Absence from work and return to work in people with back pain: a systematic review and meta-analysis

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ABSTRACT

Background A considerable proportion of work absence is attributed to back pain, however prospective studies in working populations with back pain are variable in setting and design, and a quantitative summary of current evidence is lacking.

Objective To investigate the extent to which differences in setting, country, sampling procedures and methods for data collection are responsible for variation in estimates of work absence and return to work.

Methods Systematic searches of seven bibliographic databases. Inclusion criteria were: adults in paid employment, with back pain, work absence or return to work during follow-up had been reported. Random effects meta-analysis and meta-regression analysis was carried out to provide summary estimates of work absence and return to work rates.

Results 45 studies were identified for inclusion in the review; 34 were included in the meta-analysis. The pooled estimate for the occurrence of work absence in workers with back pain was 15.5% (95% CI 9.8% to 23.6%, n=17 studies, I² 98.1%) in studies with follow-up periods of ≤6 months. The pooled estimate for the proportion of people with back pain returning to work was 68.2% (95% CI 54.8% to 79.1%, n=13, I² 99.2%), 85.6% (95% CI 78.2% to 90.7%, n=13, I² 98.7%) and 93.3% (95% CI 84.0% to 94.7%, n=10, I² 99%), at 1 month, 1–6 months and ≥6 months, respectively. Differences in setting, risk of participation bias and method of assessing work absence explained some of the heterogeneity.

Conclusions Pooled estimates suggest high return to work rates, with wide variation in estimates of return to work only partly explained by a priori defined study-level variables. The estimated 32% not back at work at 1 month are at a crucial point for intervention to prevent long term work absence.

INTRODUCTION

Low back pain is a major problem throughout the world; it is common, and often recurrent. A recent systematic review of 165 studies on the epidemiology of back pain estimated the global 1-month period prevalence to be 23.2% (±2.9%).1 The 1-year incidence of a first ever episode of back pain has been reported to range from 6.3% to 15.4%.2 The incidence of back pain is highest in people in their 40s, while the prevalence of back pain increases with age before declining in older age groups.3 Of those people who experience activity limiting back pain, most will go on to have recurrent episodes.2

What this paper adds

• Back pain leads to a considerable proportion of work absence, however prospective studies in working populations with back pain are variable in setting and design and summary of current evidence is lacking.
• The pooled estimate for the occurrence of work absence in workers with back pain was 15.5% in studies with follow-up period of up to 6 months.
• The pooled estimate for the proportion of people with back pain returning to work was 68.2% at 1 month, 85.6% at 1–6 months and 93.3% at ≥6 months.
• Differences in setting, risk of participation bias and method of assessing work absence explained some of the heterogeneity.
• Pooled estimates suggest a high return to work, however the estimated 32% not back at work at 1 month are at a crucial point for intervention to prevent long term work absence.
of back pain), definition of work absence and return to work. Hestbaek et al.\textsuperscript{11} concluded that the literature on return to work, in particular, was confusing and estimates of return to work inconclusive due to the lack of consistency in the definitions used.

The aim of this systematic review and meta-analysis was to investigate the extent to which differences in setting, country, sampling procedures and methods for data collection may be responsible for variation in estimates of work absence and return to work, in people with back pain, and provide more accurate estimates for specific settings and populations.

METHODS
Selection of studies for review
Inclusion criteria
Cohort studies were included in the review if participants, at baseline, were in paid employment and had non-specific or mechanical back pain; the back pain did not have to be work related. Studies also had to report: (1) a subjective or objective outcome measure of work absence or sick leave over the follow-up period, and/or (2) data on return to work rates in workers with back pain absent from work at baseline. Cohort studies using prospectively collected data as well as studies based on retrospective analysis of existing data from insurance or employment databases were included.

Exclusion criteria
Studies that reported on patients with more generalised painful conditions (such as rheumatoid arthritis and fibromyalgia), but did not report separate results for people with back pain were excluded from this review. Studies on the prevalence of back pain related absence in a population of workers (where the absence was not necessarily due to back pain) and studies including patients on long term sick leave (more than 2 weeks’ duration) at the start of the study were excluded. Studies published in languages other than English were also excluded.

Search strategy
A systematic, comprehensive search of published and unpublished healthcare and occupational health literature was carried out. The following electronic databases were searched in May and June 2011: Medline, EMBASE, CINAHL, AMED, PsycInfo, Health Management Information Consortium Database (including King’s Fund and Department of Health databases) and Web of Science. A full search strategy is available on request.

Two of three reviewers (JC, JJ, DvdW) independently assessed the titles and abstracts of potentially relevant papers identified from the search strategy against the inclusion criteria. All remaining papers were obtained and reviewed in full (by two of the three reviewers) before a final decision was made on inclusion or exclusion from the review. If consensus between the two reviewers could not be reached for a particular study, the third reviewer was consulted.

Data extraction
Data were extracted by two reviewers independently using a standardised data extraction sheet. The following data were extracted from each of the studies:

• Design: analysis of prospectively collected data, or retrospective analysis of existing data on work absence (usually insurance databases).

• Characteristics of the study setting and population: year data collection started, country, setting (database, primary care, secondary care, workplace, general population), sampling/recruitment process, number of participants or claims sampled, baseline characteristics of participants, the types of workplace, and the duration of back pain.

• Outcome measurement: method of data collection on work absence using self-report or based on available health insurance or employer records.

• Results: proportion of workers absent from work due to low back pain over the period of follow-up, duration of work absence, or proportion returning to work within a specific time period.

Outcome measures
The main outcome measures of interest were occurrence of work absence, measured by the proportion of workers with back pain absent from work over a follow-up period of at least 6 months, and return to work, measured as the proportion of workers on sick leave at baseline who return to work within 1 month (short term), 1–6 months (medium term) or more than 6 months (long term). The mean or median duration of work absence was also recorded if this was reported by study authors.

Potential sources of variation
We assessed the following study-level variables as potential sources of variation in estimates of work absence or return to work across studies:

1. Setting/study population: samples identified from insurance databases, general populations, healthcare settings or workplaces.

2. Geographical region: Europe, North America, other.

3. Study period during which data were collected: 1977–1990, 1991–2000, 2001–most recent (2007).

4. Method used to collect information on the outcome measure (work absence or return to work): using either data from self-report questionnaires or data retrieved from insurance or employer databases.

