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Published

2008

Journal Title

Australian Occupational Therapy Journal

DOI

[10.1111/j.1440-1630.2006.00624.x](https://doi.org/10.1111/j.1440-1630.2006.00624.x)

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Musculoskeletal disorders and comorbid depression: Implications for practice

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Word Count: 4503 (excluding table)

Key Words: depression, musculoskeletal disorder, return to work, intervention strategies

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Abstract

Background: The physical demands of work have a substantial impact on the incidence of work related musculoskeletal disorders. Depression is often associated with work-related injuries and may influence a person's success or otherwise for return to work. There is pressure for occupational rehabilitation providers to produce good return to work outcomes in a timely and financially responsible manner. The aim was to examine current evidence for the added impact of depression on return to work prospects among people with work-related musculoskeletal disorders.

Methods: A review of the literature and a secondary analysis of the Australian Bureau of Statistics Survey of Disability, Ageing and Carers were conducted to determine the extent to which comorbid depression and musculoskeletal disorders affect labour force participation.

Results: Australian population level data show that people of working age with co-morbid depression and musculoskeletal disorders have higher levels of non-participation in the labour force and lower levels of employment compared to people with non-comorbid musculoskeletal disorders or depression.

Conclusions: Systems need to be implemented to enable early detection and treatment of comorbid depression, linked to occupational rehabilitation in order to maximize vocational results. Practitioners working in occupational rehabilitation may need to consider routine screening for depression and early intervention integrating optimal treatment with specific vocational interventions.

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Word Count: 4950

Introduction

The impact of psychosocial factors on successful return to work for workers with musculoskeletal injuries is becoming increasingly well known and documented (Adams & Williams, 2003; Crook *et al.*, 2002; Linton & Boersma, 2003; Linton & Ryberg, 2001; Marhold *et al.*, 2002; Nicholas, 2002; Selander *et al.*, 2002; Trief *et al.*, 2000). Yet, people with musculoskeletal disorders have substantial levels of disability, poor return to work rates, and high socioeconomic costs associated with time off work. There is limited evidence to support the efficacy of first line medical treatments such as medication, injections and surgery, currently available to injured workers with work related musculoskeletal disorders (WMSDs) (Nicholas). Many workers with WMSDs are treated within a medical rehabilitation model and typically experience difficulty adjusting to the lack of full remission resulting from mainstream medical treatments. Over the last decade, occupational researchers appear to have broadened the scope of their research to include psychosocial factors that may help or hinder a successful return to work.

The relationship between pain and psychosocial factors, including depression, has been well documented. Goldberg and Lox (1999), in their review of the role of the mind body connection in low back pain, concluded that it was important to consider and evaluate all the psychosocial aspects of pain in order to prevent disability. Linton (2000) concluded from a systematic review of psychological risk factors in back and neck pain, that depressed mood increases the risk of concurrent problems associated with pain. This is a view supported by Rush, Polatin and Gatchel (2000). Following a review of current literature, they reported that while depression can precede pain, in up to 50% of cases the severity of a person's pain is related to the degree of depression. In a review of the psychosocial aspects of the evaluation and management of chronic low back pain, Cohen (1995) differentiated depression from other

factors. He concluded that depression implies an increased risk of morbidity and disability and often requires specialist intervention and treatment.

Poor return-to-work outcomes in this group have many negative implications for the wider community. These include loss of productivity, increased claim costs and employer insurance premiums, negative social impacts of unemployment, increased health care costs, and increased use of income support payments (Hirschfield *et al.*, 1997; Selander *et al.*, 2002). Occupational rehabilitation practitioners often encounter cases where depression is clearly an added barrier to return to work. However, there is little evidence-based literature available to help occupational therapists to enhance their practices in order to improve return to work outcomes among people with musculoskeletal disorders. In many cases successful treatment of musculoskeletal conditions alone is insufficient for a successful return to work. Hence, practitioners need to know more about the impact of depression and pain-related depression on people with WMSDs attempting a return to work. Practitioners also need to be aware of optimal treatments for depression, and how these can be integrated with occupational rehabilitation (e.g. Hildebrandt *et al.*, 1997; Linton, 2000; Selander *et al.*, 2002; Sullivan & Stanish, 2003; van der Giezen *et al.*, 2000; Waddell & Burton, 1999).

