

Upper Limb Disorders

CMPritchard (GJMacfarlane) *Occupational and Environmental Medicine*. June (2001) Vol.58 #6 p 374.

A cross-sectional study of a potential association between ergonomic work factors and musculoskeletal pain.

The study cohort consisted of 1081 new recruits (68% male, 91% participation rate) who had recently joined one of 12 occupational groups. Logistic constraints meant that each employer needed to have enlisted 40 new recruits i.e. large employers were the only feasible source of subjects.

Subjects' median age was 23 at the start of the study. 50% had ever worked before.

Any subjects who reported musculoskeletal pain lasting in excess of one day in the last month (before new employment) were excluded.

Job analysis was made by validated questionnaire. 123 jobs were directly observed for the purposes of validation.

Spot prevalences of pain lasting more than one day in the last month were reported as follows:

| Anatomical Location | Prevalence % |
|---------------------|--------------|
| Low back | 24 |
| Shoulder | 20 |
| Knee | 21 |
| Wrist and Forearm | 9 |

[Comment: Regional pain syndromes have a 1-month prevalence of 20% in the general community.]

Carrying weight on one shoulder was found to be a risk factor (measured as odd ratio (OR)) for:

Low Back Pain if the load was >50 lbs. (23Kg) OR = 2.4 (95% CI = 1.5,3.8)

Shoulder Pain if the load was >50 lbs. (23Kg)
OR = 3.1 (95% CI = 1.9,4.8).

Lifting more than 11Kg with one hand was found to be a risk factor for **Low Back Pain**, OR = 3.3 (95% CI = 1.4,7.7).

55%, 62% and 59% of back, shoulder and knee pain cases respectively, reported pain in at least one other site.

Measured risk factors for pain at multiple sites were:

- Lifting more than 11 Kg with one hand
OR = 2.2 (95% CI = 1.5,3.3);
- Lifting more than 23Kg with two hands
OR = 2.6 (95% CI = 1.6,4.4) and,
- Carrying more than 23 Kg on one shoulder
OR = 5.6 (95% CI = 3.3,9.7)

Repetitive movements of the wrist were specifically associated with wrist and forearm pain.

OR = 1.8 (95% CI = 1.04,3.1) for repetitious work lasting for more than 4 hours a day. [Comment: Experts/observers rarely agree on the definition of repetitive].

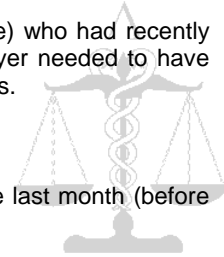
Reports of pain were more common among men, a trend that is opposite to most reports. But may be explained by actual exposures/types of work studied.

None have left work because of pain.

Correction for psychosocial factors at work was attempted but found not to be significant. No correction for sport as a potential confounder was attempted.

Comment

Self-reported pain may or may not have a link with diagnosable harm. The study was performed very soon after recruitment, in our view it is unlikely that new cases of diagnosable harm would be present.



The cohort will be re examined after 12 months and a second report will be published, including any diagnosed conditions.

Of particular interest from the present report are 1) the finding that pain locations were not specific to mechanical ergonomic factors (except in the case of wrist pain) and 2) that psychosocial factors were not significant.

The first finding strongly suggests that the mechanism linking ergonomic risk factors with pain is not directly bio-mechanical. This would suggest an indirect mechanical (or other) mechanism, such as, over compensation, or perhaps tension after work, should be sought.

The second finding is not consistent with a large number of other studies that have found that regional pain is weakly, but significantly, associated with adverse psychosocial conditions at work.

The work reported here suggests that eliminating unbalanced and heavy lifting at work would improve, self-reported, employee comfort.

