COPING WITH MUSCULOSKELETAL PAIN: IMPLICATIONS FOR OFFICE WORKERS

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ABSTRACT
The aim of the present research was to understand how office workers cope with back, neck and upper limb musculoskeletal disorders at work (and their implications for work). A small (N= 120) questionnaire survey collected information about potential participants' background and history of musculoskeletal disorders. These data were used to inform a sampling process for a qualitative study of 18 office workers who had a back, neck or upper limb musculoskeletal disorder. Each participant was interviewed one-to-one. Interviews were audio-taped, transcribed verbatim and analysed using NUD*IST (N6) qualitative data analysis software. Data were analysed using a grounded theory approach and a conceptual framework that was developed based on pre-specified themes derived from the literature. The results demonstrate that office workers use an extensive range of both cognitive and behavioural strategies to cope with musculoskeletal pain at work. Cognitive strategies include techniques such as distraction, visualization, self-talk, and blocking thoughts. Seeking-social support, exercise/stretching, exposure management, self or accompanied treatment, eating/drinking have emerged as categories that made up the behavioural coping strategies. Many of these had the potential to either further exacerbate the problems or lead to new problems including accidents or impaired work performance. The present study indicates the dangers inherent in the haphazard and trial-and-error nature of many of the coping strategies. Improved guidance and better evaluation of existing advice are required for those who remain at work but in pain.
Keywords: qualitative study, coping strategies, musculoskeletal pain, office workers, computer users

INTRODUCTION

Lifelong learning can be defined as a process of self development that could be achieved throughout training, education and self-experiences. It could help workers (computer users) develop their skills and adapt to the technology that changes dynamically (Yılmaz-Soylu and Akkoyunlu, 2009). Keeping up with the dynamic nature of technology is important in terms of forming the match between technology users and demands of their jobs (Açıkalın and Duru, 2005). A mismatch between the users and systems may lead to stress and therefore musculoskeletal disorders (MSDs).

Musculoskeletal disorders describe a wide range of degenerative and inflammatory disorders of the musculoskeletal system. They result in pain and in some cases disability may threaten both the future of many workers and the effectiveness of many organizations (Buckle & Devereux, 2002). MSDs are not just a source of pain and suffering for the sufferer but also a significant burden to their families, employers, and the wider community (Boden, Biddle, & Spieler, 2001). The literature shows that MSDs follow a pathological process that may lead to disability. During this process workers may be at work despite experiencing symptoms, a phenomenon defined in the literature as 'presenteeism' (Hagberg et al., 1995; Koopman et al., 2002). A Swedish study found that almost a third of their sample had gone to work at least two or three times during the preceding year, when, based on their perceived state of health, they should have taken sick leave. Workers with upper back/neck pain were among those with high presenteeism (Aronsson, Gustafsson, & Dallner, 2000). There has been a considerable increase in the prevalence of chronic pain among full-time U.S. workers within the past decade, (Ortho-McNeil, 2008). This survey also revealed that almost 90% of the workers typically went to work rather than taking sick-leave when experiencing chronic pain.

Such studies indicate that workers, who are lifelong learners, are often at work, despite experiencing musculoskeletal symptoms; however, there is little research into how the workers cope with such musculoskeletal pain in the work system. Car mechanics who experienced musculoskeletal symptoms (Torp, Riise, & Moen, 2001) were found to use coping strategies that included: 'changing working techniques', 'using lifting equipment', 'taking micro pauses', 'avoiding strenuous work', 'asking the foreman for less strenuous work for a period', and 'taking part in the company's health and safety work' The coping strategies identified by

(Torp et al., 2001) were informed by the ergonomics literature; and only included the ones that were suggested by experts as productive measures for coping with WRMSDs. Hence, these studies were limited in their ability to explore the strategies that were being used and might have potential to either further exacerbate the problems or lead to negative consequences such as accidents or impaired work performance.