5. Potential bias related to study participation, assessed using the study participation domain of the quality assessment framework suggested by Hayden et al.\textsuperscript{12} The items in this domain related to clear description of the source population, sampling and recruitment methods, inclusion criteria, baseline characteristics of the study population and an adequate (≥70%) participation rate of eligible subjects. The information generated by these signalling items was used to assess the risk of participation bias, which for each study was assessed as low, moderate or high by two independent reviewers, with a third reviewer being consulted to resolve any disagreements. Studies were assessed as low risk of bias if sampling procedures were clearly described and were unlikely to introduce bias (eg, random sampling or consecutive patients); high participation rates were achieved (we used ≥70%); there was no evidence of selective non-response; and the baseline characteristics of the sample were clearly described, indicating the sample reflected the intended target population. Studies were considered to be at moderate risk of bias if they met some but not all criteria of if insufficient information made it difficult to judge the risk of bias. Studies were assessed at high risk of bias if sampling methods were likely to introduce bias (eg, inappropriate exclusions); participation rates were low (<70%), and/or there was selective non-response; and the sample was poorly described.
Data synthesis

Details are provided on setting, study population, definitions used, and estimates of the occurrence of work absence and return to work rate for the studies included in the review. Pooled estimates for return to work were calculated for return to work within 1 month, 1–6 months and longer than 6 months using a random effects model. As meta-analysis requires a normal distribution of data, logit transformations were applied to proportions presented for return to work, and the analysis was weighted by inverse variance of the logit transformed proportions. The final pooled logit results and 95% CIs were back-transformed to proportions for ease of interpretation. We used Cochran’s Q test for heterogeneity with a 10% level of significance to detect inconsistency in study results, and the Higgins I² statistic to denote the percentage of variation in study results that exceeded random error. The Higgins I² was calculated using basic results from the meta-analysis as $I^2 = 100\% \times (Q - df)/Q$, where Q is the Cochran heterogeneity statistic and df is the degrees of freedom. Negative values of $I^2$ were adjusted to zero (no heterogeneity), to give an $I^2$ between 0 and 100%, where larger values show increasing heterogeneity. We used the following simplified categorisation to classify the level of heterogeneity based on $I^2$: low ($I^2$ value of 25% and above), moderate ($I^2$ value of 50% and above) and high ($I^2$ value of 75% and above).

Meta-regression analysis was used to study the influence of a priori defined potential sources of variation, investigating one co-variable at a time: study setting, country, study period, method used to collect data on work absence, and risk of study participation bias. Pooled estimates (with 95% CI) were presented for subgroups based on these study-level variables, along with the proportion of variance explained by each study-level variable. The R-statistical package (‘meta’) was used to carry out the meta-analyses and meta-regression analyses.

Data regarding the duration of work absence were not suitable for meta-analysis, and so the results were described in terms of the median or mean number of days off work over a specific time period, or as the mean or median duration of an episode of work absence.

RESULTS

Study characteristics

The search identified 8834 records, which resulted in 45 studies included in the review. Figure 1 shows the results of the search process and the selection of papers. Of these 45 studies, 55.5% (n=25) were assessed as low risk of participation bias, 37.7% (n=17) as moderate risk of bias and 6.8% (n=3) as high risk of bias. The data were such that a descriptive summary is given of results from 18 studies reporting on the duration of work absence, while we were able to include 34 studies in the meta-analysis of the occurrence of work absence or return to work rates.

A summary of the general characteristics of the included studies is presented in online supplementary table S1, and a

![Flow diagram showing the results of the search and selection of papers.](http://oem.bmj.com/content/71/6/448/F1.large.jpg)
more detailed description of design and results of each study is provided in online supplementary table S2. There were a total of 188,281 participants in the 45 included studies, ranging from 50 to 148,917 individuals or episodes of work absence.

Only four studies provided information on duration of work absence at the time of the study inception. Steenstra et al.49 at first interview participants had a mean of 18.8 (SD 6.43) days missed due to injury. Hadler et al.50 in the 30 days prior to the baseline interview, insured patients had 3.2 days of absence compared to 2.6 days of absence in uninsured patients. Linton et al.51 of the sample, 62% reported no days absence over the previous 12 months, 18% reported 1–30 days absence over the past 12 months and 20% reported ≥30 days absence over the past 12 months. Note that 12 months covers the period of follow-up (6 months) plus the period before entry into the study (6 months). Nordin et al.52 duration of absence was <28 days in 60% of participants employed in a utility company and 45% in participants employed in a transportation authority.

Healthcare settings were used to identify back pain populations in 18 studies, 10 studies were carried out in the workplace, 14 identified episodes of back pain from insurance or employer databases, and three used general population samples to identify workers with back pain.

The healthcare settings varied, from primary care settings to emergency departments, outpatient clinics and hospital settings. The workplaces included a shipbuilding company, two industrial plants, retail stores and a utility company (see online supplementary table S2).

Most of the studies were carried out in European countries (46.6%, n=21). A further 42.2% (n=19) of studies were carried out in North America, and five studies were conducted in other countries: Israel, Australia, Japan and Argentina. Approximately half of the studies collected data on work absence by self-report from the patients (48.8%, n=22), with the remaining 23 studies collecting data from insurance or work absence databases (see online supplementary table S1).

### Duration of work absence

The durations of work absence, presented as either median or mean number of days, are summarised in online supplementary table S3. The median duration of work absence (nine studies) ranged from 14 to 24 days in studies conducted in back pain populations identified from healthcare settings, from 7 to 61 days in database studies, and from 5 to 28 days in workplace samples with back pain. One population-based cohort study reported a median duration of work absence of 12 days for men and 7 days for women with back pain.18

The mean duration of work absence was reported in 18 studies which showed wide variation in setting, sampling frame and length of follow-up (see online supplementary table S3). Of these 18 studies, 38.9% (n=7) were assessed as low risk of participation bias, 44.4% (n=8) as moderate risk of bias and 16.7% (n=3) as high risk of bias. Mean sick leave ranged from 2.6 to 84 days in studies conducted in a healthcare setting, from 1.2 to 41.1 days in data taken from database studies, and from 5.0 to 21.2 days in studies conducted in workplace populations with back pain.

### Occurrence of work absence

Figure 2 presents estimates from individual studies of the proportion of workers with back pain with an episode of work absence during follow-up. Of these 14 studies 42.9% (n=6) were judged to have low risk of bias, 57.1% (n=8) moderate risk of bias and none as high risk of bias. The pooled occurrence was 15.5% (95% CI 9.8% to 23.6%, n=14 studies contributing 17 sets of data) in studies with follow-up periods of 6 months or longer. The I² statistic was 98.1%, indicating large heterogeneity in study findings.

