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Prevalence and work-related risk factors for reduced activities and absenteeism due to low back symptoms

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ABSTRACT

Although quite a lot is known about the risk factors for low back symptoms (LBS), less is known about the risk factors for the consequences of LBS. A sample of 3003 men and women randomly selected from the New Zealand Electoral Roll, were interviewed by telephone about self reported physical, psychosocial, organizational, environmental factors and the consequences of LBS (i.e. self-reported reduced activities and absenteeism). The 12-month period prevalence of reduced activities and absenteeism were 18% and 9%, respectively. Lifting (OR 1.79 95% CI 1.16–2.77) increased the risk of reduced activities. Working in awkward/tiring positions (OR 2.11 95% CI 1.20–3.70) and in a cold/damp environment (OR 2.18 95% CI 1.11–4.28) increased the risk of absenteeism. Among those with LBS, reduced activities increased with working in a hot/warm environment (OR 2.14 95% CI 1.22–3.76) and absenteeism was increased with work in awkward/tiring positions (OR 2.06 95% CI 1.13–3.77), tight deadlines (OR 1.89 95% CI 1.02–3.50), and a hot/warm environment (OR 3.35 95% CI 1.68–6.68). Interventions to reduce the consequences of LBS should aim to reduce awkward/tiring positions, lifting and work in a cold/damp environment. For individuals with LBS, additional focus should be to reduce tight deadlines, and work in hot/warm environments.

1. Introduction

Low back symptoms (LBS) are very prevalent amongst general and working populations and are a significant health problem due to their serious economic and social impact (Hanson et al., 2006; National Research Council and Institute of Medicine, 2001). Between 1997 and 2005 27% of all Washington State fund-accepted health insurance claims were for work-related musculoskeletal disorders (WMSDs) involving the back (51%), upper extremity (37%), neck (12%) with an average direct cost of USD 12,377 per claim (Silverstein and Adams, 2007). In Finland, the direct and indirect cost of managing patients with LBS was 624 EUR per visit to general practitioners (Mantyselka et al., 2002). A study in Sweden estimated the annual cost for sick listed more than one month due to back and neck problems was about 1.3% of Gross National Product (Hansson and Hansson, 2005).

The social consequences of LBS, including its severity, may be assessed in terms of the extent to which people are prevented from carrying out their normal activities (i.e. reduced activities) and absenteeism. Although many studies have reported on this, the findings of those that have used identical or very similar methods to that of the present study are summarised below. The social consequences of LBS arise from disability (i.e. diminished capacity for everyday activities and gainful employment, etc) (Wadell, 1991) and absenteeism. Although 10% of Chinese offshore workers (Chen et al., 2005), 17% of New Zealand dentists (Palliser et al., 2005), 21% of Swedish ambulance personnel (Aasa et al., 2005), and 42% of New Zealand veterinarians (Scuffham et al., 2010) are reported to have had reduced activities due to LBS, there are few other similar studies. The prevalence of absenteeism due to LBS was 9% for Irish health service workers (Cunningham et al., 2006), 9% of New

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Zealand veterinarians Scuffham et al. (2010), and 10% of dentists in Greece (Alexopoulos et al., 2004). Ijzelenberg et al. (2004) reported a similar figure of 14% of laundry and dry-cleaning workers in Netherlands whereas 15% of Greek shipyard workers had absenteeism due to LBS (Alexopoulos et al., 2008). Among general working populations in Netherland, 9% of workers took sick leave due to absenteeism (Hooftman et al., 2009), 18% of workers had ≥1 days of absenteeism due to LBS (van den Heuvel et al., 2004), and 20% of workers had ≥3 days of absenteeism due to LBS (Hoogendoorn et al., 2002). The last these three studies (Hooftman et al., 2009; Hoogendoorn et al., 2002; van den Heuvel et al., 2004) used the company's register sickness absence data in their analysis.

Previous studies have identified physical and psychosocial risk factors for reduced activities and absenteeism due to LBS. Two cross-sectional studies by Aasa et al. (2005) and Simon et al. (2008) showed that physical factors (i.e. awkward posture and lifting) were associated with reduced activities due to LBS among Swedish ambulance personnel and nurses and auxiliary staff in various countries in Europe. Psychosocial risk factors for reduced activities due to LBS have been reported as: worry about work conditions (i.e. worry about being diseased/injured, worry about making mistakes, worry about being subjected to threats and/or violence) (Aasa et al., 2005), lack of social support (Aasa et al., 2005), high quantitative demands (Simon et al., 2008), low influence at work (Simon et al., 2008), and high effort reward imbalance ratio (Simon et al., 2008).

