due to true differences in prevalence or are, at least partly, explained by biases (eg, different approaches to diagnosing disorders), or barriers to seeking help in the health-care system.[18]

Effects of mental health problems

The nature, severity, duration, and chronicity of mental disorders are important determinants of current and future disability. Workers with mental disorders are at increased risk of sickness absence, unemployment, permanent exit from employment, and lower lifetime earnings and income, which in turn might exacerbate mental disorders.[19–24] At the societal level, it is estimated that more than US$ 1 trillion are lost globally in productivity due to depressive and anxiety disorders each year.[1,2,25]

At the individual level, workers with mental health problems face issues regarding job retention, unemployment, potential for discrimination, and impaired quality of life.[26,27] For organisations and employers, concerns include decreased productivity and organisational performance.[26] In many high-income countries, mental disorders are the most rapidly rising category of disorders leading to early exit from the workforce onto disability pension.[3] Claims for work-related mental health problems have also become a major cost for workers compensation systems.[26]

Consequently, workplace mental health has become an area of active policy and practice development. For example, the 2017 UK *Thriving at Work* report[28] sets out what employers can do to support the mental health of workers, and details the major costs of poor mental health to businesses and the economy. In Australia, the National Mental Health Commission has launched the National Workplace Initiative to provide a consistent approach to workplace mental health nationwide.[29] From the occupational health perspective, policy initiatives to codify the management of psychosocial risks at work include the Canadian Standard from 2013,[30] International Organization for Standardization guidelines from 2021,[31] and WHO guidelines from 2022 (panel 2).[1,2]

See Online for appendix

The causal role of working conditions in the development of mental disorders

Although it is widely agreed that working conditions can affect worker wellbeing both positively and negatively,[26] there is less certainty regarding the potential role of work in the onset of mental disorders. Research on work and the risk of mental disorders is a young field. In the 1960s and 1970s, work and organisational psychologists, as well as stress researchers, began examining the effects of what was later termed the psychosocial work environment[32] on workers' mental health.[33–36] Large-scale epidemiological studies on working conditions and the onset of mental disorders, however, were not done until the end of the 20th century.[37,38] After the turn of the century, the proliferation of prospective studies accelerated, with most research focusing on depressive disorders.[39] Today, a considerable number of systematic reviews and meta-analyses have been published summarising the literature on working conditions, and the risk of mental disorders.

To provide an overview of the current evidence about the association between work environment and the risk of mental disorders, we have done an overview of systematic reviews, also known as an umbrella review or meta-review.[40,41] The umbrella review methodology was developed in response to the rapidly increasing number of systematic reviews and meta-analyses.[42] Umbrella reviews synthesise the results of published systematic reviews and meta-analyses and can provide researchers and policy makers with a comprehensive synthesis and assessment of the research evidence.[40,41]

Methods for the umbrella review

We searched for systematic reviews with meta-analyses of prospective cohort studies published between Jan 1, 2017, and Dec 11, 2021. By restricting the search to this period, we assumed that the results from older studies were included in the most recent reviews. The key parameters of our search were population, exposure,

Panel 2: **Key messages on prevalence and importance of workplace mental health**

- Mental health problems and mental disorders are common in the working population, especially among workers of lower occupational grade
- Mental disorders are important determinants of work disability, sickness absence, unemployment, permanent exit from employment, and lower lifetime earnings and income. These disorders incur substantial costs for workers, employers, and the whole of society

comparator, and outcome. We chose to focus on: working age population, worldwide; individuals exposed at work to specific physical, chemical, ergonomic, and psychosocial working conditions; individuals not exposed as a comparator; and onset of mental disorders as an outcome, as defined in ICD-10 or DSM-5.

We assessed the quality of the included reviews with the Health Evidence Quality Assessment Tool, which provides an overall score differentiating between reviews of weak (≤4 points), moderate (5–7 points), and strong (8–10 points) quality.[43] We assessed the certainty of evidence by reviewing the extracted estimates and by considering different factors for increasing and decreasing our confidence in the estimates. Method details are available in the appendix (pp 4–6).

Results of the umbrella review

We identified 1242 records, of which seven systematic reviews with meta-analyses remained eligible for inclusion into our umbrella review.[44–50] Details on the study selection are shown in the PRISMA flow diagram (appendix p 8), key characteristics of the seven included reviews (appendix pp 9–10), and the 24 reviews that were excluded after screening of the full text (appendix pp 11–12) are available in the appendix. Depressive disorders were the topic of six of the chosen reviews and mental disorder with a sickness absence certification was the topic of one review. Almost all primary studies in the chosen reviews came from high-income countries. Of the seven reviews, five were rated to be of strong quality, two of moderate quality, and none of weak quality. Quality assessment of the reviews is available in the appendix (p 13).