The results of the meta-regression analysis including pooled estimates for subgroups of studies are shown in table 1. There were no statistically significant associations between the characteristics of the studies and work absence in back pain populations. However, the meta-regression analysis demonstrated that some of the variance in estimates of work absence could be explained but study setting or use of a database. Study setting explained the most variance at 21.5%, with studies conducted in either a healthcare setting or using samples from insurance databases reporting the lowest estimate of work absence (pooled estimates 7.9% and 11.8%, respectively), compared to studies carried out in the workplace and using population-based samples (pooled estimates 35.0% and 20.8%, respectively).

There was a difference in the proportion of absence in back pain populations dependent on how assessment was carried out, with studies using electronic records resulting in a higher pooled rate of absence compared to studies using self-report (pooled estimate 25.2%, 95% CI 11.1% to 47.7% vs 12.4%, 95% CI 6.8% to 21.5%). This difference however was not significant, and this factor explained only 4.5% of the variance.

Lastly, study participation bias accounted for 1.1% of the variance, with a lower proportion of work absence (pooled

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**Figure 2** Summary of results regarding occurrence (%) of work absence in back pain populations based on studies with at least 6 months’ follow-up.
The I² statistic was 89.5% (95% CI 57.2% to 98.2%) in studies with a low risk of bias compared to 79.8% (95% CI 71.4% to 86.2%) and 57.4% of the variance at 6 months or longer (p=0.008). Studies using self-reported data had a pooled estimate of 79.0% (95% CI 62.7% to 89.3%) of back pain absentees returning to work at 6 months or longer compared to studies using electronic records where the pooled estimate was 98.1% (95% CI 96.1% to 99.0%).

Estimates of return to work within 1 month and 1–6 months were significantly associated with the risk of study participation bias, with a higher pooled estimate of participants returning to work being reported for studies with a moderate risk of bias when compared with those with a low risk of bias (p=0.039 and 0.014, respectively). The risk of study participation bias explained 27.3% and 39.5% of the variance at up to 1 month and 1–6 months, respectively. There was no significant effect of this source of bias at the 6 months or longer follow-up periods. At up to 1 month, studies with a low risk of bias had a pooled estimate of return to work of 58.6% (95% CI 45.8% to 71.4%) compared to 89.5% (95% CI 71.4% to 98.2%) in studies with a moderate risk of bias. Analysis of the data for the 1–6 month period also demonstrated that studies with a low risk of bias had a lower estimated return to work compared to those with a moderate risk of bias: 79.8% (95% CI 71.4% to 86.2%) and 98.2% (95% CI 92.7% to 99.6%), respectively.

**DISCUSSION**

**Summary of main findings**

The results of the systematic review and meta-analysis indicate that almost one fifth of workers with back pain take some absence over a period of 6 months or longer. Estimates showed non-significant association with estimates of return to work at the 1–6 month and 6 month or longer periods. Study period also showed a weak non-significant association with estimates of return to work at 6 months or longer.
wide variability across studies that could not be explained by geographical region, setting, study period, methods of data collection on work absence or risk of participation bias. The majority of individuals who have a period of absence as a result of back pain will return to work; pooled estimates were 68% at up to 1 month, 85% at 1–6 months and 93% at 6 months follow-up. Variability in estimates was partly explained by study participation bias, methods of data collection and study setting, with higher return to work rates reported in studies using samples from insurance databases, electronic recorded assessment of work absence and those studies judged to have a moderate risk of participation bias, compared to studies with a low risk of participation bias.

Sources of heterogeneity

There was a large amount of between-study variability in estimates of the occurrence of work absence and return to work, with $I^2$ being >90% for all analyses. Heterogeneity was investigated using meta-regression analysis to examine whether the variability could be explained by several a priori defined study-level characteristics, but this provided only limited explanation. Some of the unexplained observed heterogeneity may be the result of differences in study-level factors that were not considered in this meta-analysis, such as the specific definitions used for absence and return to work. However, it is likely that individual-level differences explain most of the variation, such as differences in the back pain duration of study participants, the level of pain and disability reported by study participants, or work conditions. Individual level factors might have provided more insight into the reasons for the observed variability in estimates of work absence and return to work in workers with back pain, but could not be addressed in this analysis. Furthermore, this review and meta-regression was only able to examine the effect of potential sources of variance individually; ideally the analysis would also have looked at potential cumulative variance but this was not possible due to the limited number of studies eligible for inclusion in each analysis.

There were some interesting findings when investigating potential sources of variation that warrant further consideration, in particular for estimates of return to work. First, estimates of return to work rates based on studies with long-term follow-up were lower in studies conducted in the healthcare setting compared to studies conducted in other settings. This is likely to reflect differing characteristics of the study population, with participants recruited from a healthcare setting having more severe back pain and related symptoms, either making them less likely to return to work, or waiting for treatment to finish before returning to work. Of studies included in the return to work analysis, only three had a moderate risk of participation bias and only one had a high risk of bias. Nevertheless, study participation bias showed a significant association with the estimates of return to work in
the reasons for this are unclear; however, it may be proposed to work at 6 months or longer compared to self-report. Again, 454 Wynne-Jones G., De 455

... further details of the specific definitions of return to work and recurrent periods of absence. Further details of the specific definitions of return to work in each of the studies would be required to explore these propositions fully.

**Definition of work absence and return to work**

Heitz et al.63 proposed the inclusion of standardised measures of a range of work outcomes, to permit comparisons between studies. Although the methods for assessing absence were generally quite consistent, the definitions of absence that were used varied considerably. It has been noted that although absence would appear to be straightforward to measure, there are many and varied definitions of absence that relate to the absence episode (eg, new/current/past absence), duration (eg, calendar days, working days, compensated days, hours) and person (number taking absence, percentage absence).64 65 Hensing et al.66 suggest five measures that should be included when recording absence in an attempt to introduce some consistency across studies: frequency of absence, length of absence, incidence rate, cumulative incidence, and duration of absence. Of the studies that were included in the current review, the majority of these measures were missing.

Variability in definitions was also found in measures of return to work and it is important to note that return to work does not equate to ‘full recovery’ or working at full capacity. Research into the measurement of return to work suggests that there are difficulties associated with reliability (particularly of self-reported status), and that the validity of measures should be examined as common measures of return to work lack information on sensitivity and specificity.58 Additionally, Anema et al.10 urge caution when comparing return to work rates across countries as a result of differing systems of disability benefits and applied work interventions, which have been demonstrated to have an impact on the rates of absence.67

In conclusion, this review has identified the important influence of research methodology when conducting studies with an occupational outcome. The observed heterogeneity demonstrates a need for more consistency in the definitions and measurement of both absence and return to work in order to...
accurately relate the literature to the occupational burden in people with back pain. There has been a move within the back pain literature to standardise terminology, and this is beginning to transfer into the occupational health literature.