The aim of this paper is to understand how office workers cope with back, neck and upper limb musculoskeletal disorders at work and the implications of the techniques and strategies that are used for work organisations.

METHODS

A questionnaire survey and qualitative interviews were used. The questionnaire survey collected information about participants' background and history of musculoskeletal disorders. These data were used to inform a sampling process for a qualitative study of 18 office workers who had a back, neck or upper limb musculoskeletal disorder. Ethical approval was given by the University of Surrey Ethics Committee.

Participants

A purposive sampling approach was undertaken and the participants were recruited on the basis of their age, gender, organization and musculoskeletal symptoms. 18 participants (9 Male and 9 Female) were recruited from a range of office jobs consisting of secretaries, administrators, officers, and researchers. The age groups represented were 18-29 (3 persons), 30-39 (6 persons), 40-49 (2 persons), and 50-65 (7 persons). Of the participants, 3 held a managerial position at the time of the study, and the rest were office workers who were suffering or suffered from musculoskeletal symptoms of upper limbs and the back. Among the participants 8 reported that their pain experience was constant (see Table 1).

Data collection

Semi-structured and one-to-one interviews were carried out with volunteers either at their workplace or at the University of Surrey. A flexible interview guide was used. First, the researcher assured the participants that the information they might share would be treated with the strictest confidentiality. This was followed by a warm-up to enable both the researcher and the participant to be relaxed and the actual interview questions. Finally, the researcher (O.O.) reflected back to each participant the main issues raised during the interview to ensure that they agreed with the record that had been made during the interview.

All the interviews were recorded using a digital voice recorder (Sony ICR-B 150) and the interviews lasted up to one hour. The recordings were transcribed verbatim by the interviewer (O.O.) and imported into the NUD*IST (N6) software as text files for qualitative analysis.

Data analysis

The qualitative data were analysed using grounded theory (Srauss & Corbin, 1998); a conceptual framework was developed based on pre-specified themes derived from the literature and by using the approach suggested by Taylor-Powell and Renner (2003). Data were coded line by line using the NUD*IST (N6), based on the key question "What did/do office workers do or think in order to master, tolerate or reduce the stress of musculoskeletal pain at work?" The resultant codes were organized into coherent categories to summarize and bring meaning to the text. The categorization and organization of the data continued until no new themes or subcategories were identified (Taylor-Powell & Renner, 2003).

Table 1: Participant's characteristics

Participant			Condition	Frequency
Position	Gender	Age Group		
Manager	Male	50-65	Low back pain	One or more times a year
Health care administrator	Male	30-39	Neck pain	Constant
			Left-shoulder pain	One or more times a week
			Wrist/hand pain	One or more times a month
			Low back pain	One or more times a year
Health care administrat	Male	30-39	Neck pain	One or more times a month
			Shoulder pain	One or more times a month
Officer	Female	50-65	Neck pain	One or more times a week
			Shoulder pain	One or more times a week
			Upper back pain	One or more times a month

Officer	Female	50-65	Low back pain spreading down into the	Constant
Secretary	Female	40-49	Wrist/hand pain	One or more times a week
Accountant	Female	40-49	Neck pain	Constant
			Shoulder pain	Constant
			Wrist/hand pain	One or more times a week
Secretary	Female	18-29	Low back pain	One or more times a week
			Elbow pain	One or more times a month
Computer programmer	Male	30-39	Low back pain	Constant
			Wrist pain	One or more times a year
Researcher	Male	18-29	Low back pain	Daily
Researcher	Female	30-39	Neck/shoulder pain	Constant
Secretary	Female	50-65	Neck pain spreading out down to the back and down to the arm, comprising the shoulder elbow and index finger	Constant
IT Support	Male	30-39	Low back pain	One or more times a week
			Neck pain	One or more times a week
			Upper back pain	One or more times a month
IT Support	Male	50-65	Elbow pain	One or more times a week
			Low back pain	One or more times a week
Manager	Male	18-29	Low back pain	One or more times a week
			Neck pain	One or more times a month
			Shoulder pain	One or more times a month
Manager	Male	50-65	Low back pain	One or more times a year
			Neck pain	One or more times a month
			Shoulder pain	One or more times a month
Officer	Female	50-65	Right shoulder pain spreading down into the wrist and hand	Constant
Researcher	Female	30-39	Neck/shoulder pain spreading down into the spine, right-arm, wrist/hand and	Daily

