Work, a prognosis factor for upper extremity musculoskeletal disorders?

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Upper extremity musculoskeletal (UEMS) disorders are an important problem in industrial countries [1] There is strong evidence for an association between biomechanical exposures and UEMS disorders.[2–4] However, little is known about the occupational factors associated with recovery of these disorders.[5–7]

To determine if occupational factors were associated with the outcome in workers with UEMS symptoms or disorders, we used data from the repetitive task survey performed in 1993–1994 and again in 1996–1997. The design has been described in earlier publications. [8, 9] Each worker had a standardized medical examination at baseline and again in 1996–1997. The self-administered questionnaire filled out at baseline included personal variables, a psychological variable, postures and biomechanical constraints at work (self-assessed, but checked with the occupational physician), psychosocial work factors, and baseline severity of the disorders. Workers were also asked in 1996–1997 about changes in work tasks in the three year follow-up period.

Only workers with symptoms or UEMS disorders in 1993–1994 are considered here. Three categories of outcome in 1996–1997 were defined: no symptoms and no UEMS disorders, UEMS symptoms and no disorder, and one or more UEMS disorder diagnosed.

We analysed the 1993–1994 factors associated with outcomes (neither symptom nor disorder in 1996–1997 vs. symptoms only and vs. disorders), using multinomial non-ordinal logistic regression. Factors were included in the model if they reached a P level of 0.20 in bivariate analyses. If some prognosis factors were too strongly correlated, only the most appropriate one was included.

Of the initial 700 workers, 598 were followed completely during the 3-year period (85.4%). At baseline, 464 of them had UEMS symptoms or disorders and were included in this analysis (77.6% of the 598 workers). Most had a disorder (n=421, prevalence=70.4%), and only 43 had symptoms in isolation. No difference in outcome was found between those who reported their job as changed in the last three years (n=114) and those who declared that it had not (n=350, P>0.05). Factors associated with the three-year outcome in multivariate analyses were age, “work with force,” and pain intensity (adjusted for gender, presence of psychosomatic of depressive problem and presence of UEMS disorder diagnosed in 1993–1994, Table 1), with a stronger association for disorders than for symptoms only.

This study is one of the first to consider jointly occupational, personal, and pain factors associated with prognosis of UEMS symptoms or disorders, in a worker population performing highly repetitive tasks. Despite several limitations (no information on events during the years between examination, losses to follow-up, subjective self-assessment of risk factors, definition of UEMS disorders based on clinical examination), these results were consistent with the few existing studies on prognosis: older age is known to be related with a poor prognosis. [10–12] So are pain intensity and duration at baseline,[5,7,12–14] and presence of disorders at baseline.[10,15] The role of occupational factors in prognosis is still debated: some investigators have found that physical work factors are not associated with prognosis, [11,16] whereas others reported that they are.[5,7,17] Job control and satisfaction at work were not associated with outcome in our study.

In conclusion, we found that work with force was associated with a poorer prognosis, as were age and pain intensity at baseline. Further studies, however, are needed to clarify the role of personal and work-related factors in determining the prognosis of UEMS disorders in working populations.

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Footnotes:

STUDY DESIGN: occupational cohort study

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Table 1

Multivariate analysis based on multinomial logistic model between the three-year outcome and the baseline variables (reference = workers with no symptom and no UEMS disorders in 1996–1997)

		Presence of UEMS symptoms alone in 1996–1997 (n= 43)	**Presence of at least one UEMS disorder in 1996–1997 (n= 421)**	
		OR [95% CI]	**OR [95% CI]**	**p=***
Gender	Men	1	1	0.08
	Women	0,68 (0,27–1,72)	1,52 (0,80–2,86)	
Age	<30 years	1	1	0,02
	30–45 years	1,35 (0,48–3,82)	2,86 (1,42–5,73)	
	>45 years	1,45 (0,37–5,67)	3,31 (1,32–8,29)	
Presence of psychosomatic or depressive problems	No	1	1	
	Yes	1,47 (0,27–7,95)	3,02 (0,89–10,23)	0,12
"**Work with force**"	No	1	1	0,02
	Yes	1,92 (0,78–4,76)	2,31 (1,27–4,21)	
Pain intensity in 1993–1994	No strong pain	1	1	0,003
	Strong and unbearable pain	2,70 (1,05–5.00)	2,76 (1,52–6.91)	
UEMS disorder in 1993–94	No	1	1	0.01
	Yes	0.53 (0.17–1.63)	2.09 (0.89–4.93)	

The multiple UEMS disorders and duration of pain highly associated with pain intensity, were not included in the model.

* difference between the outcomes and the reference group (Wald Chi^2 test).