

Musculoskeletal symptoms and type A behaviour in blue collar workers

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Abstract

Objective—Type A behaviour pattern, characterised by excessive competitiveness, impatience, hostility and time urgency, has been previously investigated as a risk factor for coronary heart disease. There are few studies concerning musculoskeletal symptoms and type A behaviour. Could there be a higher frequency of musculoskeletal symptoms with a more pronounced type A behaviour?

Design—A cross sectional retrospective study. Standardised nordic questionnaires were used for the analysis of musculoskeletal symptoms and the Bortner questionnaire and its subscales (1) speed and (2) hard driving and competitiveness were used to assess type A behaviour.

Setting—Factory based (a manufacturing industry where they make ventilating shafts).

Subjects—58 blue collar workers (51 men and seven women). Mean age was 36.9 years. Mean employment time was seven years.

Main outcome measure—Blue collar workers with musculoskeletal symptoms had a more pronounced type A behaviour than those without symptoms.

Results—For shoulder symptoms during the past 12 months blue collar workers had a more pronounced type A behaviour ($p < 0.001$). For symptoms during the past seven days the results were significant for the neck ($p < 0.01$), the shoulders ($p < 0.01$), and also for lower back pain ($p < 0.05$). There were no differences in age, psychosocial factors, or psychosomatic symptoms. According to the Bortner subscales, the speed subscale seems to be more important than the hard driving and competitiveness subscales.

Conclusions—Blue collar workers with a more pronounced type A behaviour seem to have a higher incidence of musculoskeletal symptoms.

It has been accepted for more than 100 years that musculoskeletal problems in the neck, shoulders, arms, and hands are associated with occupations that are not necessarily heavy manual ones. In the last 10 years or so it has been recognised that the conditions are complex and hard to define within traditional musculoskeletal disease classifications and that their association with work is not simple. In the absence of the establishment of causal relation, many researchers have sought to identify associated risk factors. Independent variables studied include type of job, workstation design and posture, the use of repeated movements and forces, subject variables such as age, sex, health, and migrant state, and job design, work organisation, and psychosocial factors.¹

Because ergonomic factors cannot explain all, the focus now is directed toward psychosocial factors, of which there are many aspects; one is type A behaviour. This behaviour pattern was first described by Friedman and Rosenman in 1959.² It is characterised by excessive competitiveness, impatience, hostility, and time urgency, and has been investigated as a risk factor for coronary heart disease.

In a study of white collar workers by Swan *et al*³ no correlation was found between type A behaviour and musculoskeletal symptoms. According to a review by Suls and Sanders in 1988⁴ there were no studies of possible relations between occupational cervicobrachial disorders, lower back pain, and type A behaviour. A study by Wickström *et al*⁵ showed that experience of back pain radiating to a leg was more common in manual workers with a competitive personality (type A behaviour) than in non-competitive workers ($p = 0.03$). No differences existed, however, in a white collar group. Results by Hägg *et al*⁶ indicated more neck and shoulder symptoms among female blue collar workers with type A personality. Type A behaviour also seemed to be a predictor of neck and shoulder disorders. Salminen *et al*⁷ found in their study of blue collar workers, that tenderness in the neck or shoulders on palpation was associated with type A behaviour ($p < 0.01$).

The aim of this study was to investigate further the relation between type A behaviour and musculoskeletal symptoms.

Table 1 Musculoskeletal symptoms

	Study group (n = 58)	Reference group (n = 170)	Significance of difference
Neck:			
Past 12 months	29%	26%	NS
Past seven days	12%	11%	NS
Shoulders:			
Past 12 months	40%	23%	p < 0.05
Past seven days	16%	10%	NS
Lower back pain:			
Past 12 months	41%	40%	NS
Past seven days	17%	14%	NS

Methods

A study by our Industrial Health Care Service was conducted during December 1989 on blue collar workers in an industry manufacturing ventilating shafts.

Standardised Nordic questionnaires for the analysis of musculoskeletal symptoms were used.⁸ These questionnaires have been validated.⁹ A questionnaire asking for symptoms like headache, tiredness, problems with stomach, eyes, nose, or skin, sleeping problems, irritation, or feeling of restlessness was used. This questionnaire is well known and widely used in Sweden and has also been validated.¹⁰ Type A behaviour was assessed by the Bortner questionnaire. The scale consists of nine steps, five being an average score in the Swedish version.¹¹ The more evidence for type A behaviour the higher the score. The Work-APGAR questionnaire was used for psychosocial factors.¹²

Analysis was by Student's *t* test for mean figures and χ^2 test for frequencies.