RESULTS

Coping strategies

The coping strategies reported by participants were divided into two major categories – cognitive and behavioural – each of which was further subdivided as shown in Table 2. These reported strategies described in the following section with illustrative examples where appropriate.

Cognitive

In order to cope with pain, participants reported using cognitive strategies that included distraction, visualisation, self-talk and blocking thoughts. Aittle was achieved through focusing on their jobs, ignoring the symptoms, thinking of a pleasant memory or focusing on an object. Some strategies were reported to be effective. One of the female participants (Secretary, age group 18-29) successfully used visualization as a method of coping with pain by thinking of the painful area, trying to visualize that everything was flowing normally and believing that her pain was reducing. Another, (age group 40-49) reported that she was successfully able to block pain by "going somewhere in her head". (She was also able to bear dental treatment without being given any anaesthetics by using this strategy). Another female participant (Officer, age group 50-65) successfully used self-talk by thinking of other people who were worse off than her in order to reduce her pain. However, for others cognitive strategies could have negative outcomes. In one case, (Secretary, age group 50-65), self-talk led to self-blame and anger for being "weak".

Behavioural

Participants reported using behavioural strategies that included seeking social support, stretching, changing posture, changing the layout of the workstation, and reorganising their workload. They also used a range of verbal and non-verbal methods in order to communicate their pain to colleagues. These strategies, when

successful, elicited help from the others in the form of emotional support, treatment such as massage, or guidance about the condition experienced. For example, one of the male participants (Computer programmer, age group 30-39) found it helpful to listen to colleagues who had successfully worked through similar experiences of pain and had recovered or improved. Another useful behavioural strategy was to manage the workload with the support of colleagues in their social network. One of the female participants with long term neck/shoulder pain (Secretary, age group 50-65) reported that she passed over some of her tasks to her colleagues when in serious pain. Others paced their activities by slowing down in order to avoid the pain. Others changed their working technique, for example, by training their non-dominant hand to use the mouse so that they were able to swap hands when necessary to alleviate the pain. Others found it helpful to regularly vary their posture. For example one manager with back pain said that he found it helpful to sit in an ordinary chair for a while rather than an office type chair. A number of participants had requested improvements to be made to their workstations. The use of pain killers was common among the participants. One of the participants (Secretary, age group 50-65) reported that she was taking antidepressants. Those who were experiencing less frequent symptoms were more likely to report that pain killers were helpful; although some with long lasting pain conditions gained little lasting effect.

One of the male office workers (Manager, age group 50-65) reported that he had to stop drinking so much coffee as he noticed its effects heightened the symptoms experienced. He found that drinking alcohol helped him to forget about his back pain and his consumption increased when he was in pain.

Others preferred to keep their condition secret and did not ask help. For example one of the female office workers (Accountant, age group 40-49) was afraid of being considered as a 'pain in the neck' and someone who was a health risk for the organization. This was related to feelings of job insecurity. Participants also reported the lack of opportunity for accessing their social support networks at work, as a reason for not seeking social support. For example, one described how, because his colleagues were very busy with their own workload, they were not accessible.

DISCUSSION

This study has identified how office workers cope with back, neck and upper limb musculoskeletal disorders at work. The strategies elicited has been categorised into two major categories as cognitive and behavioural.

