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Differential association of general and health self-efficacy with disability, health-related quality of life and psychological distress from musculoskeletal pain in a cross-sectional general adult population survey

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Abstract

Although evidence reveals that self-efficacy is associated with disability in people with pain, there is less known about this relationship in primary care settings and no published information in general population samples. This study aimed to assess the relationship between pain, self-efficacy, health-related quality of life, psychological distress and disability in a general population sample. A randomly selected sample from electoral registers of the lower North Island of New Zealand was mailed a survey questionnaire. Presence of musculoskeletal pain was defined as ''pain present for at least seven consecutive days during the last month''. Respondents were divided into three groups on the basis of pain: no pain, pain present for less than 12 months and pain present for 12 months or longer. Health Self-efficacy, General Self-efficacy, General Health Questionnaire, modified Health Assessment Questionnaire and EuroQol-5D were also included in the survey instrument. There were 289/471 (61%) returned questionnaires from eligible subjects (of an original sample of 540). General linear modelling found evidence of an association between pain status and self-efficacy with disability, explaining 16.4–18.8% of variability in mHAQ scores. In addition, we found evidence of an interaction between pain status and general self-efficacy, suggesting a stronger relationship between general self-efficacy and disability for pain present for 12 months or more. This interaction was not observed for health self-efficacy. General self-efficacy was more strongly related to psychological distress and this association was not influenced by pain status. Health-related quality of life was associated with health self-efficacy but not general self-efficacy.

Keywords: Musculoskeletal pain; Self-efficacy; Disability; General population

1. Introduction

Musculoskeletal (MSK) pain is highly prevalent in the general population. Around 15% of general practice consultations in New Zealand are for MSK conditions (Taylor et al., 2004) and 17–35% of the general adult population report disabling MSK pain (Taylor, 2005). In such a high frequency problem, identification of potentially treatable risk factors or mediators of secondary disability arising from MSK pain would clearly have public health implications.

We examined studies published since 2000 and found consistent evidence that self-efficacy is associated with pain and disability. For patients with chronic pain self-efficacy beliefs were associated with: disability and depression (Asghari and Nicholas,

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2001; Muller et al., 2004; Dohnke et al., 2005); disability, depression and pain coping (Turner et al., 2005); depression and pain intensity (Arnstein, 2000); disability, depression, and pain interference (Tan et al., 2002); pain behaviours (McCahon et al., 2005). In addition, Marks (2001) reviewed the relationship between efficacy theory and arthritis rehabilitation and found self-efficacy a potentially potent predictor of overall health status for someone with arthritis.

Such studies have generally been conducted in clinical populations, often in the context of chronic pain services. Three studies reported on self-efficacy and disability in a primary care setting. One study involved 371 patients receiving physiotherapy for subacute, recurring or chronic musculoskeletal pain (Denison et al., 2004). In these patients self-efficacy explained variance in disability over and above that explained by fear-avoidance beliefs (catastrophizing and kinesiophobia) or pain variables, suggesting self-efficacy is a more important determinant of disability than fear avoidance or pain intensity and duration. Similarly, Bary et al. (2003) reported functional self-efficacy as a strong and independent factor associated with pain-related disability in 1045 older veterans with chronic pain; while Reid et al. (2003) concluded depressive symptoms and functional self-efficacy were each associated with disabling musculoskeletal pain in community-dwelling older persons. Less is known about the pain, disability and self-efficacy relationship in the general population, and we found no published studies in this particular population.

Other health beliefs are associated with MSK pain in the general population. High scores on the Illness Behaviour subscale of the Illness Attitudes Scales and high scores on the Somatic Symptoms Checklist predicted later development of chronic, widespread pain (CWP) (McBeth et al., 2001) and abdominal pain (Halder et al., 2002). In another population-based prospective study (Gupta et al., 2005), baseline scores on the Somatic Symptom Scale, Illness Behaviour subscale, Sleep Scale and Life Events Inventory were significant predictors for development of CWP. The National Health and Nutrition Survey indicated depression at baseline predicted later chronic MSK pain (Magni et al., 1994). The later development of low back pain was also associated with high psychological distress at baseline (Croft et al., 1995).

These population studies primarily identified risk factors for MSK pain development, but did not specifically examine disability associated with MSK pain. We aimed to assess the relationship between self-efficacy, MSK pain, and physical disability in a postal survey of adults randomly selected from New Zealand's electoral register.

2. Methods

This postal survey was primarily designed as a pilot study for a large population-based study to determine the epidemiology of rheumatic disease in New Zealand. The main results of the prevalence analysis have been published elsewhere (Taylor, 2005).

2.1. Subjects

Subjects for the postal survey were randomly selected from the general electoral registers of Palmerston North, Wairarapa, Hutt South, Rimutaka, Otaki, Mana, Ohariu-Belmont, Rongotai, and Wellington Central. Sample size was calculated by reference to the objective of estimating response rates with acceptable precision, since this was one of the principal objectives of the pilot survey. We hypothesised that the response rate would be different between Maori and non-Maori and between persons older than 40 years and those younger than 40 years and therefore sampled by these strata. For the total Maori roll population within the target general electorates ($N = 22{,}171$) it was necessary to sample 164 to identify a response rate of 30% with a precision of 7%, confidence level of 95%. For the non-Maori aged 18–39 years ($N = 126{,}245$), it was necessary to sample 188 (expected response rate 40%) and for ages 40 and over ($N = 207{,}040$) it was necessary to sample 188 (expected response rate 60%), with similar precision.

The sampling frame fairly represented the general population. However, because of the stratification, there were more Maori (33.9% of the sample compared to 14.7% of the NZ census population) and younger people (51.8% younger than 40 years in the sampling frame compared to 39.4% of the NZ Census population) in comparison to the age and ethnic structure of the 2001 NZ Census (http://www.stats.govt.nz/products-and-services/table-builder/default.htm).

2.2. Measures

The survey instrument was based upon the same questionnaire used by a population survey in Tameside, United Kingdom, provided by Professor Deborah Symmons from the Arthritis Research Campaign Epidemiology Research Unit, University of Manchester (Urwin et al., 1998). The primary question related to the 1-month period prevalence of pain present for at least 7 days, supplemented by site-specific questions and a pain mannequin (drawing). An affirmative response (responses were of yes/no format) to any site-specific item defined the presence of MSK pain. Examples of items are:

I have had back pain for more than a week
I have had shoulder pain for more than a week

Health self-efficacy (HSE) was measured using the eight-item Perceived Health Self-competence Scale which we scored between 0 and 24 (low to high level of self-efficacy) (Smith et al., 1995). This instrument has been validated in adults, undergraduate students, West Point cadets and people with rheumatoid arthritis. It has Cronbach αs of 0.82–0.90, stability coefficients of 0.60–0.82, and good construct validity.