The primary aim of this investigation was to review recent evidence to assess the extent that comorbid depression among people with work-related musculoskeletal disorders is likely to hinder return to work programmes. While we anticipated finding a negative impact, our emphasis was on translating any evidence of impacts into practical implications for occupational therapists working in the occupational rehabilitation of people with musculoskeletal disorders.

Method

A review of depression as a predictor of return to work outcomes for people with MSDs was conducted over a six-month period commencing May 2003. Papers were identified through searching the Medline (1992 to 2003), PsychInfo (1992 to 2003) and Cinahl (1992 to 2003) databases. The search terms used included “return to work” and “depression” and “dysthymic disorder” and “musculoskeletal disorders” or “work-related musculoskeletal disorders”. In addition, colleagues were consulted and reference lists of papers located were reviewed for other relevant publications.

Thirty-seven articles were retrieved as being potentially relevant in this review. Twenty-eight articles were excluded from the final review. The inclusion criteria included: that the publication was in English; published within the last ten years since this is when there has a focus on investigating psychosocial factors that influence return to work rates; the article should be an original research report; involving return to work for a compensable or work-related injury; involving musculoskeletal injuries; and assessing depression as a factor in the return to work program. Reasons for exclusion included: not an original research report; injuries other than musculoskeletal; and did not assess depression as a primary factor influencing return to work outcomes. The final analysis considered the nine most informative articles which are discussed in the next section.

Results

Work Related Musculoskeletal Disorders

WMSDs are conditions affecting nerves, tendons, muscles, and supporting structures such as intervertebral discs (National Institute for Occupational Safety and Health, NIOSH, 1997). There is substantial evidence to support the negative effect of the work environment on WMSDs (NIOSH, 1997). WMSDs can vary from mild symptoms to chronic and disabling conditions and often result in permanent disability, chronic pain, unemployment and an

economic burden to the community. In the United States, 32% of days away from work in 1994 were attributed to WMSDs (NIOSH, 1997). Many of this group of injured workers returned to work in the first three to four weeks. However, those who do not return in the first six months account for about 75% of the compensation costs associated with failure to return to work (Schultz *et al.*, 2000). For the 1999/2000 reporting year, WMSDs accounted for 68% of the total cost of workplace injuries in New South Wales, Australia (WorkCover NSW, 2000). Of these, back injuries accounted for AUD\$220 million in compensation costs (WorkCover NSW, 2000).

Similar patterns of WMSDs are reported the United Kingdom (UK) and Sweden. WMSDs are the most commonly reported work injury in the UK (Health and Safety Executive HSE 2001) and resulted in 12.3 million lost working days in 2001/2002 at a cost of between £590 (UK) million and £624 (UK) million (HSE 2001). During 1998, Sweden reported an average of 43 days absence from work for each reported WMSD incident and in 1999 reported that 19% of occupational injuries were WMSDs (Bengtsson & Nordin, 2001).

The majority of clients with whom practitioners are involved in assisting with return to work programs fall into this diagnostic group. One of the factors on which successful occupational rehabilitation depends is identification of the barriers that impede a return to work for injured persons. Psychosocial 'yellow flags', which are the "beliefs and behaviours on the part of the patient which may predict poor outcomes" (Waddell & Burton, 1999, p18) are considerable barriers that need to be considered in any return to work program. Assessment and consideration of these yellow flags is now an accepted standard for occupational rehabilitation practitioners involved in returning injured persons to work (WorkCover NSW, 2002).