We extracted 26 pooled estimates from the seven reviews (figure). We categorised the estimates into four groups: general psychosocial work stress models, working time arrangements, negative acts at the workplace, and other working conditions. We did not pool the pooled estimates further because some of the estimates in the reviews were based on the same primary studies, and we judged the working conditions as too heterogeneous for pooling.

	Type of mental disorder (measurement)	Reference	Pooled estimate (95% CI)	Number of estimates
General psychosocial work stress models				
Job strain	Depressive disorders (clinical interview)	Madsen et al (2017)[45]	1·77 (1·47–2·13)	7
Job strain	Depressive disorders (hospital treatment)	Madsen et al (2017)[45]	1·27 (1·04–1·55)	14
Job strain	Mental disorders (proof of sickness certificate)	Duchaine et al (2020)[44]	1·47 (1·24–1·74)	11
Job strain	Depressive disorders (various measures a, b, c, d)	Mikkelsen et al (2021)[46]	1·14 (1·05–1·25)	12
Effort–reward imbalance	Depressive disorders (various measures a, c, d, e, f)	Rugulies et al (2017)[49]	1·49 (1·23–1·80)	8
Effort–reward imbalance	Mental disorders (proof of sickness certificate)	Duchaine et al (2020)[44]	1·66 (1·37–2·00)	3
Effort–reward imbalance	Depressive disorders (various measures a, c, d, e)	Mikkelsen et al (2021)[46]	1·53 (1·21–1·92)	7
Low procedural justice	Depressive disorders (various measures a, d)	Mikkelsen et al (2021)[46]	1·23 (1·02–1·47)	4
Low relational justice	Depressive disorders (various measures a, d)	Mikkelsen et al (2021)[46]	1·60 (1·14–2·24)	4
Working time arrangement				
Long working hours	Depressive disorders (various measures a, d, e)	Rugulies et al (2021)[50]	1·08 (0·94–1·24)	18
Negative acts in the workplace				
Bullying	Depressive disorders (various measures d, e, g)	Mikkelsen et al (2021)[46]	2·58 (1·13–5·93)	4
Violence and threats	Depressive disorders (various measures b, c, e)	Rudkjoebing et al (2020)[48]	1·42 (1·31–1·54)	4
Other working conditions				
High job demands	Mental disorders (proof of sickness certificate)	Duchaine et al (2020)[44]	1·23 (1·04–1·45)	7
High job demands	Depressive disorders (various measures a, b, c, d, e)	Mikkelsen et al (2021)[46]	1·08 (0·98–1·19)	22
Low job control	Mental disorders (proof of sickness certificate)	Duchaine et al (2020)[44]	1·25 (1·02–1·53)	5
Low job control	Depressive disorders (various measures a, b, c, d)	Mikkelsen et al (2021)[46]	1·07 (1·01–1·13)	14
Low decision authority	Depressive disorders (various measures a, b, c, e)	Mikkelsen et al (2021)[46]	0·93 (0·77–1·13)	9
Low skill discretion	Depressive disorders (various measures a, b, c, e)	Mikkelsen et al (2021)[46]	1·12 (0·98–1·29)	11
Low rewards	Mental disorders (proof of sickness certificate)	Duchaine et al (2020)[44]	1·76 (1·49–2·08)	3
Job insecurity	Depressive disorders (various measures a, e)	Rönnblad et al (2019)[47]	1·61 (1·29–2·00)	5
Job insecurity	Depressive disorders (various measures a, c, d, e)	Mikkelsen et al (2021)[46]	1·35 (1·21–1·50)	9
Low support (from colleagues)	Depressive disorders (various measures a, b, c, e)	Mikkelsen et al (2021)[46]	1·37 (1·07–1·74)	9
Low support (from supervisors)	Depressive disorders (various measures a, b, c, e)	Mikkelsen et al (2021)[46]	1·33 (1·11–1·60)	9
Low support (unspecified)	Mental disorders (proof of sickness certificate)	Duchaine et al (2020)[44]	1·12 (0·99–1·26)	10
Low support (unspecified)	Depressive disorders (various measures a, c, e)	Mikkelsen et al (2021)[46]	1·14 (0·98–1·32)	7
High emotional demands	Depressive disorders (various measures a, b, c)	Mikkelsen et al (2021)[46]	1·21 (1·08–1·36)	13

