The implementation of occupational health guidelines principles for reducing sickness absence due to musculoskeletal disorders

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| **Background** | Occupational health guidelines recommend a biopsychosocial approach to manage sickness absence due to musculoskeletal disorders (MSDs), with a primary focus on early intervention through provision of a supportive network. |
| **Aims** | To investigate the implementation of a guidelines-based intervention (early contact of absentees; addressing psychosocial obstacles; offering temporary modified work; communicating among the players), and to determine whether this is effective for reducing return-to-work times and duration of future absence. |
| **Methods** | A non-randomized controlled trial was conducted within a UK company. Occupational health nurses at two experimental sites (1435 workers) were trained to deliver the intervention to workers taking absence due to MSDs (low back and upper limb disorders), while usual care was delivered at three control sites (1483 workers). Company-recorded absence data were collected over a 12-month follow-up period. |
| **Results** | The implementation of the experimental intervention was impeded by unforeseen organizational obstacles at one site (policies, procedures and individual approaches) which had a detrimental effect on uptake and delivery. At the site where the intervention was delivered per protocol, absence was significantly less compared with controls; 6.5 and 10.8 days, respectively. However, the duration of future absence was not significantly different (13.0 and 25.1 days, respectively). |
| **Conclusions** | An early intervention addressing psychosocial obstacles to recovery can be effective for reducing absence due to MSDs. Successful implementation, where the key players are onside and organizational obstacles are overcome, is difficult to achieve. |
| **Key words** | Musculoskeletal disorders; occupational health guidelines; psychosocial intervention; sickness absence. |

Introduction

Musculoskeletal disorders (MSDs) are one of the most commonly reported work-related illnesses [1]. Although the majority of people experiencing MSDs either remain at work or return-to-work (RTW) in <4 weeks [2], recurrence rates can be up to 85% over a lifetime [3], and a small proportion of people seem not to recover and have difficulty in returning to work [4]. It has been suggested that, rather than relying on traditional medical concepts of prevention and cure, the focus should be on obstacles to recovery [5]. These obstacles fall into three basic categories: biomedical, ergonomic and psychosocial [6], though the accumulating evidence indicates that the first two categories exert a modest influence compared with the third [7].

Psychosocial obstacles usefully can be separated into two groups. There are the clinically focused ‘yellow flags’ [8] concerning beliefs about the nature of pain and its clinical course, which are essentially psychological parameters such as distress, depression, poor coping strategies and mistaken or unhelpful beliefs. Yellow flags can alert the clinician to a risk of chronicity, being present in workers and non-workers alike [9]. In addition, workers may have specific concerns about work and work perceptions, which also may become obstacles to recovery. Occupational psychosocial obstacles, such as job dissatisfaction, stress, lack of perceived social support, job
inflexibility and low perceived control have been termed ‘blue flags’ [10,11].

There is now general agreement among the various occupational health guidelines for management of MSDs: a need for diagnostic triage, identification of potential psychosocial obstacles to recovery, provision of advice that MSDs are self-limiting conditions and, importantly, that remaining at work or an early RTW (if necessary with temporary modified duties) should be encouraged and supported [12]. These principles suggest that joint employer–worker initiatives combined with support from health professionals are needed to provide optimum support so as to facilitate workers remaining at work or returning to work as early as possible.

To date, the sort of multidimensional approach advocated by the guidelines has not been implemented and tested in the occupational health environment. The objective of the present study was to compare the efficacy of an early, psychosocial intervention with traditional management for reducing sickness absence in workers with MSDs. It was hypothesized that the experimental intervention would be superior to management as usual for reducing absence due to MSDs.

Methods

Five manufacturing sites of a large pharmaceutical company in the United Kingdom participated in a non-randomized controlled trial of the intervention. They were selected from the 14 available sites because (i) they offered homogeneity of job type (mostly manual workers) and had similar absence rates due to MSDs (~12%) and (ii) the absence notification and recording was accurate and immediate compared with non-manufacturing sites. For logistical reasons, two sites in close geographical proximity were selected as the experimental sites (1435 workers), and the other three sites (which were spread nationwide) acted as control sites (1483 workers). There were no systematic differences between the experimental and control sites in terms of age and gender of workers.