Length and timing of follow-up

It has been proposed that the assessment of outcomes should take place at a common and clinically relevant time point and the findings of the current review would support this proposal. The studies included in this review varied considerably in terms of length of follow-up and timing of outcome measurements, which may have influenced findings regarding occurrence of work absence or return to work rates. Each study was allocated to a category relating to time-period of outcome up to 1 month, 1–6 months and 6 months or longer. These categories were selected to reflect the most common follow-up periods in the studies, and the potential for policy consequences, with no specific intervention being required for people (approximately 68% based on this review) who have returned to work within 1 month, while those who have not returned to work by 6 months (approximately 15%) may be eligible for state support in the form of benefits (e.g., in the UK). While 1 month may be considered an arbitrary time point, those who have not returned to work at 1 month (estimated at 32%) are at a crucial point for intervention to prevent longer term absences and high costs associated with benefits, in addition to the adverse health, social and economic consequences for the individual. This group could be targeted for identification of obstacles to working with health conditions, with a move towards early screening for occupational factors associated with long-term back disability.

Screening and targeting of risk factors for poor outcome has been demonstrated to be clinically and cost effective with regard to treatment for back pain, with a positive effect on work absence in addition to pain, but the method now needs to be more specifically applied to occupational risk factors of back pain in order to prevent long-term absence and promote return to work. At present there is insufficient evidence on prognostic factors, which means that we cannot yet accurately predict (at the start of work absence) who are likely to have a poor long-term outcome. There is currently little evidence to support a strategy in which early intervention is targeted only to those who need it. Therefore, the most effective and efficient approach may be a stepwise approach, in which more proactive intervention is offered to those still absent from work at a time after which current evidence indicates the majority have returned to work with no or minimal intervention. Intervening at an earlier stage risks being costly due to ‘treating’ people with back pain who are likely to return to work regardless. However, additional (randomised) research needs to take place to clarify if 1 month is indeed the most appropriate point at which to intervene in those who are absent from work, and which interventions are likely to be most cost effective.

CONCLUSIONS

In conclusion, this review summarises the evidence, from a wide range of settings and populations, on the proportion of workers with back pain who experience an episode of work absence, and the proportions who return to work in the short, medium and long term. Pooled estimates suggest high return to work rates in most studies, but also reveal wide variation in estimates of return to work partly explained by differences in study setting or study participation bias and in the methods used for measuring work absence and return to work. Further research should focus on addressing these methodological issues in addition to investigating the effectiveness and efficiency of screening and targeting individual-level risk factors in the estimated 32% of workers still absent from work at 1 month in order to prevent long-term work absence in an estimated 7% of workers with back pain.

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Contributors

GW-J contributed to the design of the study, reviewing papers, interpreting the analysis and the writing of the manuscript. JC contributed to the reviewing of papers and the writing of the manuscript. JLJ contributed to the design of the study, the search strategy, conducted the searches, reviewed the papers and contributed to the writing of the manuscript. OU conducted the meta-analysis and meta-regression. CMF contributed to the design of the study, interpreting the analysis and the writing of the manuscript. NG contributed to the design of the study and the writing of the manuscript. DvW contributed to the reviewing of the papers, interpretation of the analysis and the writing of the manuscript. All authors read and reviewed the final manuscript.

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Competing interests

None.

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Hashemi L, Webster BS, Clancy EA. Trends in disability duration and cost of workers’ compensation low back pain claims (1988–1996). J Occup Environ Med 1998;40:1110–19.

Henschke N, Maher CG, Refshauge KM, et al Prognosis in patients with recent onset low back pain in Australian primary care: inception cohort study. BMJ 2008;337:6626.

Hiebert R, Skovron ML, Nordin M, et al Work restrictions and outcome of nonspecific low back pain. Spine 2003;28:722–8.

Rossignol M, Suissa S, Abenhaim L. The evolution of compensated occupational spinal injuries. A three year follow up study. Spine 1992;17:1043–7.

Soriano ER, Zingoni C, Lucco F, et al Consultations for work related low back pain in Argentina. J Rheumatol 2002;29:1029–33.

Steensma IA, Koopman FS, Knol DL, et al Prognostic factors for duration of sick leave due to low-back pain in Dutch health care professionals. J Occup Rehabil 2005;15:591–605.

Troup JD, Martin JW, Lloyd DCEF. Back pain in industry: a prospective study. Spine 1981;6:61–9.

Vingard E, Mortimer M,Wiktorin C, et al Seeking care for low back pain in the general population. A two year follow-up study: results from the MUSIC-Nortälje study. Spine 2002;27:2159–65.

Jensen JK, KarpatiBijf, Labriola M, et al. Do fear-avoidance beliefs play a role in the association between low back pain and sickness absence? A prospective cohort study among female health care workers. J Occup Environ Med 2010;52:85–90.

Lanier DC, Stockton P. Clinical predictors of outcome of acute episodes of low back pain. J Fam Practice 1988;27:483–9.

Holtermann A, Hansen JV, Burr H, et al Associations between fear of back pain and work absence in injured workers with back pain. Eur Spine J 2002;11:451–5.

Jensen JN, Karpatschof B,Labriola M, et al. Association of work related low back pain with work disability: a two year follow-up study. Eur J Neurol 1999;6:578–87.

Linton SJ, Haldén K. Can we screen for problematic back pain? A screening questionnaire for predicting outcome in acute and subacute back pain. Clin J Pain 1998;14:209–15.

Nordin M, Skovron ML, Hiebert R, et al Early predictors of delayed return to work in patients with low back pain. J Musculoskeletal Pain 1997;5:5–27.

Reis S, Hermont O, Bortkan JM, et al. A new look at low back complaints in primary care: a RAMBAM Israeli family practice research network study. J Fam Practice 1999;48:299–303.

Wynne-Jones G, Pransky G, Winters T. The back disability risk questionnaire for work-related, acute back pain: prediction of unresolved problems at 3-month follow-up. J Occup Environ Med 2009;51:185–94.

Nordin M, Hiebert R, Piette M, et al. Association of comorbidity and outcome in episodes of nonspecific low back pain in occupational populations. J Occup Environ Med 2002;44:677–84.

Hadler NM, Carey TS, Garrett J. The influence of indemnification by workers’ compensation insurance on recovery from acute backache. Spine 1995;20:2710–5.