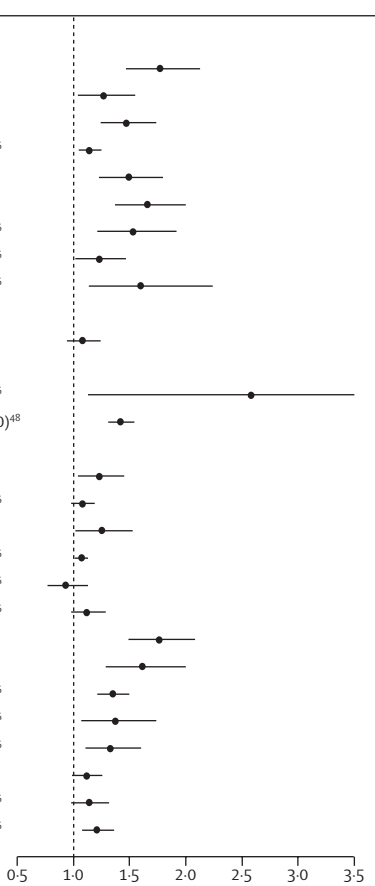

Figure: **Forest plot on working conditions and onset of mental disorders from seven systematic reviews**
a=clinical interview. b=hospital treatment. c=antidepressant treatment. d=self-reported doctor-diagnosed disorder. e=self-administered rating scale. f=register data on disability pension with diagnosis. g=combination of clinical interview and self-administered rating scale.

General psychosocial work stress models

This group included studies based on established psychosocial work environment exposure models: (1) the job strain model (combination of high job demands and low job control),[51] (2) the effort–reward imbalance model (combination of high effort and low reward at work),[52] and (3) the organisational justice model (consisting of the subdimensions of procedural and relational justice).[53] These models have been primarily developed with regard to the risk of cardiovascular disease. All these exposures were associated with the onset of depressive disorders, sickness absence due to mental disorders, or both. The pooled estimates ranged from 1·14 (95% CI 1·05–1·25) to 1·77 (1·47–2·13). The results were most robust for job strain, which was examined in the largest number of studies.

Working time arrangements

The pooled estimate for long working hours was 1·08 (95% CI 0·94–1·24). One review also reported estimates for shift work and night work;[46] however, these estimates were partly based on cross-sectional studies and therefore were not included.

Negative acts in the workplace

Exposure to workplace bullying was associated with a 2·58 times increased risk of depressive disorders, the strongest estimate among all working conditions (figure). However, this estimate was based on only four studies with a wide confidence interval (95% Cl 1·13–5·93) indicating the low precision of this estimate. The pooled estimate for workplace violence and threats indicated a 1·42 times increased risk of depressive disorders with a narrow confidence interval (95% CI 1·31–1·54).

Other working conditions

Other working conditions included mainly single components of the general psychosocial work stress models (eg, high job demands, specific job control measures, and job insecurity) plus low social support and high emotional demands. The estimates ranged from 0·93 (95% CI 0·77–1·13) for low decision authority, to 1·76 (1·49–2·08) for low rewards at work.

Interpretation and discussion of the umbrella review

Of the 26 estimates depicted in the figure, 20 estimates pertained to depressive disorders, whereas six pertained to diagnosed mental disorders from sickness absence certificates that included, but were not limited to, depressive disorders. Thus, the evidence is largely restricted to depressive disorders, as reviews on other mental disorders were scarce.

20 (77%) of 26 pooled estimates indicated that exposures to adverse working conditions were associated with an increased risk of mental disorders. The magnitudes of these associations were generally low (13 pooled relative risk estimates between 1·07 and 1·49) or moderate (six pooled relative risk estimates between 1·53 and 1·77, these estimates were for job strain, effort–reward imbalance [in two reviews], low relational justice, low rewards, and job insecurity). Only one pooled relative risk estimate was above 2·00 (workplace bullying, 2·58), which is regarded as the threshold for large magnitude of effect according to the Grading of Recommendations, Assessment, Development and Evaluations, and the Navigation Guide.[54,55] However, also small to moderate estimates might entail substantial potential for a prevention in case exposure to the factor is highly prevalent. Niedhammer and colleagues[56] estimated that between 17% and 35% percent of depressive disorders in Europe might be prevented by eliminating adverse psychosocial working conditions, because some of the exposures were highly prevalent (eg, job strain with the prevalence of 26%). The calculation by Niedhammer and colleagues is based on the assumption that the reported associations between working conditions and the risk of developing mental disorders are causal.

After reviewing the extracted estimates from the reviews and considering the factors for increasing and decreasing confidence in the estimates (panel 3), we conclude that there is clear evidence from prospective cohort studies that there is a statistical association between exposure to certain adverse working conditions and risk of depressive disorders; for other mental disorders, there is an insufficient number of studies to reach this conclusion. This association is unlikely to be caused by chance and might indicate a causal effect of some working conditions on the risk of developing depressive disorder. However, we cannot rule out that the calculated estimates of association might be inflated or deflated due to biases (panel 4).

Future directions for research on the effects of working conditions on mental health

To further improve the certainty of the evidence, we suggest seven areas for future research, which we discuss in more detail in the appendix (pp 14–15).

