Effective interventions for mental health in male-dominated workplaces

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Abstract

Purpose – *The purpose of this paper is to identify mental health interventions within male-dominated industries.*

Design/methodology/approach – *A systematic literature review was undertaken, examining mental health interventions within male-dominated industries. Major electronic databases, grey literature and reference lists for English language studies published January 1990-June 2012 were searched. Independent extraction of the studies was completed by two reviewers using predefined data fields including study quality measures.*

Findings – *Five studies met inclusion criteria. The available evidence suggests that effective interventions to address anxiety and depression in male-dominated industries include: improving mental health literacy and knowledge, increasing social support, improving access to treatment, providing education for managers and addressing workload issues.*

Practical implications – *Working conditions and the workplace can have a significant impact on a worker's mental health. Work-related factors including working conditions, job demands and social support in the workplace are particularly important for the mental health workers. Indeed, poor work conditions have been associated with poorer mental health outcomes in particular anxiety and depression, however, little work has been conducted on mental health interventions in the workplace and further the impact on male-dominated industries.*

Originality/value – *Overall, the body of evidence supporting effective interventions for mental health problems among workers in male-dominated industries is limited. Nonetheless, the evidence does suggest that mental health interventions in male-dominated industries is logistically feasible and can have some positive impact on the mental health of workers, particularly for high prevalence low severity disorders such as anxiety and depression.*

Keywords *Depression, Mental health, Anxiety, Male-dominated workplaces, Work related health*

Paper type *Literature review*

Introduction

The substantial impact that the workplace can have on a worker's mental health is now well established (Faragher *et al.*, 2005; Maslach, 2003; Segerstrom and Miller, 2004). The effect on mental health can be both positive, by providing regular activity, time structure, social contact, a sense of collective effort and social identity (Cercarelli *et al.*, 2012) and negative, as a source of psychological stress related to job demands and lack of social support in the workplace. Poor work conditions have been associated with even poorer mental health than among those who are unemployed (Butterworth *et al.*, 2011; Kuoppala *et al.*, 2008; Stansfeld and Candy, 2006).

The workplace bears a substantial proportion of the social and economic burden associated with mental illness (Conti and Burton, 1994; Dewa and Lin, 2000). Poor mental health is estimated to be associated with 50-60 per cent of all workplace absenteeism (Milczarek *et al.*, 2009) and the annual cost of mental health disorders is estimated to be around $20 billion in Australia (Australian Bureau of Statistics, 2009; World Health Organization, 2003) and more than $100 million in the USA (National Center for Health Statistics, 2007), including lost

productivity and workforce participation (Burton *et al.*, 1999; Stewart *et al.*, 2003). In addition, physical health problems are over-represented among those with mental health issues, further compounding the effects on the individual and the workplace (National Mental Health Consumer & Carer Forum, 2010). The enormous cost of mental health disorders creates a social and economic imperative to reduce the prevalence of mental health problems within the working population.

Workers affected by mental health problems are at substantially greater risk of becoming disengaged from the workforce, being less productive (Lim *et al.*, 2000), experiencing higher levels of physical health problems and being involved in accidents (Harnois and Gabriel, 2000).

Mental health problems are significant contributors to the global burden of disease more generally and comprise the largest contributor to years lost to disability, with depression (2.5 per cent) and anxiety (1.1 per cent) the main contributors (Murray *et al.*, 2013). From 1990 to 2010, major depressive disorders increased from 15th to 11th position (a 37 per cent increase) as a cause of Disability Adjusted Life Years (Murray *et al.*, 2013). Depression and anxiety are the most common mental health problems: globally, anxiety disorders have prevalence in the prior 12-month period of 2.4-18.2 per cent and mood disorders a 12-month prevalence of 0.8-9.6 per cent (Demyttenaere *et al.*, 2004).

In the general population, women have higher rates of anxiety and depression than men (22 per cent vs 18 per cent); however, a number of male-dominated industries (i.e. industries in which more than 70 per cent of workers are men (Australian Bureau of Statistics, 2008b) have higher than average rates of anxiety and mood disorders. These industries include agriculture (20.6 per cent), construction (23.3 per cent), mining (22.4 per cent) and utilities (20.7 per cent) (Australian Bureau of Statistics, 2008a).