Depression

Depression is one of the most prevalent of all health conditions affecting about 121 million people worldwide (World Health Organization, WHO 2003). It occurs in persons of all ages, genders and cultural backgrounds. The World Health Organization describes depression as a mood state that is characterized by markedly depressed mood, loss of interest, loss of pleasure, feelings of guilt, feelings of low self-worth, disturbed sleep or appetite, low energy and poor concentration (WHO, 2003). A major depressive episode is distinguished by its severity, persistence, duration, and the presence of characteristic symptoms. The depressed mood is relatively constant from one day to the next, although the mood may vary during the course of the day, for example, mood may improve as the day progresses (Treatment Protocol Project, 1997). Depression may be classified as mild, moderate or severe. Mild depression is usually associated with only minor impairment in social or occupational functioning. In moderate depression, the person has many symptoms of depression that keep him or her from doing what needs to be done. With severe depression, nearly all the symptoms of depression are present and keep the person from carrying out his or her regular day-to-day activities (Treatment Protocol Project, 1997).

Recent literature reviews have identified depression as a consistent predictor of persistent disability, work time lost, and overall return to work (Crook *et al.*, 2002; Selander *et al.*, 2002). Other authors have identified that self-efficacy in general is affected by depression and a person's level of self-efficacy will influence his or her return to work capacity (Franche & Krause, 2002). Decreased self-efficacy and depression diminishes a person's capacity for engagement in behaviours that may change his or her return to work outcomes (Franche & Krause). As individuals become more depressed, they are unlikely to recognize and address the other psychosocial issues that may be affecting their functioning and therefore their capacity to interact with their social and work environments.

At a population level depression has been found to be associated with greater reduced labour force participation and reduced part-time and full-time employment compared to people with anxiety disorders and healthy persons aged 15-64 years (ABS, 1999; Waghorn & Chant, 2005a). Furthermore, the impact of depression on employment functioning depends directly on the extent of employment restrictions reported (Waghorn & Chant, 2005b).

Comorbid depression and return to work

Friedman *et al.* (1995) evaluated predictors of return to work following participation in a rehabilitation program for 135 workers with low back pain who were receiving workers' compensation benefits. The program included physical conditioning, work simulation, back education and pain management. Logistic regression was performed to examine predictors of return to work. The findings indicated that the group who returned to work were significantly more likely to be working at base-line, to have a job available or be in job training, a low Zung depression score, more favourable activity, leisure, sleep scores, and greater lumbar flexion. Physical factors such as functional capacity were not found to be a significant predictor for return to work in their study. They suggested that return to work is more influenced by psychosocial factors and job availability than by functional capacity and other physical measures.

The Zung Depression Scale was also used by Trief *et al.* (2000) to determine level of depression when evaluating psychological predictors for lumbar surgery outcome. The sample consisted of 102 individuals who had been working before surgery and maintained a working status and those who had been disabled but had a return-to-work goal. They hypothesized that pre-surgical anxiety and depression would predict post surgical outcome at one-year follow-up. Multivariate regression analyses, controlling for significant demographic variables found that failure to return to work was predicted by pre-surgical anxiety and depression. Trief *et al.* recommended that further research be undertaken to examine whether pre-surgical

psychological intervention to ameliorate emotional distress and enhance coping will improve functional outcome of surgical intervention.

Burton *et al.* (1997) conducted a prospective cohort study investigating the effects of a range of psychosocial issues on long term employment in 70 people with upper extremity WMSDs following a rehabilitation program. Results from univariate analyses demonstrated that return-to-work status one year following rehabilitation was predicted by a self-report of depressed mood. People who successfully returned to work experienced significantly greater improvement in depressed mood, and reported feeling significantly less depressed post-treatment than those who failed to return to work. They suggested that this population should be assessed and treated for psychosocial dysfunction in conjunction with their rehabilitation so as to optimize favourable outcomes after treatment.