Cognitive strategies

Among the cognitive strategies, distraction by means of focusing on work and ignoring pain was a common way of dealing with pain. This has received prior attention in the literature both in experimental and

Table 2: Coping strategies and example quotes from the interviews

Coping Strategies	Quotes
Cognitive	
Distraction	I am able to you know just go somewhere in my head, so it's, I can temporarily just block it out.
Visualization	I was trying to visualize my circulation and that I could see everything flowing in my arms just to make it like work.
Self-talk	• **Blame/regret** I can kick myself and say 'look come on stupid. It's your own fault, you can't blame anybody else.' • **Interpreting sensations** It is something that I am afraid of that it will get worse in the future. • **Minimising and acceptance** I mean you know, you watch news and see people being shot up and losing their children and goodness knows what else…A little twinge in my arm now and then is fairly insignificant isn't it?. • **Encouragement** What I was thinking was 'relax chief, you gonna go home have a nice bath, take your pain killers and have a rest long night and you will be better.' • **Hoping** I just remember I was in such a bad state that you know I just thought 'oh my god I just want this pain to go.'

Blocking thoughts	If I really need to step out I step right out as in the mind will go totally blank and I will focus just on the wall that's it and don't think of anything.
Behavioural	
Seeking social support	• **Communicate pain** On that occasion I can remember, because I was stiff and people noticed that I was stiff. • **Get care** -you get a little sympathy from the people or you get a little you know… • **Get information** I used to quite like listening to how people used to have problems like mine and they are
Exercise/Stretch	When I have a break it gives me the opportunity to walk to stretch a bit, to move around a bit, so that's more comforting me.
Exposure management	• **Changing work technique and postural variation** I have trained my left-hand and I can swap the mouse from right to left when I need to. • **Pacing and breaks** I was getting aches in my arm, into my shoulder, wrist and fingers, so I started to try and type more slowly. • **Workstation improvement** I got myself a better chair with adjustability of the arms. • **Activity/task variation** If the pain gets to a point, I go and find something else to do. • **Workload discharge** I do pass as much as work possible to my colleagues, so it lightens my load.
Self or accompanied treatment	• **Use of medication** I take pain killers but they don't help very much. • **Other treatment** Its one of the lads who gives me a bit of a massage, but he needs a lot more work [means he needs to gain more massaging skill].
Eating and drinking	I do have a couple of glasses of wine and when I have back pain I tend to drink more wine.

clinical settings as a way of controlling pain. For example, attention-based cognitive coping strategies may be effective in pain perception and they may have potential to function in a similar manner to pharmaceutical pain killers (Eccleston, 1995). The use of distraction as a way of coping with pain while at work, however, has received less attention. Some of the participants ignored the pain and continued working despite experiencing pain. Some of them attributed this to high workload, whereas there were others who thought that by ignoring pain, the symptoms would go away. The latter shows the importance of beliefs, attitudes and awareness in coping with musculoskeletal symptoms. Similar results (Linton & Buer, 1995) have , demonstrated possible psychosocial differences among groups of workers who were either at work despite back pain (the 'copers' group) or off-sick (the 'dysfunctional' group). These authors suggested that beliefs that pain was directly related to work activities, and that individuals had little control over their pain, were important qualities of absence. In this study, most of the participants ignored the pain and continued working ; nevertheless the literature shows that ignoring pain and persisting on task performance without taking sufficient breaks may be counterproductive and even damaging to the individuals who are at the earlier stages of developing WRMSDs (Henning, Jacques, Kissel, Sullivan, & Alteras-Webb, 1997; Rohmert, 1973). Turk (2004) suggests that resting and protecting a painful area when the pain is acute may be helpful; however, this may not be appropriate in the case of chronic pain. Further research is required in order to understand whether focusing on work and ignoring pain is an effective coping strategy for the people in this group.

