ORIGINAL ARTICLE

The Significance of Aches/Pains Among Workers in an Electronics Factory

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Summary

Three hundred and fifteen female workers with at least three months' employment history in a factory manufacturing disk drives were studied. Each worker completed a self-administered questionnaire on their personal particulars, hours of work, opinion on the work and the workplace and the presence and severity of aches/pains experienced over the past one month.

One hundred and forty one (44.8%) of the workers had complaints of aches/pains. Of these, 81 (57.5%) reported an improvement in their symptoms during their off-days. 59 (41.8%) had symptoms affecting two or more sites. The most commonly affected sites were the hands and shoulders, followed by the head and back. There was no significant difference in the prevalence of' symptoms between workers from the different work stations.

Ninety four (66.7%) of these workers reported that the pains that were severe enough to affect their activities. 76 (53.9%) had to seek some form of medical treatment while 33 (23.4%) had to be on medical leave. However, the physical examinations of this group of workers were normal. The symptoms appeared to be influenced by their attitude towards work. A significantly higher number of workers with symptoms expressed dissatisfaction with work and had complaints of a noisy and cold environment. The study showed that workers' morale and the quality of the work environment may play an important role in improving their general well-being.

Key Words: Musculoskeletal symptoms, Work-related disorders, Occupational medicine

Introduction

Musculoskeletal problems associated with repetitive work have been reported to be a major cause of morbidity in many industrialised countries[1,2,3]. In Singapore, however, the prevalence and severity of such problems are little known. In a local study of 79 workers in a factory manufacturing motors for refrigerators, the prevalence of work-related musculoskeletal aches and pain was about 80%[4]. This was reduced to 34% when workers with symptoms affecting them for at least 15 days over the past one month and which either required treatment or affected their daily activities were considered. This study was carried out to evaluate the extent of this problem. An electronics factory manufacturing disk drives was chosen for study as this type of industry involved repetitive assembly work in many of their processes and was reported in many studies to have the highest incidence of musculoskeletal problems[3,5,6].

Materials and Methods

The female workers included in the study were those who were permanent residents or local citizens, who had at least three months employment in the factory and who had been working on permanent morning shift. Each worker completed a self-administered

questionnaire on their personal particulars, hours of work, opinion on the work and the workplace, as well as the presence and severity of muscular symptoms, particularly aches and pains experienced over the previous one month. The significance of the symptoms was qualified by asking for the number of days affected, duration of medical leave taken, type of treatment given and whether daily activities were affected. They were also asked whether they were satisfied with their job.

A clinical examination was conducted on those who had taken medical leave for their symptoms. The examination included inspection and palpation, testing of the motor power and range of movements, reflexes, touch, pain and vibration sensation of the affected parts. The nature of work in this factory was observed. Statislical analysis was carried out using chi-square and student-t for hypothesis testing.

Results

Nature of work

This factory manufactures different models of 2.5 and 3.5 inches disk drives for work stations, advanced-operational desktop, portable laptops and notebook micro-computers. It occupies three production floors with a workforce of about 5,200 working on permanent three shifts. The workers under study were involved in one of the following processes which was located on every floor:

a) clean room operations involving assembly of parts by screwing and fine tweezers action,

b) test operations involving connection of assembled disk drives to a computer by pulling in and out of the wires, and

c) debug operations to locate problem areas by connecting to computers (process similar to b)

Symptoms of musculoskeletal aches/pains

A total of 315 workers were studied. One hundred and forty-one (44.8%) had complaints of musculoskeletal aches/pains which occurred at any time of the day. Of these, 58.2% had symptoms affecting one site, 31.9%, two and 9.9% had at least three sites affected. The most commonly affected sites were the hands and shoulders, followed by the back and legs (Table I). 81 (57.5%) claimed that their symptoms improved during their off-days.

Table II gives an idea of the severity of symptoms. Ninety-four (66.7%) of the workers reported that the pain was severe enough to affect their daily activities, such as washing of clothes and combing of hair. Seventy-six (53.9%) had to seek some form of medical treatment while 89 (63.1%) had to self-medicate. Only thirty-three (23.4%) took medical leave because of their symptoms, indicating that most tolerated the symptoms of aches and pains.