Kovacs FM, Muriel A, Sánchez MDC, et al. Fear avoidance beliefs influence duration of sick leave in Spanish low back pain patients. Spine 2007;32:1761–6.

Heitz CAM, Hilfiker R, Bachmann LM, et al. Comparison of risk factors predicting return to work between patients with subacute and chronic non-specific low back pain: systematic review. Eur Spine J 2009;18:1829–35.

Elfering A. Work-related outcome assessment instruments. Eur Spine J 2006;15:532–43.

Hensing G. Swedish council on technology assessment in health care (SBU). Chapter 4. Methodological aspects in sickness-absence research. Scand J Public Health 2004;63:44–8.

Hensing G, Alexandersson K,Allebeck P, et al. How to measure sickness absence? Literature review and suggestion of five basic measures. Scand J Public Health 1999;27:153–44.

Wynne-Jones G, Buck R, Varana K, et al. Impact on work absence and performance: what really matters? Occup Med-C 2009;59:556–62.

Stanton TR, Latimer J, Maher CG, et al. A modified Delphi approach to standardise low back pain recurrence terminology. Eur Spine J 2011;20:744–52.

Kendall NAS, Burton AK. The flags think-tank. Tackling musculoskeletal problems: a guide for clinic and workplace. London: The Stationery Office, 2005.

Heitz CAM, Hilfiker R, Bachmann LM, et al. Comparison of risk factors predicting return to work between patients with subacute and chronic non-specific low back pain: systematic review. Eur Spine J 2009;18:1829–35.

Wynne-Jones G, Buck R, Varana K, et al. Impact on work absence and performance: what really matters? Occup Med-C 2009;59:556–62.

Krause N, Dasinger LK, Deegan LJ, et al. Alternative approaches for measuring duration of work disability after low back injury based on administrative workers’ compensation data. Am J Ind Med 1999;35:604–18.

Olenick A, Gluck JV, Guire KE. Factors affecting first return to work following a compensable occupational back injury. Am J Ind Med 1996;30:540–55.

Steensma IA, Ibrahim SA, Franche R-L, et al. Validation of a risk-factor based intervention strategy model using data from the readiness for return to work cohort study. J Occup Rehabil 2010;20:394–405.

Tellines G, Svensden K-OB, Bruusgaard D, et al. Incidence of sickness certification. Scand J Prim Health Care 1989;7:111–17.

Coste J, Delecouleurie G, Cohen de Lara A, et al. Clinical course and prognostic factors in acute low back pain: an inception cohort study in primary care practice. BMJ 1994;308:577–80.

Dionne CE, Bouthonvilliers R, Frémond P, et al. Determinants of “return to work in good health” among workers with back pain who consult in primary care settings: a 2-year prospective study. Eur Spine J 2007;16:641–55.

Eliat-Tsanani S, Tabenkin H, Lave J, et al. The effect of low back pain on work absenteeism among soldiers on active service. Spine 2010;35:6959–9.

Inflante-Rivard C, Lotrie M. Prognostic factors for return to work after a first compensated episode of back pain. Occup Environ Med 1996;53:884–94.

Linton SJ, Haldén K. Can we screen for problematic back pain? A screening questionnaire for predicting outcome in acute and subacute back pain. Clin J Pain 1998;14:209–15.

Nordin M, Skovron ML, Hiebert R, et al. Early predictors of delayed return to work in patients with low back pain. J Musculoskeletal Pain 1997;5:5–27.

Raines S, Hermont O, Bortkan JM, et al. A new look at low back complaints in primary care: a RAMBAM Israeli family practice research network study. J Fam Practice 1999;48:299–303.

Wynne-Jones G, Pransky G, Winters T. The back disability risk questionnaire for work-related, acute back pain: prediction of unresolved problems at 3-month follow-up. J Occup Environ Med 2009;51:185–94.

Nordin M, Hiebert R, Piette M, et al. Association of comorbidity and outcome in episodes of nonspecific low back pain in occupational populations. J Occup Environ Med 2002;44:677–84.

Hadler NM, Carey TS, Garrett J. The influence of indemnification by workers’ compensation insurance on recovery from acute backache. Spine 1995;20:2710–5.

Kovacs FM, Muriel A, Sánchez MDC, et al. Fear avoidance beliefs influence duration of sick leave in Spanish low back pain patients. Spine 2007;32:1761–6.

Reiss H, Nygren G, Jörgensen GS, et al. Back to work: predictors of return to work among patients with back disorders certified as sick. Spine 2003;28:1468–73.

Elfering A. Work-related outcome assessment instruments. Eur Spine J 2006;15:532–43.

Hensing G. Swedish council on technology assessment in health care (SBU). Chapter 4. Methodological aspects in sickness-absence research. Scand J Public Health 2004;63:44–8.

Hensing G, Alexandersson K, Allebeck P, et al. How to measure sickness absence? Literature review and suggestion of five basic measures. Scand J Public Health 1999;27:153–44.

Wynne-Jones G, Buck R, Varana K, et al. Impact on work absence and performance: what really matters? Occup Med-C 2009;59:556–62.
Online table 1: Summary of general characteristics of included studies

| Characteristic                                                                 | N(range) (%) |
|-------------------------------------------------------------------------------|--------------|
| Total number of studies                                                       | 45           |
| Study size (range)                                                            | 188,281(50-148,917) |
| Risk of Participation Bias scores                                            |              |
| Low risk of bias                                                              | 25 (55.5%)   |
| Moderate risk of bias                                                          | 17 (37.7%)   |
| High risk of bias                                                             | 3 (6.8%)     |
| Study setting or sampling frame, n (%)                                        |              |
| Workplace                                                                     | 10 (22%)     |
| Healthcare                                                                    | 18 (40%)     |
| Insurance database                                                            | 14 (31%)     |
| Population study                                                              | 3 (7%)       |
| % male (range)*                                                               | 31% - 97%    |
| Studies using self-reported data on work absence, n (%)                        | 22 (49%)     |
| Geographic region, n (%)                                                      |              |
| North America                                                                 | 19 (42%)     |
| Europe                                                                        | 21 (47%)     |
| Other                                                                         | 5 (11%)      |

*From 44 studies. One study [26] only included females
Online Table 2; Summary of studies included in the review