Improved theoretical framework

Research on work stress models, such as job strain, did not originate from an interest in workplace mental health but in other health outcomes, primarily cardiovascular diseases.[57] Consequently, the conceptualisations of work stress factors are not well aligned with concepts discussed in psychiatry that, for example, consider humiliation and severe threats to self-esteem as key causes of depressive disorders.[11,58] There is a need for closer collaboration between scholars in occupational epidemiology and psychiatry to develop theoretical frameworks explaining the processes that could link adverse job exposures to mental disorders. The potential and added value of such a collaboration has been recently

Panel 3: **Certainty of the evidence**

Factors that increase confidence in the estimates presented in the figure:

- The quality of most reviews was high, and the reviews had thoroughly examined the risk of bias in the primary studies
- All primary studies included in the reviews were prospective cohort studies, the gold standard design for assessing causation in epidemiology when randomised controlled trials are not feasible
- Nearly all primary studies adjusted for the basic confounders of gender, age, and socioeconomic status. Many primary studies further adjusted for an even wider range of potential confounders
- Estimates were consistent across the reviews
- The confidence of results is particularly high for job strain (indications of exposure–response associations),[45] and workplace bullying (large pooled estimate)[46]

Factors that decrease confidence in the estimates are:

- Except for workplace bullying, all pooled estimates of the association between workplace factors and risk of mental disorders were smaller than 2·0, thus residual confounding remains a concern
- The estimate of workplace bullying was strong, but was based on only four primary studies[46]
- Only a few primary studies used repeated measures of exposures or analysed exposure–response associations
- The time of onset of a mental disorder might be earlier than the time of diagnosis
- Studies using interviews or rating scales to assess mental disorders might have missed mental disorders that occurred between baseline and follow-up, and were in remission at follow-up assessment
- Studies using health-care register data will have missed mental disorders of individuals who did not seek help in health-care institutions, including individuals who were facing specific barriers at work for seeking mental health care, such as pressure to work during an illness (eg, in case of precariously employed workers with no paid sick leave)
- Most estimates were based on self-reported working conditions, raising concerns about reporting bias

discussed for examing the role of work in suicidal behaviour.[59] Valuable insight for better theoretical frameworks might also be gained by gathering information from workers with lived experience of mental health problems.

Improved exposure assessment strategies

More studies are needed that are less dependent on assessing working conditions by self-report, either by aggregating self-reported working conditions at the job group level (job exposure matrix)[60] or the work unit level.[61] Some working conditions could be measured by trained observers,[62] or could be approximated by using information from registers.[63] As these alternative measures have their own weaknesses, we suggest a triangulation approach, which combines methods with different risks for overestimation and underestimation of the exposure–outcome association.[64]

Panel 4: **Key messages on the causal link between working conditions and mental disorders**

- There is consistent evidence from prospective cohort studies showing associations between exposure to adverse working conditions and the risk of depressive disorders
- These associations indicate that working conditions are possibly important modifiable determinants of mental health; however, uncertainties remain due to possible biases

Improved understanding of biopsychosocial mechanisms

Possible pathways that might link working conditions to mental health include dysregulation of the hypothalamic–pituitary–adrenal stress axis, inflammatory processes, disturbance of circadian rhythm, loss of neuroplasticity, and inhibition of neurogenesis.[65–69] However, knowledge about these pathways is scarce.

Innovative analytical methods and study designs

In a few studies, some of which have not been covered in systematic reviews, innovative methods and study designs have been applied to strengthen causal inference on the effects of working conditions on mental health. These include fixed effects regression, inherently controlling for unmeasured time-invariant confounding,[70] instrumental variable analyses,[71] and emulated trials analysing change in exposure to specific working conditions with subsequent change in mental health.[72]

Life-course perspective

Mental disorders have complex, multifactorial causes, probably involving genetic, biological, psychological, and social risk factors that act over the life course and interact with each other.[73–77] Thus, working conditions might be component causes in a multifactorial causal model of depressive disorders,[78] representing one part of the exposome—the totality of exposures individuals experience over the life course.[79] Consequently, working conditions should be analysed together with other life domains, preferably over the life course.

Exacerbation, relapse, and recurrence

Work environment research has focused mainly on the onset of mental disorders. Little is known about whether working conditions can contribute to the exacerbation of mental health problems or to the progression of mental health problems (eg, distress or burnout) into a mental disorder (eg, depressive disorder). Knowledge on

whether working conditions can influence the chances of a relapse or recurrence of mental disorders is also scarce.

Understanding the role of context

Some studies suggest that welfare state regime and national labour market policies modify the association between working conditions and mental health.[80,81] Societal structures can condition, modify, and shape working conditions and their effect on workers' health.[32] Thus, a perspective that is restricted to the individual-level risk factors for mental disorders, without a broader sociological perspective, might be too narrow to fully understand the relationships between working conditions and mental health.[17,82,83]

Protecting and promoting workers' mental health and wellbeing

The evidence on prevention and promotion of workplace mental health varies by intervention aims and outcomes (eg, reducing job stressors, improving job quality, promoting early detection of mental health problems, and preventing disorders and symptoms) and by intervention strategies (eg, work-directed, worker-directed, and illness-directed). Hence, we narratively synthesised systematic reviews and umbrella reviews on the effectiveness of workplace mental health interventions alongside other emerging evidence.