One of the treatments of WMSDs can be surgery, in particular lumbar discectomy, which has poor success rates ranging from 5% to 50% (Schade *et al.*, 1999). It has been suggested that the psychosocial factors, including depression, associated with WMSDs are responsible for these poor outcomes. The study conducted by Main *et al* (1992) illustrated that ineffective or failed treatment makes people worse psychologically. Schade *et al.* examined the predictive value for the outcome of surgery at two years follow up for 46 people undergoing lumbar discectomy. Multiple regression analyses were used to identify the best predictor variables. Return to work two years after surgery was best predicted by depression and occupational mental stress. The most important finding of this study was that return to work was not influenced by any clinical findings, but solely by psychological factors (i.e. depression) and psychological aspects of work (i.e. occupational mental stress).

While return to work can be substantially affected by depression, it is also acknowledged that WMSDs are a multidimensional problem with a combination of complex factors that predict the return to work of people with this diagnosis (Richardson *et al.*, 1994).

Unemployment itself can make a person vulnerable to depression. Richardson *et al.* found in their study of changes of employment status and quality of work, found that people who were unemployed at the end of a twelve month follow up following a cognitive-behavioural pain program were generally more impaired on all variables, including depression, than those at work. However, the results should be interpreted with caution in view of the highly fluctuating nature of the participants' work status in the 12 months following the treatment programme.

As many people with WMSDs are involved in insurance claims, a link has been found between a decreased time to claim closure and depressive symptoms of claimants (Cote *et al.*, 2001). Cote *et al.* investigated the association between neck pain, physical functioning, depressive symptomology and time-to-claim closure on a 5398 claimants. The results suggested that lower pain, better function and the absence of depressive symptoms was strongly associated with faster time-to-claim-closure and recovery, independent of the insurance system. Mason *et al.* (2002) investigated rate of return to work, subsequent involvement in litigation, and subsequent psychosocial functioning of 154 injured employed males. In order to identify factors predicting return to work, multiple regression techniques tested the relative contributions of the independent variables in predicting return to work at six months and 18 months after injury. They found that more people with work-related injuries became involved in litigation than those with non-work related injuries. Those people not returning to work continued to be more depressed, with reduced physical and social functioning, and reported more pain. According to Mason *et al.* it is recognized that psychological distress affects coping skills and therefore ability to function normally. They suggested that by addressing both the psychological and physical aspects of recovery, return to function may be expedited in some cases.

In an attempt to derive a classification tool to evaluate outcomes of treatment for those with back pain, Main *et al.* (1992) used the modified Zung Depression Index, the Modified

Somatic Perception Questionnaire, the Inappropriate (nonorganic) Signs Test, and the Inappropriate Symptoms Test to develop and evaluate a simple screening procedure based on the assessment of distress and inappropriate illness behaviour. In this study, the participant types are compared primarily using nonparametric statistics. Return to work as measured by time lost was one of the outcome variables being investigated in this study. It was found that participants with high Zung depression scores were three to four times more likely to have a poor outcome of treatment and less likely to be employed at follow up than those with a normal score. They concluded that routine assessment of distress at the time of initial assessment has the potential to reduce the unsatisfactory outcomes of simple physical treatments and to identify people requiring multidisciplinary assessment or management.

In summary, musculoskeletal problems constitute a common complaint amongst injured workers. Findings indicate that psychosocial variables influence the successful rehabilitation of injured workers and return-to-work outcomes. Depression is a predictor for return to work rates, with depressive symptomology being a significant factor in limiting successful return to work outcomes. Therefore, it is important to incorporate psychosocial and physical rehabilitative interventions when working with injured workers who are experiencing depression. Practitioners in the area of occupational rehabilitation are in the position to identify those workers at risk of depression and the impact it may have on successful return to work, and implement an intervention strategy to address the issues associated with depression that are limiting workers capacity to successfully return to work.

Discussion

Implications for Practice

This review has found that people with depression comorbid with MSD were at greater labour force disadvantage than people with MSD alone. MSD disorders are a leading

cause of work disability in Australia. Having a comorbid condition such as depression magnifies the negative impacts of single conditions on labour force activity.