Research on mental health problems in the workplace suggests that the personal and financial costs could be reduced if a greater proportion of workers who need treatment received it. However, men in particular are often reluctant to seek assistance for mental health concerns. They subsequently delay accessing treatment or help and attend mental health treatment at lower rates than women (Addis and Mahalik, 2003; Barney *et al.*, 2006; Galdas *et al.*, 2005), with 339 and 285 service contacts per 1,000 population for men and women, respectively in 2010-2011 in Australia.

Therefore, workers in male-dominated industries are at higher risk of mental health disorders but are less likely to access treatment than the general population (Battams *et al.*, 2014). The stigma that particularly men feel in addressing their mental health issues, especially in the workplace where jobs may be jeopardised, means that particular attention is needed on the types of interventions that are effective in these workplaces. The male-dominated workplace presents an excellent opportunity to access a difficult-to-reach population and to address mental health issues at work within a broader public health perspective (Lamontagne *et al.*, 2007; Pidd and Roche, 2008; Roche *et al.*, 2012).

However, despite a growing interest in, and attention on, men's mental health issues, little research has been undertaken to identify effective strategies for male-dominated workplaces. A systematic review was undertaken to examine the current evidence base for workplace interventions addressing mental health problems in male-dominated industries.

Method

A systematic literature review was undertaken to identify and review studies examining mental health interventions within male-dominated industries. Due to the small number of papers and heterogeneity of measures to assess outcomes, a meta-analytic review was not possible; a narrative systematic review is therefore reported.

Inclusion and exclusion criteria

Methods and results are reported in accordance with the PRISMA statement (Liberati *et al.*, 2009; Moher *et al.*, 2010). The analysis and inclusion criteria were specified in advance and

agreed upon by the research team using a predefined protocol (available from the lead author) that specified the process for data extraction (Von Elm *et al.*, 2007) as well as quality measures (National Center for Health Statistics, 2007) to be used to assess the quality of each study.

The definition of male-dominated industry was based on Australia Bureau of Statistics (Australian Bureau of Statistics, 2011) figures indicating the industries with the highest percentage of male workers (see Table I).

A male-dominated industry was determined using the Australian and New Zealand Standard Industrial Classification (ANZSIC) (Australian Bureau of Statistics, 2008b).

We defined a male-dominated industry as one in which there are greater than 70 per cent male workers. This definition was chosen to examine industries that are more-than-marginally male dominated, to ensure that the particular mental health issues for men, and of implementing interventions in male-dominated workplaces, were specifically examined. According to the ANZSIC, these industries are agriculture, construction, mining, manufacturing, transport and utilities. Although some other industries have a higher proportion of men than women, including public administration and safety, which includes fire, police and ambulance services, these industries had <70 per cent men in the ANZSIC system (Australian Bureau of Statistics, 2006). Within this classification, military are not considered an industry *per se*, rather a workplace, and personnel are categorised by their industry type within this workplace.

Studies were included if they examined mental health interventions in the workplace in one of the defined male-dominated industries; were published between January 1990 and June 2012 in English; with a sample of male or female participants in paid formal work; and measured clinically significant anxiety or depression. Studies were excluded if they primarily investigated mental health issues other than anxiety and depression, including measures of subclinical symptoms only, or examined only volunteer workers or did not include workers in the pre-defined male-dominated industries.

Search strategy

Searches were undertaken using the following electronic databases: CINAHL, Cochrane Database of Systematic Reviews, PubMed, PsycINFO, Informit and Scopus.