Principles and conceptual models for workplace mental health interventions

Over the last three decades, workplace mental health interventions have evolved independently along three main threads: protection from harm, promotion of health and wellbeing, and addressing the needs of those who are potentially at increased risk of developing a mental health problem or disorder.[26,84]

The integrated approach to workplace mental health combines three threads in a comprehensive framework with complementary action areas: (1) prevent harm—protecting mental health by reducing risk factors for mental disorders and mental health problems; (2) promote the positive—promoting mental health and wellbeing by developing the positive aspects of work, worker strengths, and positive capacities, such as participatory job redesign and workers' resilience; and (3) respond to problems—by responding to potential mental health problems or disorders as they manifest in work contexts. This framework addresses both work-related and non-work-related mental health, distils the complexity of this topic to three essential areas of action, avoids jargon, is accessible to workplace stakeholders, and encompasses organisational responses, ranging from relatively simple strategies to mature programmes incorporating numerous intervention elements.[85] Multiple elements are required to address distinct targets and objectives (eg, work, worker, and manager), operating across the public health intervention levels of primary, secondary, and tertiary interventions,[86] and corresponding to universal, selected, and indicated interventions in mental health terms.[87]

Preventing harm prioritises strategies assessing work-related risks to mental health, and mitigating those risks to the extent feasible. Such a strategy is both a common legal and ethical mandate in many countries.

Promoting the positive entails developing positive aspects of work (eg, participatory job redesign to emphasise worker strengths) and positive capacities (eg, workers' resilience and mindfulness programmes). These interventions pursue positive outcomes (eg, wellbeing and worker engagement), as opposed to being risk-factor focused or illness focused (ie, avoiding negative outcomes). Promoting the positive is not a legal requirement; however, such a strategy has a dual value in that positive mental health and wellbeing might buffer the effect of job stressors on mental health,[88] and promote wellbeing, positive emotions, and optimal social and psychological functioning.[7]

Responding to problems entails a broad range of possible responses to mental health problems and disorders at work (whether caused by work or not), corresponding to the progression from subclinical mental health problems towards diagnosed mental disorders.[89] Strategies enabling safe and non-discriminatory help seeking (eg, through confidential employee assistance programmes) or help offering (eg, through Mental Health First Aid) can improve early detection of mental disorders, which can improve treatment effectiveness.[90,91] These activities are best supported by universal workplace mental health literacy and programmes aimed at destigmatising mental health problems. For workers with more serious mental health problems, referral pathways and access to treatment are essential. Upon recovery from a mental disorder, workplace accommodations might enhance return to work outcomes, such as time to return to work or sustained return to work.[92] In some cases, though, moving to a different workplace or even a different type of job might be needed, which would entail the need for job training and possibly also financial support in the interim phase.[93] In many countries, there are relevant legal and ethical mandates on occupational safety and health, workers' compensation, anti-discrimination, disability employment, and other legislation, which support workers in this situation.

The integrated approach is fundamentally principles-based, and there is evidence regarding the efficacy and effectiveness of particular intervention elements. The WHO *Guidelines on Mental Health at Work*, launched on Sept 28, 2022, align with our narrative review, and include a series of evidence reviews grouped into the following six intervention areas: (1) organisational, (2) manager and worker training, (3) individual interventions, (4) return to work programmes, (5) vocational support programmes,

and (6) screening programmes.[1] The accompanying joint WHO and International Labour Organisation policy brief, presents three overarching strategies, which overlap substantially with the integrated approach: (1) prevent mental health conditions by reshaping work environments to reduce psychosocial risk; (2) protect and promote worker mental health by strengthening awareness, skills, and opportunities for recognising and acting early on mental health issues; and (3) support workers with mental health conditions to access employment, continue working, and thrive at work.[2]

Research evidence from workplace intervention studies

Worker-directed approaches, also called individual approaches, aim to improve the individual worker's competencies, knowledge, and strengths to cope with working conditions. In contrast, work-directed approaches, also called organisational approaches, aim to improve working conditions and the organisation of work.