Some cognitive strategies were counterproductive (e.g. negative thoughts). One of the female participants reported that pain was leading her to be angry or sometimes depressed. She was constantly blaming herself for being weak. A group of studies has demonstrated that characterizing pain as 'horrible', 'awful', or 'unbearable' (e.g. catastrophizing) or negative thoughts and feelings related to pain is associated with heightened pain experience and depression (Gracely et al., 2004; Hassett, Cone, Patella, & Sigal, 2000; Sullivan, Rouse, Bishop, & Johnston, 1997).

Without the expert support, knowledge, and training, some cognitive strategies may lead to further physical or psychological damage with negative consequences for the individual and the company (Ackerman & Turkoski, 2000; Menzies & Taylor, 2004).For example, Ackerman & Turkoski (2000) suggest that self-talk (or guided

imagery) should not be used when taking medications for a mental disorder. Moreover, it should not be used when operating a machine or a motor vehicle. There is a lack of research in relation to its use in work settings for coping with musculoskeletal pain despite its potential to lead to errors and accidents while on the task.

Some participants found strategies such as visualization, blocking thoughts, and "going blank" helpful. There is only a small literature (Ackerman & Turkoski, 2000; Menzies & Taylor, 2004; Hamm & O'Flynn, 1984; Morone & Greco, 2007) on these approaches and more research is needed as to which kinds of strategies are inappropriate while on task. For example, one (secretary) reported that when she used the blocking technique her colleagues had to wait for her to finish. This may cause problems in teamwork settings. Clearly we need to know more about the contexts in which these particular strategies are effective and to have more systematic data gathered in controlled settings on how, and in what ways, they are successful or counter-productive.

Behavioural strategies

A major component of the behavioural coping strategies involved seeking social support from others. The present study confirms earlier research (Craig & Prkachin, 1983) that suggested that individuals find it helpful to convey their distress to others using a variety of expressive cues, including verbal reports and changes in facial expressions. Other studies (Woods & Buckle, 2002; Woods, 2005; Evers, Kraaimaat, Greenen, Jacobs, & Bijlsma, 2003; Lazarus & Folkman, 1984), both from the clinical context and also from work settings, have shown that social support is an important resource in both reducing the risk of the occurrence of disease (e.g. MSDs) and also helping individuals to develop behavioural coping strategies and to better adapt to illnesses (e.g. reducing the level of disability). However, our research has raised some work-related issues in relation to both the access of social support and also its content. Carayon (1993) reported that high work pressures that arise as a result of workload may cause workers to be "workstation-bounded" or tied up with their work and may reduce the opportunities for interaction among colleagues, with negative outcomes for the extent of social support received from colleagues (Carayon, 1993; Berkman, 1984). In addition, relationships among colleagues, such as the level of intimacy, appears to be an additional factor that affects decision making in seeking or not seeking social support. Berkman (1984) defines this as "the extent to which members of an individual's network know and interact with one another". This has been illustrated in this study where one manager reported that he felt reluctant to admit that he was in pain to subordinates as this might diminish his authority.

Woods (2005) indicates social support received away from workplace as an important area that needs further investigation, which is also in line with the present study. For example, participants who had social support networks, especially those who wanted to find out more about their situation, consulted other colleagues who were more experienced with musculoskeletal problems. A serious drawback, however, might be that colleagues may not always give helpful advice since their strategies for reducing pain are based only on their own individual experience and may be inappropriate for others. (Berkman, 1984) stresses that the existence of social support networks does not necessarily mean that the individuals always receive adequate support. Further studies would be useful to gain insight into the type of information shared concerning musculoskeletal disorders (Woods, 2005). For example, what kind of advice is given and is it appropriate? It may also be useful in training workers on understanding the needs of someone who is in pain and how to support them (e.g. what type of information and guidance would be useful?). For example, one participant found massage helpful but his colleague advised him against it on the basis of his own experience and limited knowledge. Without more expert knowledge, it is impossible to say which viewpoint was correct.