Table I B43 Industry of employment by sex

Industry (ABS, 2011)	*Total* *n*	*Males* *n*	*%*
Construction	**828,910**	**719,206**	**86.8**
Mining	**176,563**	**145,765**	**82.6**
Transport, postal and warehousing	**479,181**	**368,050**	**76.8**
Electricity, gas, water and waste services	**115,611**	**87,954**	**76.1**
Manufacturing	**902,829**	**668,017**	**74.0**
Agriculture, forestry and fishing	**249,828**	**174,774**	**70.0**
Wholesale trade	403,801	264,640	65.5
Information media and telecommunications	178,190	103,637	58.2
Professional, scientific and technical services	730,062	404,357	55.4
Public administration and safety	689,931	372,301	54.0
Arts and recreation services	151,574	79,358	52.4
Rental, hiring and real estate services	158,853	78,003	49.1
Administrative and support services	323,779	156,926	48.5
Financial and insurance services	377,352	176,626	46.8
Accommodation and food services	650,397	284,815	43.8
Retail trade	1,057,310	446,002	42.2
Education and training	804,418	240,824	29.9
Health care and social assistance	1,167,634	245,316	21.0
Other services	*378,217*	*211,298*	*55.9*
Inadequately described/Not stated	*233,885*	*138,800*	*59.4*
Total	10,058,325	5,366,669	53.4

An example of the string search used is provided below:

1. mental health.mp. or exp Mental Health/
2. mental health.m_titl
3. 1 or 2
4. exp Anxiety Disorders/or exp Anxiety/or anxiety.mp
5. anxiety.m_titl
6. 4 or 5
7. depression.mp. or exp Major Depression/
8. depression.m_titl
9. 7 or 8
10. exp Major Depression/or exp Psychotherapy/or generalised anxiety.mp. or exp Risk Factors/or exp Anxiety/or exp Anxiety Disorders/or exp Generalized Anxiety Disorder/or exp Treatment Effectiveness Evaluation/or exp Panic Disorder/
11. generalised anxiety.m_titl
12. 10 or 11
13. mental health/or well being/
14. "depression (emotion)"/
15. anxiety/or agitation/or anxiety disorders/or generalized anxiety disorder/or panic/or panic attack/or panic disorder/
16. 13 or 14 or 15
17. 3 or 6 or 9 or 12 or 16

A total of $n = 282$ abstracts were retrieved and assessed for inclusion in this systematic review. Of these $n = 238$ were further excluded as they did not satisfy the inclusion criteria. After data extraction and quality assessment a further $n = 39$ studies were excluded leaving the final number of included studies ($n = 5$). Of these, three were assessed to be of good methodological quality (Figure 1).

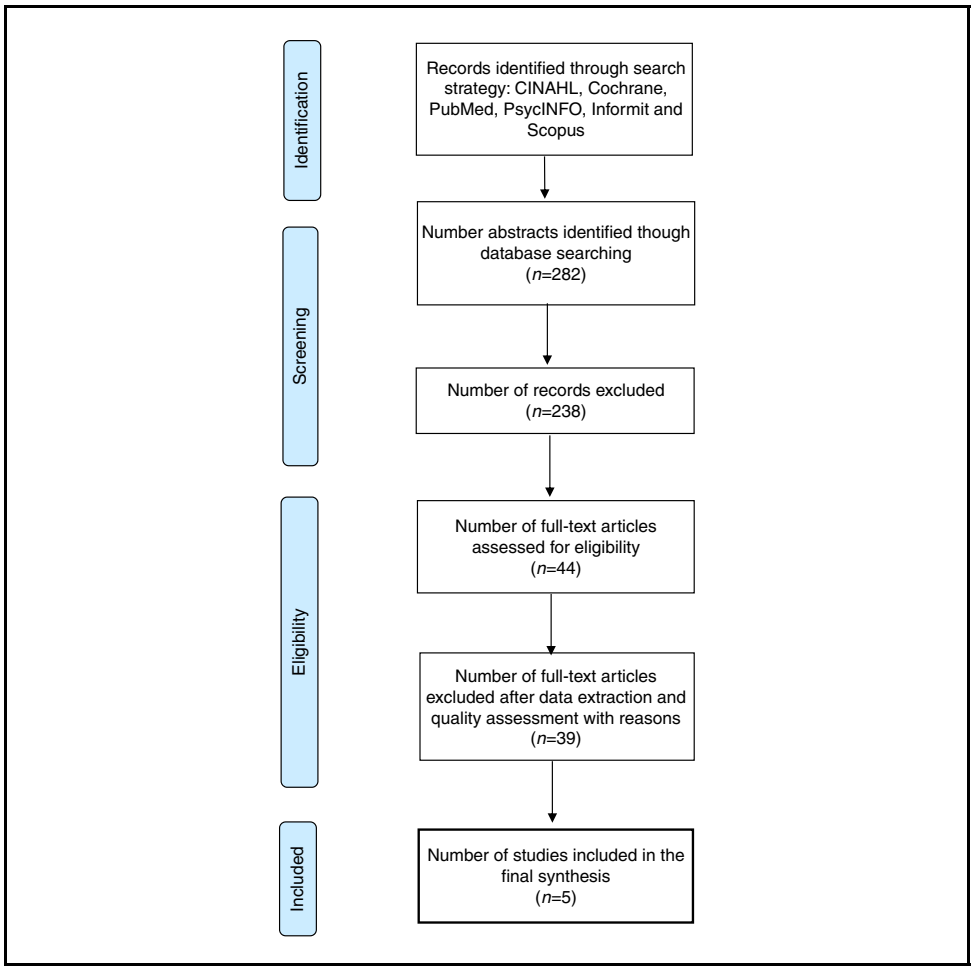
Screening, data extraction and quality assessment