At the experimental sites, the protocol required occupational health nurses (OHNs) to identify and contact workers at the start of absence, and invite them to come into the occupational health department to discuss their condition and give their informed consent to be part of the study. At the control sites, management as usual continued; in general, this meant that workers absent due to MSDs would be seen by the OHN only on RTW, or were contacted after being absent for a considerable period of time, meaning there were no attempts at an early RTW.

Using pre-defined criteria, OHNs at the experimental sites assessed each participant for study eligibility. Eligible participants were those with MSDs (back/neck pain with/without referred limb symptoms; shoulder/elbow/wrist/hand symptoms). Participants were also assessed for the presence of clinical ‘red flags’ [13]; if there was any suggestion of serious underlying pathology, the worker would be excluded from the trial and immediately referred to the company doctor.

The intervention comprised several components that the OHNs were trained to deliver using a case-management approach over a period of 4 weeks. The OHNs received a training package that included education about pain and pain mechanisms, tackling negative beliefs and attitudes, and reinforcing evidence-based messages and advice (e.g. importance of keeping active and early RTW), and they were provided with a manual and checklists to facilitate delivery of the protocol [14]. Figure 1 illustrates the protocol procedure.

The experimental intervention comprised the following components.

Psychosocial assessment

The psychosocial assessment comprised a series of ‘stem questions’, asked in order to elicit responses that were indicative of psychosocial risk (yellow and blue flags). These were addressed using a technique broadly based on cognitive-behavioural principles [15] and, in recognition that the OHNs were not qualified psychologists, a schedule was devised that included ‘scripts’ for all the necessary information and advice [16]. In addition, educational booklets targeting unhelpful beliefs were also provided to the workers [14,17].

Modified work

The experimental protocol allowed for modified work to be utilized in order to facilitate early work-return. It was stipulated that modified work was only to be offered if deemed essential, and its availability was restricted to a maximum of 2 weeks. If it was not possible for the participant to return to normal duties after 2 weeks of modified work, there was referral to the company physiotherapist or general practitioners (GPs) for additional help. (While the OHN no longer continued to manage these workers, their data were still included in the analyses.) Although modified work was a possible component of usual management at the control sites, it was without clear criteria for implementation or temporal restriction.

Liaison with other ‘players’

Specific steps were taken to involve GPs, in the hope that unnecessary sickness certification would be discouraged. A letter was sent to all GPs informing them of the study, and explaining that the OHN was managing the participant in the workplace. The OHNs were also required to communicate with team leaders to discuss RTW/work-retention plans. This communication was also used to highlight any problems with colleagues or
job demands, and facilitated a discussion of possible work modifications.

The trial was submitted to and approved by the company’s research ethics committee. The study duration comprised a 2-year recruitment period (August 2000 to July 2002) during which workers taking absence for MSDs were identified, and their sick leave was tracked over a 12-month follow-up period. Sickness absence data (related to MSDs) were collected at the individual level from company records.

Two outcomes were investigated: (i) RTW time, which was defined as the duration of the index spell of absence and (ii) work retention, which was defined as the duration of subsequent absences due to MSDs during the 12-month follow-up period. Data were processed with SPSS version 12.0, using independent measures t-tests and relative risk (RR) estimates. The significance level was set at 5%, and 95% confidence intervals (CIs) were calculated.

**Results**

During the recruitment period, 304 workers took absence due to MSDs across the experimental sites (denoted E1 and E2, having 486 and 949 workers, respectively). The OHNs failed to contact 112 workers and of those who were contacted, 111 were contacted after returning to work. Of the 81 workers contacted while absent, 54 received the intervention and the remainder either declined or were deemed ineligible. Across the three control sites, 214 workers took absence due to MSDs—see Figure 2.

Since the majority (85%) of those who actually received the intended early intervention came from site E1, the primary comparison for testing the effect of early intervention was taken to be E1 versus controls. To adjust for any recruitment bias, the analysis included all workers who took sick leave due to MSDs during the recruitment period, irrespective of whether they were contacted for, or participated in, the experimental intervention. When comparing the two experimental sites in terms of RTW, the analysis involved all workers who were ‘offered’ the intervention while absent at both sites, irrespective of take-up.

