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Sickness absence due to musculoskeletal diagnoses and risk of diagnosis-specific disability pension: A nationwide Swedish prospective cohort study

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ABSTRACT

Musculoskeletal disorders constitute major public health problems. Few studies have, however, examined risk of disability pension among persons sickness absent due to musculoskeletal diagnoses. Thus, we constructed a prospective nationwide population–based cohort study based on Swedish registers, consisting of all 4,687,756 individuals living in Sweden December 31, 2004/2005, aged 20–64 years, who were not on disability or old-age pension. Those individuals who were sickness absent in 2005 due to musculoskeletal diagnoses were compared to those sickness absent due to non-musculoskeletal diagnoses and those with no sickness absence. Musculoskeletal diagnoses were categorized as follows: 1) artropathies/systemic connective tissue disorders, 2) dorsopathies, and 3) soft tissue disorders/osteopathies/chondropathies/other musculoskeletal disorders. All-cause and diagnosis-specific incident disability pension were followed from 2006 to 2009. Incidence rate ratios (IRRs) and 95% confidence intervals (CIs) were estimated by Cox proportional hazards regression. In models adjusted for socio-demographic factors and morbidity, sickness absence due to all categories of musculoskeletal diagnoses was associated with 12- to 18-fold increased risks of all-cause disability pension (adjusted model, category 2 diagnoses, IRR = 18.57, 95% CI = 18.18–18.97). Similar associations were observed among both women and men sickness absent due to all 3 musculoskeletal diagnostic categories. Moreover, increased risks of disability pension because of cancer, mental, circulatory and musculoskeletal diagnoses were observed among individuals sickness absent because of any musculoskeletal diagnostic category (disability pension due to musculoskeletal diagnoses, adjusted model, category 2 diagnoses, IRR = 50.66, 95% CI = 49.06–52.32). In conclusion, this nationwide cohort study reveals strongly increased risks of all-cause and diagnosis-specific disability pension among those sickness absent due to musculoskeletal diagnoses.

1. Introduction

Musculoskeletal disorders constitute major public health problems in the Western world because of pain and reduced physical function, leading to reduced quality of life and work capacity [5,6,13,26,28]. The etiology is multifactorial, and female sex, increasing age, physical inactivity, physical strain, smoking, obesity, low socioeconomic status (SES), adverse psychosocial factors and heredity are known risk factors [5,29]. Musculoskeletal disorders often coexist with other musculoskeletal disorders and with other conditions such as mental disorders and cardiovascular disease [29]. Moreover, musculoskeletal diagnoses, together with mental diagnoses, are the most common reasons for long-term sickness absence in Sweden and other industrialized countries [4,5,10,14,15]. However, there are few studies of health-related consequences of being sickness absent because of musculoskeletal diagnoses. One such potential consequence is disability pension. Disability pension is a large public health problem, entailing severe social, economic and health-related consequences for individuals and a considerable economic burden for society [1,3,16,23]. About 8% of the Swedish adult population were on disability pension in March 2010, of which disability pensions resulting from musculoskeletal and mental diagnoses were the most common [16]. Known risk factors for all-cause disability pension include advanced age, female sex, low SES, not being married, living in a semi-urban area, adverse psychosocial and physical working conditions, poor self-rated health, chronic disease, obesity, smoking, and some factors measured in late adolescence, in particular, low IQ [16,27,28,30]. Moreover, disability pension is generally preceded by sickness

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absence [3,18], although the majority of those sickness absent are never granted disability pension.

Few studies have examined the association between diagnosis-specific sickness absence and risk of diagnosis-specific disability pension [3,18] as access to data including sick-leave diagnoses is rare [3]. Hitherto, only 5 prospective cohort studies of the association between sickness absence because of musculoskeletal diagnoses and risk of disability pension have been performed [3,12,14,17,18]. These studies however, were based on smaller, selected samples. Thus, the aim of the present study was to examine, for the first time, the association between sickness absence due to 3 different categories of musculoskeletal diagnoses and risk of disability pension in a nationwide cohort study.

2. Methods

2.1. Study design

This prospective cohort study consists of all 5,277,713 individuals who, as of December 31, 2004, and December 31, 2005, were registered as living in Sweden, and in December 31, 2005, were 20 to 64 years old. Data from the following nationwide, population-based registers were linked by using the Personal Identity Number (PIN, a unique 10-digit number assigned to all Swedish residents): 1) Longitudinal Integration Database for Health Insurance and Labor Market Studies (LISA), held by Statistics Sweden, including data for cohort definition, potential confounders, old-age pension, and follow-up regarding migration; 2) Micro Data for Analysis of the Social Insurance database (MiDAS), held by the Swedish Social Insurance Agency, including exposure and outcome data regarding diagnosis-specific sickness absence and disability pension and data regarding old-age pension; 3) the National Patient Register; and 4) the Causes of Death Register, both held by the National Board of Health and Welfare, including potential confounders regarding morbidity and mortality data. These population-based registers are considered complete and of high quality [2,22].