Table I
Frequency of symptoms of pains and aches by sites

Site affected	Workers (n = 141)	%
Hands/Arms/Shoulder	53	37.59
Back	38	26.95
Legs	37	26.24
Abdomen	23	16.31
Neck	15	10.64
Chest	7	4.96

Note: One worker can have more than 1 site affected.

Table II
Severity of symptoms among workers

Workers	No: (%)
with pains/aches	141 (100%)
who had symptoms daily	13 (9.22%)
whose daily activities were affected	94 (66.67%)
seeking medical help	76 (53.9%)
on self-medication	89 (63.12%)
who took medical leave	33 (23.4%)

Comparison of workers by symptoms

There was no significant difference in the prevalence of symptoms between workers doing different types of work. There was also no significant difference in smoking habits, age, marital status, race, sleeping hours. duration of employment and educational status between workers with symptoms and those without. Those who did significantly more overtime work did not present with more symptoms. There was no association between symptoms and the number of children less than five years old and the amount of housework done by the workers. The symptoms appeared to be influenced by the workers' opinion towards work. A significantly higher number of workers with symptoms expressed dissatisfaction with their work (22.7% compared to 11.5% of workers without symptoms). Forty-five (31.9%) of the workers with symptoms claimed that their workplace was too noisy compared with 25 (14.3%) of workers without symptoms and a significant number of workers claimed that the workplace was too cold (Table III).

Clinical signs

Clinical examination of workers who had taken medical leave because of their symptoms showed no significant abnormality or disability.

Discussion

Musculoskeletal aches and pains have been widely accepted by workers as part and parcel of having to earn a living. They hardly complained for fear of losing their jobs. During the past decade of economic progress, workers were beginning to realise that their work situation and problems could be improved and having aches and pains as a result of work became unacceptable. They were now reporting such problems. Many developed countries now recognise work-related musculoskeletal aches and pains as one of the leading causes of morbidity resulting in loss of workdays and disability[1,7,8,9]. In some countries, this condition also resulted in huge compensation claims[5,7,9,10].

In the present study, 44.8% of the workers had complaints of pains/aches involving mainly the hands, shoulders and back. This prevalence was higher than the 4.4% to 18% rate reported in factories involved in the slaughtering of animals, apparel sewing and electronics assembly[3,11-13] but lower than the 80% rate reported in a local study of a factory manufacturing motors for refrigerators[4]. However, the prevalence rate was lower than the 53% to 95% rate reported in assembly-line packers, supermarket cashiers and sewing machine operators[12,14,15]. The difference in the prevalence rate reported could be due to differences in the terminology used, screening methods and the levels of symptom severity.

Clinical signs were essentially normal in the 33 workers who had taken medical leave. This was expected as

Table III
Work factors in relation to symptoms

Work factor	Workers without symptoms n=174	Workers with symptoms n=141	Hypothesis test
Work was dull	39	33	$p > 0.05$
Work pace was too fast	33	42	$p > 0.05$
Satisfied with work	83	51	$p > 0.05$
Dissatisfied with work	20	32	$p < 0.05$
Workplace was noisy	25	45	$p < 0.05$
Workplace was cold	99	106	$p < 0.05$

Note: One worker may have more than one complaint about their work.

the common manifestation of a work-related musculoskeletal injury is pain which may not be accompanied by any objective signs. Various terms such as occupational overuse syndrome. repetitive strain injury and cumulative trauma disorders had been used to describe this entity[1,8]. The authors preferred to use the term "work-related musculoskeletal disorders" in this study as the contributory factors included not only repetitive work but also work dissatisfaction as well as work environment discomfort.

Dissatisfaction with work and discomfort in the work environment were found to be major contributory factors in the development of musculoskeletal aches/ pains in our study group and in a few other studies[16,17].

From the results of this study and another local study[4], we believe that to improve the physical and psychological well-being of workers, increased attention should be given to improving workers' morale and the quality of their work environment besides improvement on work procedures/practices and work tools. This study provided useful insights into the significance of such problems and suggested that there is a need for a more coordinated approach to awareness, diagnosis, management and prevention to reduce such an unhappy chain of events, discomforts and diminished productivity.

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