

## Screening of risk for non-specific low-back pain: do occupational hazards matter?

Low back pain (LBP) is very common; lifetime prevalence is high with estimates of 50% to 70%, and up to half the people with LBP will seek some form of healthcare. Global burden of disease findings show that back pain is the leading cause of disability adjusted life years (DALYs) in Western Europe and Australia, and is ranked 6<sup>th</sup> of the top 25 diseases associated with disability (6). As a consequence LBP has a significant impact on the individual, and on the wider economy due to substantial healthcare costs and loss of productivity due to sickness absence.

Despite an exponential rise in the number of Randomised Control Trials (RCTs) over the past 30 years, covering a wide range of LBP treatments in differing populations, LBP still remains a challenge with relatively low efficacy of treatment success (10). A number of reasons have been proposed to explain this lack of efficacy, for example heterogeneity in clinical presentation, a lack of consensus on diagnostic and clinical classification, and variation on prognosis (1). One suggested approach to address these issues is stratification: the use of targeted treatment to sub groups of patients based on their key shared characteristics (e.g. risk factors, prognostic factors, factors on response to treatment, and underlying mechanisms). This approach was recently demonstrated as successful within a RCT showing both efficacy on patient recovery as well as economic superiority compared to usual care (3). However, a number of recent reviews on patient classification and the stratified approach for LBP have discussed low agreement on what stratified approach is best, and suggest that no one way is correct, in essence, as with the problem stratification hopes to address, i.e. no one treatment fits all, it appears that no one stratified approach fits all (7).

With this in mind we wish to discuss a particular omission to many of these patient classification systems, namely the inclusion of occupational hazards. Aside from diagnostic systems, most classification systems or screening tools focus on individual patient characteristics. For example, a well-known and widely applied prognostic screening tool (STarT Back Screening Tool (2)) contains a focus on pain severity, impact on function, and psychological distress, but does not consider occupational risk factors. Similar well cited measures, such as the Orebro Musculoskeletal Pain Questionnaire (4) only contain minimal reference to occupational risk factors (job satisfaction, perception of work duties). This is despite

the major impact LBP has on work, with the World Health Organisation estimating that more than a third (about 37%) of low back pain has occupational aetiology, resulting in 800,000 DALYs, and the impact of work on LBP with considerable evidence of the role of occupational hazards (or risk factors) on the outcomes of those with LBP (8, 9).

Whilst most occupational risk factors are well known, valued and assessed by occupational physicians, they are not readily considered where most individuals with LBP will show up (e.g. General Practice, Rheumatology, and Orthopaedics). Efforts have been made to give more recognition, for example the “Decade of the Flags” working group’s identification of occupational factors or “blue flags” (9), but more needs to be done with current calls for a greater level of understanding of occupational risk factors within routine General Practice and increased training for clinicians.

Given the strength of evidence of occupational hazards in both risk and prognosis for LBP, why might it be that they are not routinely incorporated within patient screening tools or classification systems often used within the busy confines of a physician practice? Marras (5) in a recent paper shows that between 11% and 80% of LBP cases are due to activity risk factors (occupational ergonomics) but that between 14% and 63% of cases also have a relationship with non-occupational psychosocial risk factors, thus indicating significant overlap. This raises the issue of patient complexity, with both occupational and psychosocial aspects influencing outcome. Added to that is the issue of occupational heterogeneity, as workers come from an array of employment backgrounds, each type having a particular set of influences on LBP. It appears that, as with the tenets of stratification outlined above, it may not be possible to apply standard measures to all workers with LBP, but there may be scope to include some core features that prove helpful to physicians. Therefore we wish to outline a set of recommendations for future research in this area.

1) *Identification and classification*: research is now required to examine and review factors predictive or protective of the onset of occupational LBP, and occupational risk factors that increase or decrease risk of poor outcome once the person has LBP.

2) *What works for whom*: we require more information on how occupational hazards operate at the individuals’ level,

and how these factors interact with other known non-occupational risk factors predictive of poor outcome. It is clear that any approach to understand LBP should not mask the complexity of the interactions and interdependencies between the various risk factors.

3) *Synthesis*: there is a need to produce a work based stratification tool or subscale of an existing tool based on relevant risk factors and barriers to recovery within the occupational environment. Such a tool can complement and give added value to existing screening tools to improve prognostic accuracy when applied to people who are employed who report LBP.

4) *Context beyond the individual*: a criticism of classification and screening tools is the focus on the individual, and this should be no less an issue for a potential work based screening tool. Evidence shows the wider employment context (e.g. systems, and policy) are as equally important and further work is required to evaluate their influence.

## CONCLUSIONS

Despite the advances in stratification models to assist in the risk identification and treatment for those with LBP, occupational risk factors are generally low in consideration. However evidence shows that occupational hazards are not only important in aetiology of LBP but are also important in its management as well as whether an individual with LBP returns to work. This is suggestive that those who are employed may represent a viable subgroup within the total LBP population. Research is now required to understand the interaction between known occupational risk factors and known individual factors. Such understanding can then be applied within stratification models that can give added value when applied to people who are employed who report LBP.

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