



Commentary

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Does it help to know the work-relatedness of back pain in individual cases?

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Does it help to know the work-relatedness of back pain in individual cases?

by David Coggon, FFOM¹

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Nonspecific low-back pain is an enigma. Epidemiologic research has strongly implicated various occupational risk factors, both physical and psychosocial, but, together, they do not come near explaining the remarkable time trends that have been observed in disability attributed to back disorders. In Great Britain, rates of incapacity for work because of back problems (measured as days of social security payment per 1000 of the population at risk) increased more than sevenfold between 1953 and 1992 (1), at a time when the physical demands of work were generally decreasing. Even if psychosocial aspects of employment deteriorated substantially over this period, and there is no evidence that they did, such change could not account for a growth in disability of this magnitude. There must, therefore, be other important influences operating.

Further research is needed to identify these influences, but, until they have been characterized, the management of low-back pain in the workplace will continue to focus on controlling the risk factors that are already well established. To help with this problem, Lötters et al (2) have constructed a mathematical model that might be used by clinicians to quantify the work-relatedness of low-back pain for an individual patient. Their method is straightforward in principle. From 40 published studies that met specified criteria, they derived pooled estimates of the odds ratio for each of four occupational risk factors and, also, of the prevalence of low-back pain among workers unexposed to any of these factors. This procedure allowed an estimation of the low-back-pain prevalence for any given combination of the risk factors. Then, by comparison with the prevalence in the absence of exposure, it was possible to calculate the etiologic fraction for each combination of risk factors (ie, the proportion of cases with that pattern of exposure in which low-back pain is attributable to the exposure).

In practice, however, there are many limitations to this approach. The case definition for low-back pain varies, and, although all the calculations were based on a 12-month prevalence of the symptom, the qualifying anatomical location and duration of pain may not have been uniformly specified across all 40 studies. Similarly, although the authors took care to define minimum criteria for each of the physical exposures examined, within these definitions there was a large scope of variation between investigations. In one study, the majority of the exposed persons may have only just exceeded the threshold, while, in another, most of the persons may have experienced much higher exposure. The separate assessment of risks for two levels of exposure did not fully counter this difficulty, since data by level of exposure were only available for a subset of studies. In addition, many of the studies did not adjust for all of the relevant risk factors, and only a crude correction could be made for possible interconfounding. Overall, therefore, there must be some doubt about the validity of the etiologic fractions calculated.

But even if the results are reliable, will they be useful? When confronted by a worker with low-back pain, a clinician may have several questions. Should I recommend specific modifications to the patient's job, either in the short-term or the long-term? Does the case point to an important problem in the workplace that requires intervention for the benefit, not only of the patient, but also of others? And, if so, which forms of intervention are most likely to be worthwhile? The summary work-relatedness of an individual case is not the most relevant statistic with which to answer any of these questions. A decision to modify a specific feature of the patient's work will depend on the future benefits that can be expected as a consequence. These benefits will not necessarily equate with its causal contribution in the past and will equate still less with the causal contribution of

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several risk factors combined. The need for wider interventions in the workplace will depend on the absolute elevation of risk associated with each occupational hazard, for individual workers and the workforce as a whole, and on the extent to which the excess risk might be reduced by controls. Again, the most relevant statistics (individual attributable risk and population attributable risk) are distinct from the etiologic fraction.

A more appropriate application of etiologic fraction is in the assessment of claims for compensation. Here, the critical question is whether the individual case can be attributed to a particular hazardous exposure according to specified criteria (eg, on the balance of probabilities). The statistic has been used in the United Kingdom, for example, in deciding whether diseases should be classed as occupational for social security purposes, and, if so, in which groups of workers. However, compensation for low-back pain is problematic because the diagnosis depends largely on the reporting of symptoms, which makes it difficult to distinguish genuine from fraudulent claims.

Perhaps the main value of the model developed by Lötters et al (2) will relate to patients with low-back pain to which the occupational contribution is likely to be relatively small. In such cases, the estimate of work-relatedness might help a clinician to convince the employer that there is no need to restrict the worker's occupational activities unnecessarily and that, if a further episode of low-back pain occurred for this worker, there would be adequate defense against any legal claim for compensation. This possibility would, however, depend on being able to convince a court that the model was sufficiently trustworthy.

References

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Where to with meta-analysis?—first, do no harm

by Barbara Silverstein, PhD¹

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As resources to conduct large multicenter prospective studies of musculoskeletal disorders become more limited, it is critical that we make maximum use of the data we already have to focus our prevention efforts. It is, in this context, that the meta-analysis used in the "Model for the Work-relatedness of Low-back Pain" (1) must be viewed. This particular paper has strong implications for clinicians in judging work-relatedness in cases of nonspecific low-back pain.

The authors conducted a systematic review of the literature on low-back pain, physical load, and psycho-

social factors and performed a type II meta-analysis (from published studies rather than individual data) using a random effects model to calculate the pooled prevalence for nonspecific low-back pain and a pooled odds ratio for each risk factor using logistic regression. The stated objective of this analysis was to develop a decision-making model for clinicians to determine the work-relatedness of low-back pain.

The authors used cross-sectional and population cohort studies of *nonspecific* low-back pain. They eliminated studies that did not have sufficient exposure based

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