Studies reporting duration of work absence

| Author (years) | Country | Setting                        | Participants                                                                 | Data source for work absence | Follow-up       | Reported results: duration of work absence                                                                 | Risk of study participation bias (QUIPS tool) |
|---------------|---------|--------------------------------|-----------------------------------------------------------------------------|------------------------------|-----------------|-------------------------------------------------------------------------------------------------------------|---------------------------------------------|
| Hashemi et al (1998) [19] | USA     | Workers compensation insurance database | 148917 compensable low back pain claims                                          | Register                     | 1 year (1996) | Median length of disability (number of days lost from work) 61 days                                           | Low                                         |
| Nyiendo et al (1991) [30] | USA     | Workers compensation insurance database | 201 with disabling compensable low back pain >3 workdays                        | Register                     | Over a period of 2.5 years | Chiropractic claimants: mean 41.1 days (SD 83.5) Medical claimants: mean 39 days (SD 75)                   | Moderate                                    |
| Rossignol et al (1992) [22] | Canada  | Workers compensation insurance database | 2342 workers compensation claims for spinal injury (defined as musculoskeletal complaints related to the entire spine (cervical, thoracic, lumbar and sacral)) in Quebec 1981 | Register                     | 4 years        | Initial episode: median 11 days 1st recurrence: median 13 days 2nd recurrence: median 14 days 3rd recurrence: median 15 days 4th recurrence: median 17.5 days | Moderate                                    |
| Shinohara et al (1998) | Japan   | Workers compensation           | 177 with organic low back pain and                                             | Register                     | 5 years        | Organic: mean 3.7 months (± 0.7)                                                                            | High                                        |
| Study                                      | Country   | Database Type          | Sample Description                                                                 | Source Type | Duration | Work Absence Details                                                                 | Results |
|-------------------------------------------|-----------|------------------------|------------------------------------------------------------------------------------|-------------|----------|--------------------------------------------------------------------------------------|---------|
| Soriano et al (2002) [23]                 | Argentina | Insurance database     | 330 patients consulting for acute low back pain while at work or while travelling to/from work | Register    | 6 months | Median work absence: 7 days (0-422 days)                                               | Moderate |
| Vallfors et al (1985) [34]                | Sweden    | Insurance database     | 50 people with low back pain who had not been absent from work in the past year     | Register    | 1 year   | Mean 10.5 days for those with objective findings Mean 7 days for those without objective findings (i.e. normal movement ability, no signs of neurologic involvement) | High    |
| Watson et al (1998) [35]                  | UK        | Social security database | 2291 claims with specific and nonspecific low back pain                            | Register    | 3 years  | 1<sup>st</sup> absence: mean 20.73 days (SD 38.9) 2<sup>nd</sup> absence: mean 36.8 (SD 61.4) | Moderate |

**Population sample**

| Study                                      | Country   | Population Type     | Sample Description                                                                 | Source Type | Duration | Days off work Details                                                                 | Results |
|-------------------------------------------|-----------|---------------------|------------------------------------------------------------------------------------|-------------|----------|--------------------------------------------------------------------------------------|---------|
| Biering-Sorensen et al (1984) [18]        | Denmark   | Population sample   | 357 (193 men, 164 women) with low back pain                                         | Self-report | 1 year   | Median days off work Men: 12 days Women: 7 days                                       | Low     |

**Samples identified from healthcare settings**

| Study                                      | Country   | Setting Type         | Sample Description                                                                 | Source Type | Duration | Days off work Details                                                                 | Results |
|-------------------------------------------|-----------|----------------------|------------------------------------------------------------------------------------|-------------|----------|--------------------------------------------------------------------------------------|---------|
| Henschke et al (2008) [20]                | Australia | Primary care clinics | 770 with low back pain for <2 weeks preceded by no low back pain for               | Self-report | 1 year   | Median 14 days                                                                      | Low     |
| Study                          | Country | Setting                        | Sample Description                                                                 | Method      | Time Period | Mean Outcomes                                      | Conclusion |
|-------------------------------|---------|--------------------------------|------------------------------------------------------------------------------------|-------------|-------------|----------------------------------------------------|------------|
| Lanier et al (1988) [28]      | USA     | Primary care                   | 104 patients consulting their family physician with low back pain                  | Self-report | 3 months    | Mean: 6.6 days manual labourers Mean: 3.6 days professional or technical workers | Moderate   |
| Valat et al (2000) [33]       | France  | Primary care                   | 2487 working with an episode of acute low back pain with or without radiation in the lower limbs, referred for the first time (symptoms developing for no more than a week) | Self-report | 42 days (± 15) after initial visit | Mean: 9 (± 7) days | Low        |
| Vingard et al (2002) [26]     | Sweden  | Primary care Occupational physicians Hospital physicians Physiotherapists Chiropractors Alternative therapists | 791 patients with new episode of low back pain, not having sought care during the preceding 6 months | Self-report | last 12 months of 24 month follow up | Median: 24 days (3-365) women Median: 14 days (2-365) men | Moderate   |

**Samples identified from workplace settings**

| Study                          | Country | Setting        | Sample Size | Method | Time Period | Outcomes                                      | Conclusion |
|-------------------------------|---------|----------------|-------------|--------|-------------|-----------------------------------------------|------------|
| **Hiebert et al**             | USA     | Utility company | 240 workers | Register | 1 year      | Median: 14 days                              | Low        |
| Study                        | Country | Setting                          | Population Description                                                                 | Method         | Duration | Mean (Range) | Grades   |
|------------------------------|---------|----------------------------------|----------------------------------------------------------------------------------------|----------------|----------|--------------|----------|
| al (2003) [21]               |         |                                  | employees with restrictions                                                             |                |          |              |          |
|                              |         |                                  | Median: 15 days                                                                          |                |          |              |          |
| Jensen et al (2010) [27]     | Denmark | Health and elderly care workers  | 1724 female healthcare workers with low back pain ≥1 day during the previous 1 year     | Self-report    | 1 year   | Mean: 21.2 days (0-365) | Low      |
| McEllingott et al (1989) [29]| USA     | Industrial plant                 | 280 with work-related back injuries & 740 with non-work related back injuries both incurring costs due to time off work | Register       | 1 year   | Mean: 5.2 days (work related) Mean: 5.1 days (non-work related) | Moderate |
| Peek-Asa et al (2004) [31]   | USA     | Retail                           | 2152 with acute low back injuries, occurrence at work, verified by physician           | Register       | 5 years  | Mean: 5.6 days age <45  Mean: 9 days age 45-54 Mean: 8.5 days Age 55+ | Moderate |
| **Steenstra et al (2005) [24]| The Netherlands | Hospital employees               | 615 who reported sick leave due to non-specific low back pain for more than 1 day over a 2-year period | Self-report    | 6 months | Median: 5 days (IQR 2-12) | Low      |
| **Troup et al               | UK      | Collieries                       | 802 participants                                                                      | Self report    | 1 year and 2 | Mean: 7.01 weeks (1-12) | High     |
(1981) [25]  