Exercises/stretches were another behavioural strategies used to deal with musculoskeletal pain at work. Those who did not rely on these strategies indicated the lack of a suitable environment to perform exercises and stretches. Among those who performed exercises/stretches, some followed suggestions given by the healthcare professionals experts (e.g. physiotherapist, chiropractor) while others relied on suggestions given by their colleagues. Moreover, some of the participants did not follow any experts' guidance and performed exercises/stretches, which they thought would be appropriate.

There was also a tendency among the participants to combine exercises with work tasks (e.g. walking up and down the stairs), rather than allocating special time for them. Some of them recognized that their workload was high and therefore they didn't have the opportunity for exercising.

In the literature, there is still a debate concerning the exercises/stretches and their usefulness in preventing musculoskeletal pain (Miranda, Viikari-Juntra, Martikainen, Takala, & Riihimaki, 2001). Hess and Hecker (2003) suggested that physical exercise may have indirect effects in preventing pain (e.g. perception of physical conditioning, self-worth, attractiveness, and strength) and Shrier (2000) demonstrated that stretching increases the tolerance to pain (e.g. it has an analgesic effect.) This finding is in line with the present research, as some of

the participants expressed that they relied on stretching in order to tolerate pain and stay on the task rather than doing it based on the guidelines provided by an expert. The authors emphasised that in order to better benefit from stretching, there is a need to design programs that would be job specific or designed according to the body-parts (e.g. for office workers programs that would focus on the neck, shoulders, upper extremities and the back).

Medication use was another strategy, which some of the participants had often relied on for relief. A range of medication types were reported that the office workers used for treating their musculoskeletal pain. These can be broadly categorised as pain killers and antidepressants. The use of pain killers was more common than the antidepressants, however some of the participants reported that they had recognised the side effects (e.g. vomiting, dizziness etc.) of taking such medications and, therefore, had avoided these..

One of the participants stopped using pain killers as they were ineffective in relieving her pain. These results are similar to those of Haslam, Brown, Hastings and Haslam (2003). One of the participants had the belief that the pain killers were chemicals, that shouldn't be taken unless the pain was intolerable. However there were others who were using pain killers for headaches but not for musculoskeletal pain, demonstrating the effects of beliefs and attitudes on decision making, whether to use medication or not (Avorn & Solomon, 2000). Other factors identified were knowledge and awareness of musculoskeletal disorders, which some of them gained through their social support networks.

With respect to the use of medication, various experimental and field studies demonstrated a relationship with high risk for injury (Haslam et al., 2003; Pickett, Chipman, Brison, & Holness, 1996; Voaklander et al., 2006). In a qualitative study Haslam and colleagues (Haslam, Atkinson, Brown, & Haslam, 2005) explored the range of accidents that was attributed to the use of medication or the symptoms of anxiety/depression. As a result the participants associated a range of falls, minor injuries and industrial accidents with medication use and symptoms of anxiety/depression that they experienced. The present study confirmed findings from the literature about the benefits and also risks of taking medication without proper medical supervision. In the present study one male participant, a manager, reported that he was taking a little alcohol when in pain. Drinking may have consequences for social and performance related problems at the workplace (e.g. relationships, productivity, human error and accidents) (Tómasson, Gunnarsdóttir, Rafnsdóttir, & Helgadóttir, 2004; Zaloshnja, Miller, Hendrie, & Galvin, 2007). Although in this study the participant reported that he was drinking only a little alcohol, there is evidence to suggest that the employees in this group, since they are likely to form a bigger proportion of the workplace drinkers, may account for greater impact on workplace productivity and accidents (Mangione et al., 1999).

CONCLUSION

Office workers use a range of cognitive and behavioural coping strategies while at work. Some of these strategies are successful. However, many of these have the potential either further to exacerbate the problems or lead to new problems, including accidents or impaired work performance. The present study indicates the haphazard and trial-and-error nature of many of these strategies. Improved guidance and better evaluation of existing advice are required for those who remain at work but in pain.

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