Routine screening should be conducted with each person referred for treatment. This should be conducted by any of the occupational rehabilitation counselors in order to provide a comprehensive assessment. Comprehensive assessment enables the practitioner to make more or better informed treatment choices as to the appropriate treatment strategy. It may be useful to employ a measure such as the CES-Depression Scale or the Beck Depression Inventory. The advantage of these measures is that they don't require extensive mental health training. However, it would be prudent to have a mental health professional available to provide coordinated treatment as part of the occupational rehabilitation plan.

It is necessary for occupational rehabilitation providers to identify comorbid depression to prevent people dropping out of occupational rehabilitation and giving up return to work goals. After assessing people with comorbid depression with MSD, occupational rehabilitation providers can provide a full range of disability management and return-to-work services. This may include recommendations related to work modifications, promoting illness prevention through education and communication, and implementing an effective return-to-work programme (Cockburn, Krish, Krupa, & Gewurtz, 2004). The return-to-work programme needs to include effective treatments for depressive disorders while taking into account factors related to their MSD. For example, individuals who have MSD comorbid with depression would benefit from ongoing assessment and treatment of the disorder, psycho-education, and training ineffective management strategies eg. using structured problem solving and regular physical activity (Treatment Protocol Project, 1997).

Depression can have a secondary impact on the adjustment of people living with disability. In this analysis, it was interesting to note that people with depression comorbid with MSD were the most disadvantaged (62.6% not in the labour force). Again, detailed

assessment and evidence-based treatment is of primary importance, because the presence of depression magnifies the negative impact of MSD on employment prospects. It is important that a coordinated treatment and rehabilitation programme is developed, which can include education and support for both the individual and their family. Optimal effective treatment should be sought which may include a combination of pharmacological and psychological therapies. In addition, with respect to the work context a range of problem solving, lifestyle, sleeping, nutrition, assertiveness and interpersonal communication, goal setting, and personal development strategies can be considered (eg. Treatment Protocol Project, 1997). In addition, people require ongoing psycho-education, and may need a wider range of vocational rehabilitation interventions to manage the added challenge of a depressive illness.

Having a comorbid condition increases labour force disadvantage. Hence the possibility of mental health condition comorbidity needs to be considered by all occupational rehabilitation providers. This group of people require extra assistance and support to obtain effective treatment, and then to manage any residual symptoms in rehabilitation or employment context. Because treatment is rarely 100% effective, some deterioration or relapse is more likely than not in the future. It is essential that workplace strategies are established to accommodate the possibility of mental health deterioration or relapse. Regular monitoring of the person's work performance is usually sufficient because work performance is highly sensitive to mental health deterioration. Partners and carers can be involved to assist with relapse prevention strategies, long-term treatment and care, and can assist with support during potentially stressful life events (Treatment Protocol Project, 1997). After receiving assistance to find work, occupational rehabilitation providers need to negotiate workplace accommodations to increase the person-environment fit, and may need to plan strategies to provide some form of ongoing support to help retain employment (Kirsh, Cockburn, & Gewurtz, 1004).

Conclusion

Injured workers with WMSD have high levels of disability and poor return-to-work outcomes. Consequently there are high costs burdens on employers resulting from working days lost. Prior research indicates that the psychosocial aspects of health have a significant impact on return-to-work outcomes and exacerbate the problems associated with musculoskeletal disabilities. Conversely, the absence of comorbid depression is an important predictor of successful return-to-work. Together these findings have important implications in the treatment and occupational rehabilitation of people with WMSDs. Interventions should respond to both the psychosocial and physical dimensions of these disorders in order to optimize health and vocational outcomes. Occupational rehabilitation practitioners can consider depression as an important risk factor likely to obstruct a successful return to work if suitable practices and systems are not introduced to routinely screen and treat comorbid depression in concert with vocational interventions for people with musculoskeletal disorders.

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