Prevent harm

There is a considerable amount of research on organisational interventions focusing on improving worker job control, which is a key element of the job strain model.[51] Reviews indicate that increasing workers' job control has positive effects on workers' mental health.[89,94] Examples are participatory problem-solving groups,[95,96] and increasing workers' influence on shift-schedules.[97,98] These interventions might be beneficial for mental health, either directly through positive effects of experiencing more job control,[99] or indirectly, via increased ability to influence other work-based risk factors.[99,100]

Although the results of interventions concerning job control are fairly consistent, reviews on other types of workplace interventions reported mixed,[101,102] or no effects,[103,104] which might be in part due to suboptimal implementation of those interventions.[105] More research is needed evaluating the sufficient quality and intensity of implementation, especially in light of research suggesting that changes in psychosocial working conditions need to be substantial to lead to measurable health effects.[106] A combination of organisational and individual approaches might be particularly efficacious.[107] This notion is supported by reviews on the combination of organisational and individual interventions to reduce burnout.[108–111]

Promote the positive

Promoting the positive in workplace settings is a growing concept, which evolved during the last 10 years, but the evidence base is still small.[112–116] Most reviews focus on individual-directed interventions, and only a few have examined organisational-directed interventions.[112–114,116]

One organisational approach studied extensively is manager and leadership training. This training aims to increase managers' knowledge, change attitudes, and promote self-reported supportive behaviours towards workers experiencing mental health problems, and increasing managers' skills for developing positive aspects of work.[89,117,118] Evidence on the effect on workers' mental health is poor, as most studies did not measure worker outcomes; however, some studies found improvements in managers' and supervisors' skills and an increase in their awareness of mental health.[117,118] Considering the key role of leaders and supervisors as role models, decision makers, and facilitators of workplace changes, more research on the effects of leadership training is urgently needed.

Respond to problems

Individual approaches, such as supporting workers in coping with stressful situations, or cognitive behavioural therapy-based approaches, have been widely tested and consistently show improvements in workers' stress and mental health symptoms.[94,119] However, the impacts of these interventions on long-term mental health and organisational outcomes, such as absenteeism, presenteeism, and productivity are yet to be sufficiently studied.[94]

Mental Health First Aid[120] and workplace suicide prevention[121] have been shown to be useful approaches, but need further development. Mental Health First Aid needs more studies in work settings,[122] and suicide prevention needs to go beyond responding to acute distress and suicidal crises, and shift upstream to reducing risk factors. Although workplace suicide prevention shows some evidence of effectiveness,[121,123,124] particularly among emergency responders,[125] there is a need for greater attention to primary (universal) level intervention, such as reducing exposures to suicide-associated job stressors.[126]

Anti-stigma interventions have been shown to improve workers' knowledge and supportive behaviour towards colleagues with mental health conditions, supporting disclosure and inclusivity in workplaces.[127,128] Qualitative studies and expert-based guidelines suggest that support from supervisors and colleagues, and workplace adjustments, such as reduced working hours, are effective for improving recovery and return to work of workers with mental health conditions.[129,130] Cognitive behavioural therapy-based return-to-work programmes (ie, focusing on work-related concerns or development of work related problem solving skills) might both reduce depressive symptoms and improve occupational outcomes, such as faster return to work.[94]

Future directions for intervention research

Randomised controlled trials (RCTs) are considered the gold standard for evaluating intervention efficacy and effectiveness. However, RCTs have limitations regarding

complex workplace interventions that often cannot be fully randomised or standardised, and are influenced by the organisational and cultural context.[131,132] RCTs are more applicable to individual-level than organisational-level interventions, as organisational-level interventions require random assignment of distinct work units (cluster RCT designs), with each cluster counting as one observation. Also, key strategies for organisational-level interventions, such as a participative approach,[133] active and context-specific support by supervisors,[117,134–136] and the co-creation or co-design of mental health interventions,[137] are difficult to realise within an individual-randomised design. The focus on RCTs and meta-analyses might therefore lead to an overuse of narrow worker-directed intervention approaches (eg, psychoeducation or mindfulness) and an underuse of more complex and resource and time intensive work-directed approaches.[109]

The updated Medical Research Council framework for the development and evaluation of complex interventions to improve health might be particularly suitable for investigating multi-component workplace mental health programmes.[138] This framework allows the inclusion of multiple measured short-term and long-term mental health outcomes and potential intermediary factors (eg, improved working conditions) that could indicate not only whether interventions work, but also how they work (ie, through which pathways and mechanisms).[138]

Realist evaluation offers an approach allowing an understanding of how interventions work and how they can be affected by context.[139,140] In the last 20 years, implementation research in occupational health has evolved, documenting barriers and facilitators of implementing workplace interventions,[141–143] partly based on evaluations of failed interventions.[144,145] Understanding whether failure was due to shortcomings in the intervention programme theory or problems in the implementation (eg, poor fidelity of implementation, inadequate programme design, or low participation) is key.[146] Systematic reviews, meta-analyses, and meta-synthesis of qualitative study results of process evaluations are urgently needed to better inform future research and practice.[147] Further insights might also be gained by involving workers with lived experience of mental health problems.

In 2020, under the Horizon 2020 programme, the European Commission funded large-scale European workplace intervention studies that aim to promote and protect workers' mental health, including a focus on implementation research. The projects are ongoing and their results in the upcoming years will likely have a considerable effect on future discussions about possibilities and challenges of workplace mental health interventions. The intervention sites include middle-income European countries, such as Albania and Kosovo.[148] A description of the aims and methods of the projects can be found in a recorded webinar,[149] and two study design protocol papers of the H-WORK project,[150] and the MENTUPP project,[148] respectively.