Studies were screened twice. First, two reviewers screened the title and abstract of each article against inclusion criteria. At the second screen, one reviewer screened the full article and checked that the study met the specified inclusion criteria. This process was then checked and confirmed by a second reviewer. A data extraction codebook was developed to ensure consistency between reviewers and any disagreement for inclusion was referred to a third reviewer.

Study quality was assessed in two ways. The level of evidence of the study was considered against the National Health and Medical Research Council's evidence hierarchy (NHMRC, 1999, 2000).

To assess for risk of bias, the *Quality Assessment Tool for Quantitative Studies – Effective Public Health Practice Project* was used (National Collaborating Centre for Methods and Tools, 2009), which assesses selection bias, study design, confounders, blinding, data collection methods, withdrawals and drop-outs, intervention integrity and analyses. A global rating was derived for each study, ranging from "weak" to "strong". Studies with no ratings of "weak" and at least four ratings of "strong" for any of the assessment criteria were considered methodologically strong. Studies that had one weak rating and less than four strong ratings were assessed as

Figure 1 Flow of information through the different phases of a systematic review on mental health interventions in male-dominated industries



methodologically moderate. Studies that had two or more weak ratings were assessed as methodologically weak.

To ensure consistency in data extraction a data extraction template was developed based on the STROBE statement (Von Elm *et al.*, 2007). It included methods (selection of subjects, allocation and blinding, confounders and statistical analyses), results, conflict of interest and other sources of bias.

Results

Five studies met the inclusion criteria and these are summarised in Table II.

Most studies used multi-modal interventions, making it difficult to determine which components of the intervention were most effective. The quality of the studies varied widely and did not measure clinical mental health symptoms, focusing instead on health and wellbeing as outcome measures. Three of the five studies were assessed to be of good methodological quality. Of the five included studies, three were undertaken in Japan and two in Finland, potentially limiting the generalisability of the work.

A group of $n = 782$ manufacturing workers who scored > 8 on the General Health Questionnaire (GHQ-30) in Japan were followed up every six months for one year, without any specific intervention, and the relationship between job stress and recovery from mental illness was examined (Mino *et al.*, 2000). Of the 232 workers at the six-month follow-up, 113 (49 per cent)