2.2. Ethics statement

The study was approved by the Regional Ethical Review Board in Stockholm, Sweden.

2.3. Swedish social insurance system

All adults in Sweden with income from work or unemployment benefits may receive sickness benefits covering up to 80% of lost income if the individual's work capacity is reduced due to disease or injury. A sickness certificate from a physician is required from day 8. Sick pay is provided from the employer for the first 14 days of a sick-leave spell and thereafter the Social Insurance Agency pays sickness benefits. All adults may be granted disability pension if a disease or injury has led to permanent work incapacity. Old-age pension is granted mostly at 65 years. Disability and old-age pension cover at least 65% of lost income.

2.4. Sickness absence due to musculoskeletal diagnoses

Exposure data, based on MiDAS including sickness benefits (not sick pay) data, were defined as having at least 1 sick-leave day due to musculoskeletal diagnoses in 2005. Nationwide diagnosis-specific sick-leave data is available since 2005, and only the main sick-leave diagnosis for each sick-leave spell is registered. Sick-leave diagnoses are classified according to the World Health Organization's International Statistical Classification of Diseases and Related Health Problems, Tenth Revision (ICD-10) [36]. We categorized sickness absence due to musculoskeletal diagnoses (ICD-10, chapter XIII; diseases of the musculoskeletal system and connective tissue, M00-M99, 3 digits) in 3 different categories: 1) artropathies (M00–M25) and systemic connective tissue disorders (M30–M36); 2) dorsopathies (M40–M54); and 3) soft tissue disorders (M60–M79), osteopathies and chondropathies (M80–M94) and other disorders of the musculoskeletal system and connective tissue (M95–M99). These will be referred to as category 1, 2, and 3 diagnoses, respectively. Thereafter, we constructed 3 exposure variables based on prevalent sickness absence during 2005. These 3 variables were grouped into the following 4 categories: 1) no sickness benefits in 2005 (unexposed/reference group); 2) no sick-leave spell due to any musculoskeletal diagnosis, but at least 1 sick-leave spell due to non-musculoskeletal (or no registered) diagnosis in 2005 (of which non-musculoskeletal diagnoses include ICD-10 chapters I–XII and XIV–XXII); 3) no sick-leave spell due to musculoskeletal category 1 diagnoses, but at least 1 sick-leave spell due to musculoskeletal category 2 or 3 diagnoses in 2005; and 4) at least 1 sick-leave spell due to musculoskeletal category 1 diagnoses in 2005. Musculoskeletal category 1 diagnoses were replaced by musculoskeletal category 2 or 3 diagnoses for the other 2 exposure variables.

2.5. Incident disability pension

To identify all disability pensions, we used MiDAS, which comprised all disability pensions granted among Swedish residents since 1993. Disability pensions were defined as incident disability pensions granted during follow-up in 2006 to 2009, including both full- and part-time disability pensions. Disability pension diagnoses are classified according to ICD-10. We analyzed all-cause disability pension and diagnosis-specific disability pension due to common diagnostic groups regarding disability pension and/or common chronic diseases. Thus, the following main diagnoses were studied: 1) malignant and benign tumors (ICD-10, chapter II: C00–C97, D00–D48); 2) mental and behavioral disorders (ICD-10, chapter V; F00–F99); 3) diseases of the circulatory system (ICD-10, chapter IX; 100–199); and 4) diseases of the musculoskeletal system and connective tissue (ICD-10, chapter XIII: M00–M99).

2.6. Exclusions of cohort members

The cohort included 5,277,713 individuals. After excluding 34 individuals who were erroneously registered as alive in 2005, 29,011 individuals with early old-age pension starting before or at January 1, 2005, and 560,912 individuals with ongoing or newly granted disability pension in 2005, a total of 4,687,756 individuals were included in the statistical analyses.

2.7. Statistical analyses

The cohort members were followed from January 1, 2006, through December 31, 2009, December 31 of the year that the participant turned 65 years of age, date of emigration, date of death, or date of an incident disability pension, whichever came first. Incidence rate ratios (IRRs) and 95% confidence intervals (CIs) were estimated by Cox proportional hazards models [7], using time since entry into the cohort as underlying time scale and the PHREG procedure in SAS, release 9.2 (SAS Institute, Cary, NC). Data were analyzed in crude and adjusted models. The following potential confounders, namely, known risk factors for sickness absence due to musculoskeletal diagnoses and disability pension, were adjusted for (Table 1):