Results

Fifty eight blue collar workers (87%) (51 men and seven women) of the total 67 participated. Mean age

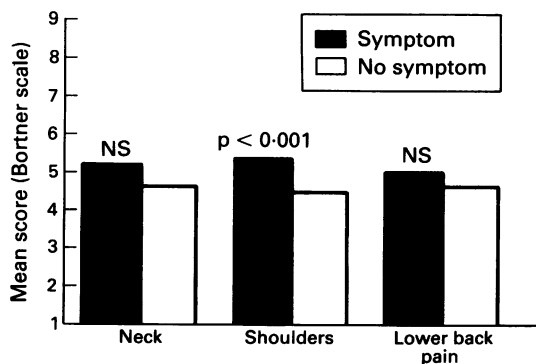


Figure 1 Musculoskeletal symptoms during the past 12 months and type A behaviour (Bortner scale) in blue collar workers.

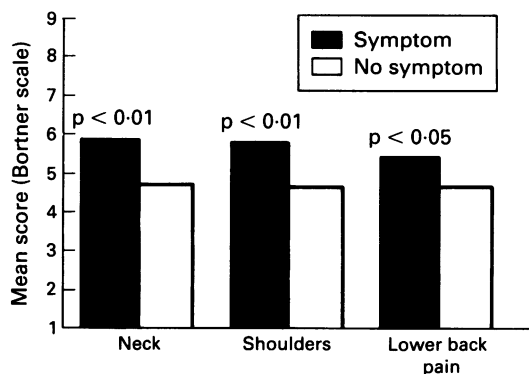


Figure 2 Musculoskeletal symptoms during the past seven days and type A behaviour (Bortner scale) in blue collar workers.

was 36.9: 31% of workers were in the age range 15–29, 47% in range 30–49, and 22% in range 50–65. They worked 40 hours a week and the mean employment time was seven years. Most of them have been working at the same tasks the past five years. Twenty eight per cent were smokers, 33% ex-smokers, and 39% non-smokers.

Twenty nine per cent of the workers had had neck symptoms during the past 12 months. The figures for shoulder symptoms and lower back pain were 40% and 41% respectively. The frequencies were much lower when questions about symptoms during the past seven days were asked. To see if the frequencies of musculoskeletal symptoms were normal for blue collar workers, we found a group of 170 blue collar workers in a database in Örebro, Sweden. This consists of the same type of questionnaires answered by more than 30 000 persons.¹³ The figures were more or less the same, except for shoulder symptoms, which were higher (table 1).

Figure 1 shows the relation between type A behaviour pattern and musculoskeletal symptoms during the past 12 months. Blue collar workers with symptoms had a more pronounced type A behaviour (higher mean scores on the Bortner scale) than those without. The mean Bortner score for the group with shoulder symptoms was significantly higher (p < 0.001) compared with those without symptoms. The tendency was the same for neck symptoms and lower back pain, although the figures were not significantly different. The tendency was the same for symptoms during the past seven days. The closer the symptoms to the time questions are asked about them the higher frequencies of true answers you normally get. All these differences were significant (fig 2).

There were no differences in age or symptoms such as headache, tiredness, problems with stomach, eyes, nose, or skin, sleeping problems, irritation, or lack of concentration. The only exception was the feeling of

Table 2 Symptoms during the past 12 months and type A behaviour

		Past 12 months		Statistical significance
		Symptoms	No symptoms	
Neck:				
Bortner	Global	5.19	4.64	NS
	HDC*	4.79	4.65	NS
	Speed	5.43	4.79	p < 0.05
Shoulders:				
Bortner	Global	5.35	4.47	p < 0.001
	HDC*	5.30	4.31	p < 0.05
	Speed	5.50	4.65	p < 0.01
Lower back pain:				
Bortner	Global	5.01	4.62	NS
	HDC*	5.08	4.35	NS
	Speed	5.14	4.82	NS

*HDC = Hard driving and competitiveness.

restlessness for lower back pain during the past 12 months ($p < 0.05$) and during the past seven days ($p < 0.01$). There were no differences in psychosocial factors according to the Work-APGAR questionnaire to explain the results.

Recent evidence of Edwards *et al*¹⁴ indicates that the relation between type A behaviour and coronary heart disease is dependent upon the method of measuring type A behaviour. They suggest that the psychometric properties of type A behaviour measures should be carefully investigated. Rather than reflecting a single dimension, the Bortner scale contains two independent dimensions, one reflecting speed and the other hard driving and competitiveness.

Perhaps these two dimensions are of more importance than the so called true type A behaviour. The speed subscale seems more important than the hard-driving and competitiveness subscale. Possibly the

Table 3 Symptoms during the past seven days and type A behaviour

		Past 7 days		Statistical significance
		Symptoms	No symptoms	
Neck:				
Bortner	Global	5.85	4.68	p < 0.01
	HDC*	5.11	4.64	NS
	Speed	6.22	4.82	p < 0.01
Shoulders:				
Bortner	Global	5.79	4.62	p < 0.01
	HDC*	5.29	4.59	NS
	Speed	5.95	4.81	p < 0.01
Lower back pain:				
Bortner	Global	5.40	4.66	p < 0.05
	HDC*	4.73	4.68	NS
	Speed	5.71	4.81	p < 0.05

*HDC = Hard driving and competitiveness.

speed subscale is more important than the Bortner global scale (tables 2 and 3).