Table II Included mental health intervention studies

Study	*n*	*Participants*	*Intervention*	*Outcome measures*	*Follow-up*	*Outcomes*	*Quality assessment*
Mino *et al.* (2000), Japan Cohort study	$n=782$	Mean Age Not reported Gender (%male) 49%	No formal intervention but examined the relationship between job stress and indicators on recovery or improvement from mental ill health	General health questionnaire Perceived job stress Family life satisfaction Physical health	6 months	Outcome 1: Recovery proportion at 6 months: 49% ($n=113$). Recovery proportion at 1 year: 66% ($n=36$). No significant associations between recovery and gender, age, family life satisfaction or physical health Outcome 2: No significant associations between recovery and job stress during first 6 months. Significant associations found between recovery and having too much responsibility – OR 4.16 (1.3-13.1) (95% CI, $p<0.05$) Authors' conclusion: Relief from excessive responsibility at work may enhance recovery in mentally ill workers	Fair
Shimizu *et al.* (2003), Japan Case study	$n=1,259$	Mean Age 37.6 ± 9.6 Gender (%male) 100%	Mental health care program (MCaP) aimed to reduce absence due to mental health disorders and included three elements – social support, treatment support, and managerial education	Sickness absence days	2.5 years	Outcome 1: Sickness absence day rates due to mental disorders had a significant reduction from 0.06 to 0.03% ($p<0.001$) For short sickness absence, day rates due to mental disorders increased from 0.01 to 0.03% but for long sickness absence, the day rate decreased from 0.05 to 0% Authors' conclusion: In conclusion, the trends in sickness absence due to mental health disorders change in the 2.5 years after the introduction of a mental health care program	Poor
Taimela *et al.* (2008), Finland RCT	$n=1,341$	Mean Age Not reported Gender (%male) 88%	Intervention participants received a targeted occupational health intervention program, which included consultation and personalised feedback from occupational	Sickness absence days Sleep disturbances Work-related stress Fatigue Depression Pain	1 year	Outcome 1: Mean differences in sickness absence was 11 days (95% CI, 1-20) The intervention was effective in reducing sickness absence Outcome 2:	Good

(continued)

Table II

Study	*n*	*Participants*	*Intervention*	*Outcome measures*	*Follow-up*	*Outcomes*	*Quality assessment*
			medical staff Participants could also attend for a consultation to a local occupational health service. Control participants could consult medical staff on request but received no feedback	Disability Working ability		After 12 months, the mean of sickness absence was 30 days in the control group ($n = 192$) and 11 days less (95% CI 1 to 20 days) in the intervention group ($n = 192$) No significant differences in self-reported work ability, depression, fatigue, stress, pain and physical impairment between groups, however depression and fatigue tended to be more present in the control group at 12 months Authors' conclusion: Workers at a high risk for sickness absence can be identified. Appropriate occupational health intervention can be effective in reducing sickness absence among high-risk workers	
Taimela *et al.* (2010), Finland RCT	$n = 382$	Mean Age 49±9.4 Gender (%male) 93%	Intervention participants received a targeted occupational health intervention program, which included consultation and personalised feedback from occupational medical staff Participants could also attend for a consultation to a local occupational health service Control participants could consult medical staff on request but received no feedback	Sickness absence days Age Gender Work status Physical impairment Depression Working ability Comorbidity	1 year	Outcome 1: No modifying effect of age, gender, work status, depressive symptoms or previous sickness absence was found in the previous 12 months Outcome 2: The intervention was more effective for workers who reported comorbidities, i.e. more than one health problem (−22.5 days; 95% CI −35.5 to −9.5) and those who perceived an inability to work in the future due to health-related reasons (−74 days; 95% CI −105 to −43) Authors' conclusion: Occupational interventions can have a greater effect for certain workers such as those who have co-morbidities and those who perceive that they may be unable to work in the future due to health impairment	Good
Tsutsumi *et al.* (2009), Japan RCT	$n = 97$	Intervention Mean Age 49 Gender (%male) 51% Control Mean Age 41 Gender (%male) 69%	Participatory workplace mental health and productivity program (problem-solving, team-based approach on improving work environment and job processes)	General Health WHO Health and Work Performance Age	1 year	Outcome 1: GHQ scores remained unchanged for the intervention group but and increased for the control group ($t = -2.43$, $p = 0.020$) GHQ scores at 12 months decreased for intervention ($t = -2.37$; $p = 0.022$) and increased for control group ($t = 2.18$; $p = 0.035$) with a significant interaction effect Outcome 2: HPQ scores increased in the intervention group ($t = -2.37$, $p = 0.348$ but decreased in the control group ($t = 2.13$, $p = 0.040$) Authors' conclusion: The participatory approach may be effective in improving mental health outcomes in workers	Good

had a score of <8 on the GHQ-30 suggesting some recovery, the recovery rate reported at 12 months was 66 per cent. A relationship between job responsibility and recovery was identified and it was concluded that relief from excessive responsibility at work might enhance recovery in mentally ill workers.