At E1, there were 81 workers who took sick leave due to MSDs during the recruitment period. The mean RTW time for those absentees was compared with the mean RTW time for the 214 absent workers at the control sites; the RTW time at E1 was 4.3 days shorter than at the control sites ($P = 0.009$; Table 1). The mean RTW time for the 223 workers at E2 taking sick leave was not significantly different from the controls (Table 1).

At E1, there were 55 absent workers who were offered the early intervention (nine of whom declined), while at E2 the number was 26 (18 of whom declined). The mean RTW time at E1 was 6.8 (SD 7.6) days compared with 15.0 (SD 13.8) days at E2. The difference of 8.2 days (95% CI 2.0–14.3) was statistically significant ($P = 0.01$).

There were 61 workers at the experimental sites and 47 workers at the control sites who took subsequent
absence following an index spell of sick leave. The mean duration of future absence during the 12-month follow-up was compared between E1 and controls, and between E2 and controls. Those at E1 showed an average duration of future absence approximately half that of the controls, but the difference (12.1 days) was not statistically significant—see Table 2. The mean duration of future absence for those at E2 was not significantly different from the controls (Table 2).

In terms of the likelihood of future absence, the proportion of those who took initial absence and went on to take future absence was 17%, at both E1 and the controls, while the proportion at E2 was 22%.

Clearly there was a marked difference between the experimental sites in their recruitment of participants to the early intervention. Of the 82 workers at E1 taking sick leave, 60 received the experimental intervention and 46/60 received it while absent. Of the 233 workers at E2 taking sick leave, 39 received the experimental intervention and 8/39 received it while absent. Thus, the majority of absentees at E2 were either simply not contacted or contacted after RTW.

Post hoc investigations revealed that the intervention protocol was not being followed correctly at E2. The average time taken to contact absent workers at E1 was 2.5 days (as per protocol, within the first week of absence), but E2 had a significantly longer average contact time at 12.4 days ($P < 0.001$; 95% CI 7.4–12.4). This longer contact time resulted in more workers being contacted after RTW; those who were contacted early being three times more likely to participate than those who were contacted late (RR = 2.78, 95% CI 1.8–4.4).

**Table 1.** RTW times for workers taking absence during the intervention period at experimental sites and controls

<table>
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<th>Mean RTW time (SD)</th>
<th>Difference between means (compared with controls)</th>
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<tr>
<td>E1 ($n = 82$)</td>
<td>6.5 (9.4) days</td>
<td>−4.3 days (95% CI 1.1–7.4)</td>
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<tr>
<td>Control ($n = 214$)</td>
<td>10.8 (17.8) days</td>
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<tr>
<td>E2 ($n = 223$)</td>
<td>9.3 (14.4) days</td>
<td>−1.5 days (95% CI −4.5–1.6)</td>
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**Table 2.** Duration of future absence due to MSDs for experimental participants and controls

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<th>Mean future absence (SD)</th>
<th>Difference between means (compared with controls)</th>
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<tr>
<td>E1 ($n = 14$)</td>
<td>13.0 (18.2) days</td>
<td>−12.1 days (95% CI −2.7–26.9)</td>
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<tr>
<td>Control ($n = 37$)</td>
<td>25.1 (33.4) days</td>
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<tr>
<td>E2 ($n = 47$)</td>
<td>20.4 (27.5) days</td>
<td>−4.7 days (95% CI −20.6–11.3)</td>
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Discussion

This study has shown that an occupational health nurse-based psychological intervention produced RTW times that were statistically significantly shorter at a single site (E1) compared with controls. OHNs were trained to deliver an early guidelines-based intervention concentrating on addressing psychosocial obstacles to recovery/RTW through provision of evidence-based information and advice, along with workplace collaboration to facilitate work-return/retention.