Future directions in workplace mental health policy and practice

Guidelines, policies, and standards supporting a strategic approach to mental health interventions

Workplace wellness, wellbeing, and mental health promotion have become a billion dollar industry offering a vast selection of unregulated and unvalidated programmes.[1,151] Workplaces need authoritative evidence-informed guidance to help them navigate the flood of information and advice available (panel 5).

Sweden in 2015,[152] and Denmark in 2020,[153] adopted legally binding regulatory approaches, mandating employers to regularly assess, improve, and monitor specific psychosocial risk factors at work, such as high workload, emotional demands, and workplace bullying.[152,153] Since 2015, Japan mandates the implementation of the Stress Check Program to monitor and prevent mental health problems at workplaces employing 50 or more people.[154,155]

Other governments have developed less binding national policies, standards, and guidelines. Examples are: the UK Health and Safety Executive Management Standards for psychosocial work risks,[156] the UK National Institute for Health and Care Excellence guideline on Mental Well-being at Work,[157] and the Canadian National Standard for Psychological Safety in the Workplace.[30] At the international level, the International Organization for Standardization published a standard for psychological safety at work in 2021.[31] Also, an international consortium of researchers and stakeholders, including WHO, has developed the European framework for psychosocial risk management.[158] Finally, WHO recently published guidelines on mental health at work,[1] accompanied by a WHO and International Labour Organisation policy brief.[2]

The most notable features of these guidelines include the recommendation of a strategic organisation-wide

***Panel 5:* Key messages about protecting and promoting worker mental health and wellbeing**

- Integrated intervention strategies have gained traction and might improve both working conditions and worker mental health
- In practice, most interventions focus on the individual level only; more proactive interventions to improve work organisation and working conditions need to be developed and implemented to meet legal and ethical mandates on providing psychologically safe work environments
- Improvements in collaborative interdisciplinary approaches involving all relevant stakeholders are essential to develop and implement co-designed and context-specific interventions

approach integrating mental health interventions into existing policies and practices. The WHO guidelines include medium-term and long-term measures to improve working conditions and to improve people management rather than ad-hoc solutions. These guidelines promote the continual monitoring and systematic assessment of psychosocial risks to develop need-based interventions, and the design of healthy working conditions in partnership with workers. Other recommendations include the implementation of policies and procedures in organisations for supportive people management, (eg, training supervisors, supportive leadership style, and making staff mental health and wellbeing, as well as intervention activities, part of the performance evaluation for companies and managers).[159] Calls have also been made for evaluating mental health policies during the COVID-19 pandemic.[160]

Although many guidelines specify what to do, they are less explicit about how to implement interventions into daily business practice. Future endeavours should focus on the enhancement of guidelines, standards, and policies by adding implementation guidance, to facilitate their uptake and successful implementation across different contexts and industries.[134,161]

Policies addressing workplace mental health inequalities

There is an urgent need for policy strategies to address workplace mental health inequalities.[17] Workers of lower occupational grade are the most exposed to working conditions adversely affecting mental health, yet are the least likely to be provided with workplace mental health interventions.[26,84] Working conditions of workers of lower occupational grade are often more rigid and less amenable for modifications than working conditions of workers of higher occupational grade. Moreover, low-wage workers have usually little or no latitude for accommodating the workload by reducing working hours. If not addressed, this situation could contribute to the widening of mental health inequalities.[17]

Implications for health services

Clinicians, including general practitioners, play an important role in assessing, diagnosing, and assisting individuals with work-related mental health problems and disorders, and are often the first point of contact. Studies suggest, however, that work hazards are rarely considered in the clinical assessment and management of mental disorders,[162,163] and few cases of work-related mental disorders are reported to the occupational health service.[164] Some clinical practice guidelines are available,[165] including guidance on how to determine the work-relatedness of mental health problems and disorders, early identification, communication with the patient's workplace, and strategies for facilitating return to work. Understanding working conditions can also help in determining why recovery from a mental health problem is delayed, as well as in how the return to work process can be best managed.[162,163]

Future developments

Several important societal developments might considerably affect workplace mental health in the future, including increasing digitalisation and telework (partly caused by the COVID-19 pandemic), large migrant labour workforces, the emergence of the gig economy, and the increase in precarious employment. These and other topics are comprehensively discussed in paper 1 of the work and health Series.[17]

Conclusions and recommendations

Workplace mental health is scientifically informed by epidemiological research into work-related determinants of mental health, and by intervention and implementation research. This research has grown rapidly and has generated important insights over the past two decades. There is, however, a need to further develop the evidence base to consolidate our understanding of the problems (eg, to improve causal inference regarding risk and protective factors and mechanisms of action), and to comprehensively devise, implement, and evaluate specific interventions (eg, co-design strategies, mixed methods implementation evaluation, and effectiveness studies). Almost all high-quality research evidence on work and mental health stems from high-income countries. More and high-quality research from low-income and middle-income countries is urgently needed.