Glass industry  
Motor company  
interviewed and examined in medical centres after episodes of back pain, on return to work after sickness absence. Or in cases not absent from work after completion of treatment, or after reporting a back injury sustained at work.

| Author (years) | Country | Setting | Participants | Data source for work absence | Follow-up | Reported results: proportion with work absence | Risk of study participation bias (QUIPS tool) |
|----------------|---------|---------|--------------|-----------------------------|-----------|-----------------------------------|----------------------------------|
| Holtermenn et al (2010) [36] | Denmark | National compensation database | 676 employees with low back pain | Register | Over 2 years | 142/676 (21.0%) | Moderate |
| Watson et al (1998) [35] | UK | Social security database | 2291 claims with specific and non-specific low back pain | Register | Over 3 years | 144/2291 (6.28%) | Moderate |

*Samples identified from work absence databases*

*Population samples*
| Study                          | Country    | Setting                        | Sample Description                                                                 | Method          | Duration | Male Low Back Pain (%) | Female Low Back Pain (%) |
|-------------------------------|------------|--------------------------------|-------------------------------------------------------------------------------------|-----------------|----------|------------------------|--------------------------|
| Biering-Sorensen et al (1984) | Denmark    | Population sample             | 357 (193 men, 164 women) with low back pain                                         | Self-report     | Over 1 year          | Men 15% (29/193)          | Women 14% (23/163)        |
| Demmelmaier et al (2010)      | Sweden     | Population sample             | 313 reporting non-specific back pain                                                | Self-report     | Over 12 months      | 58/313= 18.5%             |                          |
| Nyman et al (2007)            | Sweden     | Population sample             | 120 with low back pain and 271 with neck shoulder disorder                          | Register        | Over a period of 5 years | 50/120 (42%)             |                          |
| Samples identified from healthcare settings |
| Grotle et al (2007)           | Norway     | Primary care                  | 112 with acute low back pain of <3 weeks duration and no previous treatment for low back pain | Self-report     | 1 month 3 months 6 months 9 months 12 months | 12/106 (11%) 10/110 (9%) 7/109 (8%) 7/109 (8%) 9/103 (9%) | Low                     |
| Henschke et al (2008)         | Australia  | Primary care clinics           | 770 with low back pain for < 2 weeks preceded by no low back pain for at least 1 month | Self-report     | 6 weeks 3 months 12 months | 17/770 (2.2%) 12/770 (1.6%) 12/770 (1.6%) | Low                     |
| Kovacs et al (2007)           | Spain      | Primary care and outpatient clinics | 165 workers consulting their physician for low back pain                               | Register        | 12 months (<60 days absence) 12 months (> 60 days absence) | 46/165 (27.9%) 42/165 (25.4%) | Low                     |
| Schiottz-Christensen et        | Denmark    | Primary care                  | 503 consulting with back pain of                                                     | Self-report     | 1 month 6 month      | 15/503 (3%) 15/503 (3%)    | Low                     |
| Study                           | Country       | Setting                | Sample Size | Methodology | Duration | Incidence | Quality   |
|--------------------------------|---------------|------------------------|-------------|-------------|----------|-----------|-----------|
| Vingard et al (2002) [26]      | Sweden        | Healthcare             | 791 patients with new episode low back pain, not having sought care during preceding 6 months | Self-report | Last 12 months of the 24 months follow up | Women: 44/449 (9.7%)  Men: 35/342 (10.2%) | Moderate |
| Wynne-Jones et al (2008) [41]  | UK            | Primary care           | 597 consulting their GP with low back pain | Self-report | 1 year | 17/253 (6.7%) (16.6%) | Moderate |
| Alexopoulos et al (2008) [42]  | Greece        | Ship building company  | 312 employees with back pain | Register | 1 year | 74/312 (23.7%) | Low |
| Murtezani et al (2010) [43]    | Republic of Kosovo | Energetic corporation | 430 blue and 59 white collar workers with back pain | Self-report | 1 year | Blue collar: 88/430 (20.5%) <7 days; 129/430 (30%) >7 days  White collar: 26/59 (44.1%) <7 days; 7/59 (11.9%) >7 days | Low |
| Van den Heuvel et al (2004) [44] | The Netherlands | 34 participating companies | 629 observations in blue collar, white collar, and workers in care professions with back pain who had been employed in their current job | Register | 3 years | 113/629 (18%) | Moderate |
for at least 1 year and who were working more than 24 hours a week

**Studies reporting return to work**

| Author (years)       | Country | Setting                  | Participants                                                                 | Data source for work absence | Follow-up time | Reported results: Proportion on sick leave returning to work | Risk of study participation bias (QUIPS tool) |
|----------------------|---------|--------------------------|------------------------------------------------------------------------------|------------------------------|----------------|----------------------------------------------------------------|---------------------------------------------|
| **Cote et al (2008) [45]** | USA     | Workers compensation database | 1831 workers who filed a workers’ compensation claim for back pain        | Self-report                  | 1 month 6 months 12 months | 1194/1321 (90.4%) 780/810 (96.3%) 449/462 (97.1%)         | Moderate                                   |
| **Kapoor et al (2006) [46]**   | USA     | Workers compensation database | 300 workers seeking compensation and treatment for acute (<14 days since onset), non-specific low back pain | Register                     | 1 month 3 months | 156/275 (57%) 202/274 (74%)                              | Low                                        |
| **Krause et al (1999) [47]**   | USA     | Workers compensation database | 850 workers with permanent or temporary disability (at least 3 days) due to low | Register                     | 1 month 12 months   | 507/850 (59.6%) 816/850 (96%)                             | Low                                        |
| **Oleinick et al (1996) [48]** | USA | Workers compensation database | 8628 with disabling compensable low back pain >7 workdays (claims) | Register | 8 weeks | 6445/8628 (74.7%) | Low |
| **Steenstra et al (2010) [49]** | Canada | Workers compensation database | 442 with new, accepted or pending, work related back injury lost-time claim, absent from work at least 5 days within the first 14 days post-injury | Self-report | 1 month 6 months | 258/442 (58.4%) 233/442 (52.7%) | Low |
| **Tellnes et al (1989) [50]** | Norway | National insurance database | 493 with sickness certificates related to back pain | Register | 1 month 1-6 months >6 months | 324/493 (65.7%) 474/493 (96.1%) 487/493 (98.8%) | Low |