When the intervention was delivered according to the protocol (at E1), the results were encouraging. RTW times were found to be statistically significantly shorter at E1 compared with controls. The duration of future absence was also shorter but, due to unexpectedly small numbers, the difference did not reach statistical significance. The early work-return at E1 was not associated with an increased likelihood of taking further absence for MSDs over the ensuing 12 months. By contrast, when the intervention was not delivered according to the protocol (at E2) both RTW time and future absence was statistically indistinguishable from the controls.

The protocol required the intervention to be initiated at a very early stage of sick leave, necessitating identification of absent workers within the first days of absence. The fact that only one of two experimental sites achieved this exposed unforeseen obstacles to implementation of this sort of early intervention. Delivering the intervention package to workers within the first few days of absence relied on simple absence-management procedures requiring team leaders to inform the occupational health department on the first day of a worker’s absence, and for sickness certification to be sent directly to the OHN. It transpired that, contrary to pre-trial assurances, the necessary absence-management procedures were not in place at E2; sickness certificates were processed at another department before being handed to OHNs, resulting in a considerable delay in absence notification. It was this delay that was largely responsible for the failure at E2 to achieve adequate recruitment of workers while they were absent.

In understanding these findings certain limitations of the trial need to be recognized. Participants were not randomized between the experimental and control interventions. While randomization at the individual level would have been desirable it was impractical; the need to engage numerous personnel within the workplace meant that contamination could not be avoided and the nature of the intervention precluded blinding. The experimental and intervention sites were not randomly allocated. The choice of experimental and control sites was largely dictated by efficient absence notification and recording, which was not available at all the company’s sites. Practical considerations then influenced the allocation of sites to experimental or control arms of the trial. Although systematic bias cannot be excluded, reasonable attempts were made to reduce obvious sources of bias: all five sites were broadly matched for job type and demographic data, and had similar absence rates due to MSDs.

In addition to the problematic late identification of absentees at E2, the issue of differential application of the eligibility criteria at that site also needs to be considered. Audit of the delivery of the intervention was not possible; justifiable concerns over confidentiality negated the possibility of videotaping intervention sessions, so the competences of OHNs at E2 are not known with certainty. However, the data showed that a much higher proportion of workers at E2 were deemed ineligible. Since it is most unlikely that the workers at E2 were presenting with different MSDs, it suggests that the OHNs at E2 were applying the exclusion criteria differently to those at E1 despite having had similar training. The lack of objective audit also meant that it was not possible to identify which components of the intervention package were actually being delivered, and how. Thus it is not possible to state which components were driving the effect at E1, or to what extent the individual behaviour of the nurses influenced delivery.

Methodological limitations are not uncommon problems, and controlling for all confounding factors is often outside the reasonable practicalities of research in industry. Discrepancies between intervention theory and practice have been noted previously, where a number of circumstances prevented implementation of ideal design plans for an intervention to improve the psychosocial work environment [18]. While ‘real world research’ is unquestionably valuable, ‘real world research limits’ should also be acknowledged, and have been suggested by some as legitimate research topics in their own right [19]. The problems at E2 are typical of the unforeseen and uncontrollable influences that can occur, but they can nevertheless be helpful: in this case, the lack of an efficient absence-management system is shown to be a major obstacle to successful implementation of an early occupational health intervention.

In summary, this study adds to emerging evidence that absence can be reduced by so-called mini-interventions which owe more to providing information and support than on medical treatments [20,21]. The generalizability of the present results, though, must be approached with caution. In addition to the methodological limitations, it is necessary to take account of local culture and practices, and there is a need for further exploration of innovative strategies that deliver appropriate care and support while identifying and overcoming the full range of obstacles. Overall, this study shows there is considerable potential for absence management in the occupational health environment, but cautions that this may not always be easy to deliver. While addressing psychosocial obstacles (yellow and blue flags) may be important, dealing with
organizational obstacles, which have been termed ‘black flags’ [10], is crucial for successful implementation. Further studies of interventions employing the principles of early occupational health-managed approaches to reduce absence seem warranted, but comparable interventions will also need to be developed for small and medium size enterprises that have no in-house occupational health staff [22].

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Conflicts of interest

None declared.

References