Some prospective cohort studies have shown an association between physical risk factors and absenteeism from work due to LBS. These include: manual material handling (Bergström et al., 2007; Hooftman et al., 2009; Hoogendoorn et al., 2002) and awkward posture (Hooftman et al., 2009; Hoogendoorn et al., 2002; Tubach et al., 2002). A case control among Dutch farmers also indicated twisting and whole body vibration to be significantly associated with absenteeism due to LBS (Hartman et al., 2005). Some psychosocial risk factors have also been shown to be predictors for absenteeism due to LBS in a few prospective cohort studies. These include: job dissatisfaction (Hoogendoorn et al., 2002; van den Heuvel et al., 2004) and lack of social support (Tubach et al., 2002; van den Heuvel et al., 2004). In addition, Bartys et al. (2005) found that low job control, psychological distress and poor organisational climate was associated with absenteeism due to musculoskeletal symptoms among UK workers.

Although some studies have reported the risk factors for the consequences of LBS, most of them have explored only limited risk factors at a time. For example, Hoogendoorn et al. (2002) investigated the association between two physical factors (i.e. awkward posture and lifting), psychosocial factors (using Karasek's job content questionnaire (JCQ)) and absenteeism due to LBS among a general working population. Similarly, Hooftman et al. (2009) and van den Heuvel et al. (2004) assessed awkward posture, lifting, driving, and psychosocial factors in relation to absenteeism due to LBS. A wider range of physical factors were explored by Alexopoulos et al. (2006) and Alexopoulos et al. (2004). They assessed awkward posture, repetitive movements, prolonged sitting or standing, strenuous arm positions, and use of vibrating tools, psychosocial (using Karasek's JCQ), perceived general health, and need for recovery in relation to LBS' consequences. However, to our knowledge only one study has explored environmental factors (noise, draft, heat, cold, poor quality of internal air, and poor of blinding lighting) in relation to absenteeism due to LBS (Virtanen et al., 2008). This study also included a wide range of psychosocial factors, but only a few physical factors (i.e. work posture, repetitive movements, and physical strain) in its analysis. Since workers are most commonly exposed to physical, psychosocial, organisational and environment factors simultaneously, and each of these factors may be correlated with each other in the workplace, it is possible that there may be additional risk factors unreported in previous studies. Thus, the present study investigated a wider range of physical factors as well as psychosocial, organisational, and environmental factors in relation to the consequences of LBS, in which exposures were simultaneous. In addition, most studies cited above (Aasa et al., 2005; Alexopoulos et al., 2006; Bartys et al., 2005; Hartman et al., 2005; Hoogendoorn et al., 2002; Simon et al., 2008; Tubach et al., 2002) examined the risk factors for the consequences of LBS in the whole population, regardless of the presence of LBS. In order to be more focused in preventive strategies, therefore, the present study also examined the risk factors for the consequences of LBS for only those individuals who reported LBS.

2. Methods

2.1. Participants

This study was part of a recent large national survey of self-reported current occupational exposures, workplace practices and occupational ill-health which has been described in detail elsewhere (Eng et al., 2010). Ten thousand potential participants aged 20–64 years randomly selected from the New Zealand Electoral Roll (7000 from 2003 and 3000 from 2005) were invited by mail (three letters were sent) to have a telephone interview (Eng et al., 2010). Of 10,000 mail-outs, 1209 were returned to sender, 2719 did not reply to the three invitation letters and could not be contacted by phone, 637 did not meet the study eligibility criteria (i.e. the addressee either no longer lived or never worked in New Zealand, or was deceased) and 2425 refused to take part. Thus, 3003 people were interviewed as the study participants (an additional 7 questionnaires were missing and therefore excluded). Ethics approval for the study was obtained from the Massey University Human Ethics Committee (WGTN 13/133).

2.2. Questionnaire

The telephone interview sought information on demographic characteristics (including gender and age), lifetime work history, current self-reported physical, psychosocial, organisational, and environmental exposures, and various health conditions including musculoskeletal symptoms including LBS and the consequences of LBS (Eng et al., 2010).

2.2.1. Consequences of low back symptoms

A modified version of the Nordic Musculoskeletal Questionnaire (NMQ) (Kuorinka et al., 1987) was used to assess musculoskeletal symptoms (aches, pains, discomfort or numbness) in the low back region, and its consequences, with a recall period of 12 months. A yes/no response indicated if the participant had trouble (musculoskeletal aches, pains, discomfort, or numbness) in the low back regions, if the trouble prevented them from carrying out their normal activities (reduced activities) (e.g. housework, hobbies, gardening), and if they had been absent from work due to that trouble within the last 12 months (absenteeism). The prevalence of musculoskeletal symptoms and risk factors for LBS have been reported in earlier papers (Widanarko et al., 2011, in press).

2.2.2. Physical, psychosocial, organisational and environmental exposure assessments

In order to obtain information about physical exposures, participants were asked to estimate how much working time (never, quarter, half, three quarters or full time) during their work activities involved any of these situations: awkward or tiring position, awkward grip or hand movements, lifting, carrying out