**Samples identified from healthcare settings**

| **Coste et al (1994) [51]** | France | Primary care | 75 patients consulting their doctor for back pain | Self-report | 1 month 90 days | 58/75 (78%) 71/75 (95%) | Low |
| **Dionne et al (2007) [52]** | Canada | Emergency departments and family medicine units | 1007 consulting for back pain & absent ≥1 day due to back pain | Self-report | 6 weeks 12 weeks 1 year 2 years | 164/923 (17.80%) 467/907 (51.50%) 500/913 (54.80%) 489/864 (56.60%) | Low |
| **Eilat-** | Israel | Military clinics | 160 soldiers whose | Self-report | 6 weeks | 126/160 (78.8%) | Low |
| Study                        | Country     | Setting            | Description                                                                 | Methodology  | Timeframe  | Outcome Measure | Conclusion |
|-----------------------------|-------------|--------------------|-----------------------------------------------------------------------------|--------------|------------|-----------------|------------|
| Tsanani et al (2010) [53]   | USA         | Primary care       | First visit to the clinic was for acute low back pain                      | Self-report  | 2 weeks    | 1321/1366 (96.7%) | Moderate   |
| **Hadler et al (1995) [60]  | USA         | Primary care       | 1366 patients coping with episode of back pain for less than 10 weeks without seeking care from elsewhere | Self-report  | 2 weeks    | 1340/1366 (98.1%) | Moderate   |
| **Infante-Rivard et al (1996) [54] | Canada | Health centres     | 305 workers with compensated low back pain                                | Self-report  | 112 days   | 153/305 (50%)   | Low        |
| **Linton et al (1998) [55]  | Sweden      | Primary care       | 137 patients consulting family physician with acute low back or neck pain, 52 on sick leave | Self-report  | Within 1 month | 25/52 (48%)     | Low        |
| **Nordin et al (1997) [56]  | USA         | Primary and secondary care | 557 episodes from 162 employees having lost-work episodes of non-specific low back pain, within 1 week of episode onset, initial visit at company occupational health clinic | Register     | 1 month    | 314/557 (56.4%) | Moderate   |
| **Reis et al (1999) [57]    | Israel      | Primary care       | 178 patients who had the chief                                            | Self-report  | 2 months   | 94/110 (85%)     | Low        |
| Study | Country | Setting | Sample Description | Method | Follow-up | Findings | Risk of Bias |
|-------|---------|---------|--------------------|--------|-----------|----------|-------------|
| Reiso et al (2003) [62] | Norway | Hospital outpatient clinic | 190 patients with back pain certified as sick, with or without radiating pain | Self-report and register (for sick cert) | 2 years | 130/190 (68.4%) | Low |
| Shaw et al (2009) [58] | USA | Occupational health clinics | 568 with non-specific low back pain (<14 days), pain presumed to be work-related | Register | 12 weeks | 417/519 (80.3%) | Low |
| Troup et al (1981) [25] | UK | Medical centre | 802 participants interviewed and examined in medical centres after episodes of back pain, on return to work after sickness absence. Or in cases not absent from work after completion of treatment, or after reporting a back injury sustained at work | Self-report | 1 year 2 years | 280/503 (55.7%) 122/177 (68.9%) | High |
| Hiebert et al | USA | Work medical | 240 workers | Register | 1 year | 223/225 (99%) | Low |

**Samples identified from workplace settings**
| Studies included in the work absence meta-analysis |
| Studies included in the return to work meta-analysis |

All other studies provided data on duration of absence but were not included in the meta-analyses

Only 4 studies provided information on duration of work absence at the time of the study inception: Steenstra et al (2010) [49]– At 1st interview participants had a mean of 18.8 (SD6.43) days missed due to injury. Hadler et al (1995) [60] – In the 30 days prior to the baseline interview insured patients had 3.2 days of absence compared to 2.6 days of absence in uninsured patients. Linton et al (1998) [55]– Of the sample 62% reported no days absence over the previous 12 months. 18% reported 1-30 days absence over the past 12 months and 20% reported ≥30 days absence over the past 12 months. Note that 12 months covers the period of follow-up (6 months) plus the period before
entry into the study (6 months). Nordin et al (2002) [59] - Duration of absence was <28 days in 60% of participants employed in a utility company and 45% in participants employed in a transportation authority.
## Online Table 3: Summary of results from studies reporting on duration of work absence

| Study Ref | Sample size | Follow-up | Results |
|-----------|-------------|-----------|---------|
| **Insurance databases** | | | |
| [19] | 148917 claims | Over 1 year | Median: 61 days |
| [22] | 2342 claims | Over 4 years | Median: 11, 13, 14, 15, 17.5 days (per year) |
| [23] | 330 people | 6 months | Median: 7 days (range 0-422) |
| [30] | 201 claims | Over 2.5 years | Mean 41.1 days (SD 83.5) for chiropractic claims, Mean 39 days (SD 75) for medical claims |
| [32] | 353 claims | Over 5 years | Mean 3.7 days (SE 0.7) for organic LBP Mean 1.2 days (SE 0.4) for non-specific LBP |
| [34] | 50 people | 1 year | Mean 10.5 days (objective findings) Mean 7 days (no objective findings) |
| [35] | 2291 claims | Over 3 years | Mean: 20.73 (SD 38.9) first absence Mean: 36.8 (SD 61.4) second absence |
| **Health care** | | | |
| [20] | 770 patients | 1 year | Median: 14 days |
| [26] | 791 | 6 months | Median: 24 days (range 3-365) women Median: 14 days (range 2-365) men |
| [28] | 104 | 3 months | Mean: 6.6 days (manual labourers) Mean: 3.6 days (professional or technical employees) |
| [33] | 2487 | 42 days (±15 days) | Mean: 9 days (± 7 days) |
| **Workplace** | | | |
| [21] | 240 employees | 1 year | Median: 14 days (with restrictions) Median: 15 days (without restrictions) |
| [24] | 615 | 6 months | Median: 5 days (interquartile range 2-12 days) |
| [25] | 802 | 1 year | Median: 28 days (4.06 weeks) Mean: 7.01 weeks (1-68 weeks) |
| [27] | 1724 | 1 year | Mean: 21.2 days (range 0-365) |
| [29] | 280 (work related back injuries) 740 (non-work related back injuries) | 1 year | Mean: 5.2 days (work related) Mean: 5.1 days (non-work related) |
| [31] | 2152 | 5 years | Mean: 5.6 days (age <45 years) Mean: 9 days (age 45-54 years) Mean: 8.5 days (age 55+ years) |
| **Population sample** | | | |
| [18] | 357 participants | 1 year | Median: 12 days (men) Median: 7 days (women) |

*Range or Standard Deviation (SD) not reported*