Discussion

The overall result from the questionnaires indicates a relation between type A behaviour and different musculoskeletal symptoms.

In the studies of Wickström *et al*,³ Hägg *et al*,⁶ and Salminen *et al*⁷ they used their own type A scales, whereas we used the well known Bortner scale.¹⁵ Swan *et al*³ used the structured interview.

The most reliable procedure for type A diagnosis is the videobased interview (VSI),¹⁶ which evaluates both contents and expressive aspects of the pattern. Among the many questionnaires used for type A assessment, only a few including the Jenkins activity survey (JAS),¹⁷ the Bortner questionnaire,¹⁵ and the Framingham scale¹⁹ have been epidemiologically validated. The questionnaires can be accepted in larger studies depending on costs. According to Kittel²⁰ the validity or global agreement between the structured interview and the two questionnaires (Bortner and JAS) is acceptable even for the blue collar category, although agreement of type A classification in the blue collar group was low. This could indicate that the questionnaires are less adequate for this group, which in turn might partially explain why type A was not predictive for coronary heart disease among blue collar workers in the Framingham study.¹⁹ The results by Edwards *et al*¹⁴ imply that the Bortner scale should not be considered as interchangeable with other measures of type A behaviour, but it should instead be viewed as a measure of specific type A behaviour components. The Bortner scale should primarily be viewed as an index of speed and, to a lesser extent, competitiveness.

The notion that a behaviour pattern can function as a risk factor for a disease process was expressed by Friedman and Booth-Kewley.²¹ In their meta-analytic review of personality characteristics and disease, they concluded that a person's pattern of behaviour "may function like diet: imbalances can predispose one to all sorts of diseases".

One explanation of the findings could be that a competitive personality predisposes to musculoskeletal trauma in manual occupations, as people with type A behaviour may be more prone to use all their strength in demanding situations than people with type B personality.⁵

It has been hypothesised that type A persons chronically experience greater neuroendocrine arousal.²²⁻²⁷ Type A employed women in the study by Kelly and Houston²⁸ reported more daily stress and tension. Although these are not direct measures of neuroendocrine arousal, they can be regarded as arousal related symptoms.

As with most retrospective studies, the question of which behaviour traits and response tendencies

preceded the emergence of musculoskeletal symptoms and which followed the illness remains largely unresolved. The study by Hägg *et al*⁶ was prospective and indicated that type A behaviour seemed to be a predictor of neck and shoulder disorders.

Type A persons are significantly more likely to ignore fatigue and other symptoms, more likely to work when suffering from disabilities, and less likely to take medication than type B persons, but only in challenging circumstances.²⁹⁻³¹ When in non-challenging circumstances no A/B differences typically appear. Type A persons are thought to ignore symptoms in order to minimise their potential effect on work capacity and they tend to ignore anything that might interfere with their performance. Furthermore, illness may be labelled by type A persons as a weakness threatening their control of work situation.³² People vary in their predisposition to adopt a type A pattern and the work situation contributes to a varying degree in enhancing this behaviour. A person dedicated to a type B lifestyle will often move away from the kind of social jobs and social situations that seek to force type A behaviour upon him or her.³³ Type A persons possess personality traits that predispose self selection into stressful jobs.³⁴

In challenging circumstances type A blue collar workers maybe get a higher muscle tension and hence there is a higher risk of symptoms from the muscles. It seems that one or another dimension of type A behaviour measured by the Bortner scale can correlate with musculoskeletal symptoms, but only in blue collar workers.

To conclude, the present study suggests that blue collar workers with type A behaviour (Bortner scale) have a higher incidence of neck symptoms, shoulder symptoms, and lower back pain. This is in accordance with other recently published data.⁵⁻⁷ The findings may indicate that type A persons drive themselves so hard that their physical abilities suffer. If prospective studies can confirm a true relation between type A behaviour (or a part of it) and musculoskeletal symptoms, what conclusions can we draw? Sometimes it is easier to change the level of stimulation or demand of environments, than to change individual deepseated predispositions. Because the personality cannot easily be changed, efforts should be directed towards changing the work situation and the work organisation instead.

We thank Ms Gunilla Svensson for her assistance in the project. An abridged version of this paper was presented at the eighth international symposium, epidemiology in occupational health, Paris, France, 10-12 September, 1991.

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Accepted 20 January 1992

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