The workplace offers considerable potential to influence mental health by preventing harm and promoting positive aspects of work, and by facilitating timely, safe, and non-discriminatory support for those showing signs of mental health problems. Realising this potential requires a collaborative approach involving all key stakeholders, including governments, employers, employer organisations, workers, workers unions, workers with lived experience of mental health problems, occupational health service providers, non-governmental organisations, occupational health and safety professionals, and clinical practitioners. Based on the research evidence summarised, we make the following recommendations to policy makers and stakeholders.

Recommendation one: regulate and control working conditions, for which scientific evidence suggests an increased risk of mental health problems and mental disorders

Based on the precautionary principle, policy makers at local, national, and international levels should regulate and control exposure to working conditions for which research studies suggest a contribution to the development of mental health problems and mental disorders. The need for regulation and control is further supported by the ethical—and in many jurisdictions also legal—mandate for employers to provide psychologically

safe work. Prevalent practice overemphasises individual-directed and illness-directed interventions, but under-emphasises work-directed preventive interventions, which should be the focus of workplace health and safety regulators. This aligns with recommendation 1 in the WHO *Guidelines on Mental Health at Work* from 2022.

Recommendation two: develop and improve policy on mentally healthy work, with a particular focus on work environments of unskilled and low-wage workers

Improved policy on mentally healthy work is needed for all workers and all areas of employment. However, improved working conditions and mental health services should be prioritised for marginalised, low-skilled, and low-wage workers, because these workers are disproportionally affected by mental health problems and poor psychosocial working conditions.[17] Policy and guidance should not be restricted to individual-directed interventions, but must include organisational-directed interventions. All interventions should be rigorously monitored and evaluated to further inform evidence, and improve and maintain practice of mentally healthy work.

Recommendation three: develop guidance on how to create and maintain mentally healthy work at all levels of an organisation and promote systematic professional capacity building and training programmes for supervisors and occupational health and safety professionals

In addition to policy on mentally healthy work, there is a need for workplace guidance on how such mentally healthy work can be achieved. Workplace mental health should be made a collective concern at all levels of an organisation. Improving workplace mental health requires better guidance for how mentally healthy workplaces can be created, which also requires systematic professional capacity building and training programmes for supervisors and occupational health and safety professionals, to facilitate implementation and maintenance of mentally healthy work and workplaces. This recommendation aligns with recommendation 4 in the 2022 WHO *Guidelines on Mental Health at Work*.

Recommendation four: improve governmental support and workplace conditions to enable individuals with mental health problems and disorders to be part of the workforce

A healthy workplace with good working conditions can provide enormous benefits for individuals with mental health problems and mental disorders.[24] Governments and other policy makers should provide structural conditions and support for workplaces, to enable them to be increasingly inclusive of workers with mental health problems and mental disorders. Organisational commitment to diversity, equity, and inclusion should encompass the provision of working conditions that enable these individuals to participate in the workforce. This organisational committment also entails the provision of strategies to support safe return to work after periods of sickness absence due to mental health problems and mental disorders, including adjustments in working tasks and working conditions. This recommendation aligns with recommendations 3, 11, and, 12 in the WHO *Guidelines on Mental Health at Work* from 2022.

Recommendation five: routinely enquire about work and working conditions in the clinical assessment, diagnosis, and management of mental health problems and mental disorders

General practitioners, psychiatrists, psychologists, nurses, and other clinicians and health professionals should routinely enquire about work and working conditions in the clinical assessment, diagnosis, and management of mental health problems and mental disorders. Clinical guidelines and standards for general practitioners and other health-care professionals need to be developed, specifying how to assess and manage work-related mental health issues. These guidelines should be coupled with systematic education and training programmes for health-care professionals.

Recommendation six: ensure that the workplace is included into governmental mental health strategies, and build societal awareness about the importance of mental health in the workplace

For workplace mental health strategies to be successful, activities must reach beyond the workplace and embrace the whole of society. Societal awareness should be built regarding the importance of mental health in the workplace. This awareness-building includes advocacy and campaigns to increase mental health literacy in all parts of society, destigmatisation of mental health problems and mental disorders, and promotion of mental wellbeing. The joint and complementary efforts of stakeholders at all levels of the workplace, government, and civil society, is essential to the pursuit of mentally healthy work for all.

Contributors

RR and IEHM had the original idea for this paper, drafted the first outline and conducted the umbrella review used in this paper. RR, BA, BAG, NK, and IEHM assessed the quality of the review studies. All authors contributed to writing the final manuscript. RR, IEHM, and ADL led the revision of the manuscript after peer-review and all other authors substantially contributed to the revision for re-submission. All authors approved the final version of the manuscript.

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