A case study of an organisational mental health care programme (MCaP) was examined years before and after the introduction of a two and a half year mental health care programme, which included social support, treatment support and managerial education on mental health issues. The sample included $n = 1{,}259$ male workers in an industrial chemical manufacturing plant, outcome measures included sickness absences, duration of sickness absence and the sickness absence day rate. Mental health was identified using the ICD-10. The results identified significant reductions in sickness absence days (0.06-0.03 per cent) – shorter absences increased slightly but longer absences decreased significantly (0.05-0 per cent) (Shimizu *et al.*, 2003).

A study in Finland randomly assigned $n = 1{,}341$ (49 per cent construction industry) workers (88 per cent male) with high and intermediate risk of sickness absence to a targeted occupational health programme or usual care (Taimela *et al.*, 2008). Intervention participants received an 11-month targeted occupational health intervention programme, which included consultation and personalised feedback from occupational medical staff. Control participants could consult medical staff on request but received no feedback. There was a significant reduction in sickness absence in the high risk but not the intermediate risk group. No significant differences in self-reported work ability, depression, fatigue, stress, pain and physical impairment between groups, however depression and fatigue tended to be more present in the control group at 12 months. The authors concluded that identifying and responding to people at high risk of sickness absence is effective in reducing absences.

The same research team using a subsample ($n = 382$) of the same data as Taimela *et al.* (2008) and completed further analyses which found a significant interaction in the intervention group on self-rated future working ability, severity of physical impairment and co-morbidity. The other modifying effects from age, gender, occupational status, depression score and sickness absence in previous 12 months were not statistically significant. They concluded that the intervention was especially effective for workers who were certain that they would not be able to continue working in their current job due to health-related reasons, multiple health problems or severe physical impairment at work (Taimela *et al.*, 2010).

In one randomised control study ($n = 97$) 11 assembly lines (six intervention and five control) were randomly assigned to a participatory workplace mental health and productivity programme for 12 months, which included problem solving and team based approaches to improving work environments and job processes, or to a no intervention control group and followed up 12 months later (Tsutsumi *et al.*, 2009). Outcome measures included self-report on mental health measured by the GHQ and work performance measured by the WHO Health and Work Performance Questionnaire (HPQ). GHQ scores remained the same for the intervention group, whereas they increased for the control group but were not significant, the HPQ scores increased for the intervention group but decreased in the control group and this change was significant, at follow up the GHQ scores reduced and the intervention group increased. The authors suggest that this programme had a protective effect on mental health and job performance.

Discussion

Overall, the body of evidence supporting effective interventions for mental health problems among workers in male-dominated industries is limited. Nonetheless, the evidence does suggest that mental health interventions in male-dominated industries are logistically feasible and can have some positive impact on the mental health of workers, particularly for high prevalence low severity disorders such as anxiety and depression.

The available evidence indicates that effective strategies to address anxiety and depression among workers in male-dominated industries include:

- the distribution of information to workers about mental health issues;
- providing additional social support;

- offering access to treatment and advice for workers;
- education for managers about mental health in the workplace; and
- specifically targeting intervention at groups at high risk for absenteeism. Addressing excessive workloads and providing relief periods from heavy workloads.

This systematic review is the first of its kind that has attempted to identify the available evidence for interventions to address mental health problems among workers in male-dominated industries. Five studies met the inclusion criteria. The studies were variable in their design and interventions, but some were of good quality.

Few studies have identified intervention strategies specifically for male-dominated industries but a number of studies have examined interventions for mental health in the workplace more generally (Barry *et al.*, 2009; Cooper and Cartwright, 1994; Giga *et al.*, 2003; Lamontagne *et al.*, 2007). The workplace holds considerable promise as a setting to introduce strategies that will prevent and/or ameliorate mental health problems among a largely difficult-to-access population. Opportunities for primary and secondary prevention of mental health problems are of paramount importance (Barry *et al.*, 2009).

Historically, mental-health-related workplace interventions have targeted the individual worker with varying degrees of success and inconclusive long-term outcomes (Cooper and Cartwright, 1994, 1997; van der Klink *et al.*, 2003). Alternatively, primary prevention through "proactive", organisation-directed activities (e.g. increased social support and job control in the workplace), to circumvent the need for "reactive" secondary (e.g. stress management) and tertiary (e.g. employee assistance programmes) prevention has been suggested (Cooper and Cartwright, 1994).

Interventions that targeted the whole workplace, utilised team-based approaches, and used multiple strategies appeared to be effective. Most studies used a whole of workplace approach and implemented a menu of interventions, targeting individuals, teams and systems. This is consistent with general mental health workplace research that suggests that, although individually focused approaches can favourably affect individual-level outcomes, they do not influence organisational level change (Lamontagne *et al.*, 2007) overall; while organisational approaches have benefits at both individual and organisational levels, and offer greater scope for the prevention of mental health problems in male-dominated industries (Cooper and Cartwright, 1994). However, it remains difficult to determine which individual components in the suite of intervention activities were required to achieve positive outcomes.

While most workers have relatively little control over workplace factors, at the organisational level there is considerable untapped latitude to address crucial factors that impact on the workers' mental health and wellbeing.

The results of this review suggest that there is a potential benefit in providing primary intervention and secondary prevention activities for mental health disorders within the workplace setting. The type of research that is possible within a real-world workplace setting is generally broad, often tailored to the workplace and not well controlled, making generalisations to other work places difficult.

A systematic review of risk factors for mental health disorders (Battams *et al.*, 2014) in male-dominated industries noted that social support and team environment, job demand, job variety and control, workplaces can have a positive primary and secondary preventive influence on the mental health and wellbeing of employees.

More generally, research suggests that it is the workplace environment (Michie and Williams, 2003; Stansfeld and Candy, 2006), including job control (Bond and Bunce, 2001), and structural factors such as economic climate, labour market conditions and employment policies, job security (Marmot *et al.*, 2009; Meltzer *et al.*, 2010) that make the greatest contribution to worker wellbeing. By addressing these risk factors through well-designed interventions workplaces can have an impact on workers' mental health, wellbeing and hence on productivity.

Growing emphasis has been placed on the duty of care of employers towards their employees through occupational health and safety (OHS) law and policy, including the duty to provide a safe workplace to promote both physical and psychological health. OHS has traditionally focused on

physical safety. There is increasing recognition of the need for a "psychologically safe" work environment (Dollard and Bakker, 2010).

The interventions studied to date that indicate promise are relatively inexpensive to design, implement and evaluate. The potential return on investment, and to the community at large, from such interventions is substantial.

As costs for mental health treatment (National Institute of Mental Health, 2013), life expectancy and retirement age continue to increase, and greater workforce participation extends into older age (Shannon, 2013), the workplace will become an increasingly important early intervention avenue to address public health issues such as high prevalence mental health issues. Ensuring that workers' wellbeing is fostered is of greater imperative than ever.

A considerably improved evidence base would be helpful in informing the judicious selection of effective and appropriate interventions that may be applied in the workplace. Given the high prevalence of mental health problems in male-dominated industries, further research in these areas is identified as a pressing priority.

Limitations

There were a limited number of studies found and the samples varied, particularly in relation to culture/country, gender and occupational categories. A range of measures were also used to assess anxiety and depression; this level of heterogeneity precluded a meta-analysis.

Conclusions

Mental health problems have numerous sequelae, including an association with absenteeism, lost productivity and physical health issues; those working in male-dominated industries have higher than average rates of mental health issues. Men continue to present for treatment at lower rates than women, limiting access to opportunistic treatment be health professionals. This review suggests that workplaces can influence mental health and wellbeing and provide some support for the introduction of mental health interventions in the workplace. This is especially important in workplaces with populations that have low treatment seeking rates, such as men. However, to date, the evidence is limited and further research is needed to identify both programmes of interventions that are effective and to isolate specific active components of such programmes.

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