

Editorial

Changing concepts in approaches to occupational low back pain

With the lifetime prevalence of low back pain (LBP) in the Japanese population exceeding 80%¹⁾, LBP is a major health problem and the leading cause of disability worldwide²⁾. It is one of the most common reasons people consult a physician, have activity limitations, or take time off work³⁾. The number of individuals with LBP is projected to increase in the future and even more rapidly in low-income and middle-income countries⁴⁾. Disability has the highest rate in working-age groups²⁾ and is the most common cause of medically certified sick leave and early retirement. The onset can be work-related⁵⁾, and many workers with prolonged absences from work attribute their back pain to their work⁶⁾. Conversely, workers' lost productivity includes absenteeism (productivity loss that stems from being absent from work) and presenteeism (productivity loss that stems from being at work while ill and performing at a lower level than usual). Among the costs related to workers' health, lost productivity costs are significantly higher than medical and pharmacy costs and are, on average, 2.3 times higher⁷⁾. Several studies have demonstrated that costs incurred from presenteeism are much higher than those incurred from absenteeism^{8–11)} and account for the largest proportion of the total health-related costs^{8–10)}. LBP, along with neck and shoulder discomfort (Katakori), is also reportedly a primary cause of presenteeism in Japan^{12–14)}.

Thus, the number of individuals with back pain and the loss of work continue to be significant, and looking at this situation from a bird's eye view, it can be said that measures and interventions for LBP have been ineffective. Thus, can it be said that experts, including myself, are not producing successful results?

I would like to consider the reasons for this. LBP is a complex condition with pain and disability in different manifestations, which are influenced by various biological, psychological, and social factors. Many consider it a category of nonspecific LBP for which no specific cause can be established⁴⁾. We have reported in several prospective studies that not only ergonomic factors, but also psychosocial factors, including work-related factors such as job dissatisfaction and a lack of supervisor support, are the risk factors

for both the occurrence and chronicity of nonspecific LBP that interferes with work, even among Japanese workers^{15–19)}. However, there is a lack of standardization and provision of appropriate approaches to assessments that include psychological (called yellow flags) and social factors (called blue flags, including perceptions about the relationship between work and health), which is the main reason. One global standard screening tool for understanding potential personal psychological factors⁴⁾ called yellow flags, such as pain catastrophizing, fear-avoidance beliefs (kinesiophobia), depression, and anxiety, is the Keele STarT Back Screening Tool (SBST)^{20,21)}. If prognostic factors are present or in case of a high-risk profile on the SBST, interventions should be considered to eliminate or reduce factors hindering work participation and to support beneficial factors²²⁾. The use of SBST is recommended in the world's first multidisciplinary occupational health guideline focused on effective interventions for work participation²³⁾. If SBST has a high-risk profile, a mechanism needs to be established to share both the results and effective intervention methods with the clinicians and occupational health staff.

From a health and safety perspective, bias toward the work environment and ergonomic approaches may be a reason. Many stakeholders in occupational health and workers and patients still believe that back pain is mostly caused by mechanical pain with tissue damage due to back strain. Conversely, in 2017, the International Association for the Study of Pain announced that, in addition to the long-standing pain mechanism classification of nociceptive pain, including intervertebral disc injuries and neuropathic pain (e.g., lumbosacral radicular syndrome), nociplastic pain was officially adopted and announced as the third mechanistic descriptor²⁴⁾. Nociplastic pain occurs even in the absence of tissue damage and is associated with various psychosocial factors. Thus, the pain created by the brain, which is distinct from the mind–body dualism, has finally become a civil right. Since it has already become clear that nociplastic pain with central sensitization is common in musculoskeletal disorders, such as LBP and osteoarthritis²⁵⁾, there is a need to recognize nociplastic pain and de-

velop solutions for it in the field of occupational health. Candidate solutions or intervention packages may include approaches to fear-avoidance and pain behavior²³); exercise with a time-contingent approach²³); approaches to depression⁴) and sleep²⁶), which are mutually causal to LBP; and rehabilitation that also utilizes the mechanism of exercise-induced hypoalgesia. The WHO is developing disease-specific, priority evidence-based interventions, including those for LBP, and a package of interventions for rehabilitation that deliver them safely and effectively. All stakeholders in occupational health need to know that the only evidence-based intervention recommended for both recurrence prevention and chronic LBP relief is exercise. Needless to say, “staying active” is recommended for non-specific LBP, even if it is acute, to the extent that performing work can be preferred over rest^{23, 27}).

Furthermore, attention should be paid to age management. Examples would include lifestyle approaches, including weight management⁴), which is weak but associated with LBP relief for the working-age population, where disability due to LBP is common. Assessments and interventions for osteoporosis and sarcopenia, which are also associated with back pain and for which assessment and intervention methods are largely established, are essential for senior workers. These are investments in the prevention of long-term care after retirement. We should also be concerned about potential vitamin D deficiency in fair-skinned, thin women who work indoors with little exposure to sunlight and prevention of osteoporosis and sarcopenia. Hypovitaminosis D is related to back pain, its severity, and difficulty in performing daily activities²⁸), and vitamin D supplementation for chronic pain with vitamin D deficiency improves sleep and quality of life, as well as pain relief²⁹).

Based on the above, future research is warranted in the area of effective interventions for LBP with disability, including work-related outcomes such as presenteeism and work engagement. Cost-effectiveness studies for interventions with work-related outcomes in this field is currently lacking, and it will be necessary to clarify the role of the factor of “medical costs” (resource allocation) in the future.

Furthermore, a strategy that considers the advent of the digital healthcare era is essential. We have confirmed that offering short exercises, including “One Stretch”, which has been proven to prevent and improve LBP in workers³⁰), as the AI-assisted health program via SNS on workers can increase adherence to exercises and help improve symptoms^{31, 32}). In the future, it will be necessary to develop Just-in-Time Adaptive Intervention using IoT and metaverse in

this area.

As the way of working is changing due to the pandemic, it is desirable to establish an individualized population approach based on the rational and strategic assessment of LBP, which is a common disease with the highest disability impact and is frequently recurrent, to help workers improve their self-management³³) and self-efficacy, maintain constant work participation²³) and moderate physical activity, and improve productivity. This requires further interdisciplinary and international collaborations. As a prerequisite for this, we consider that all stakeholders involved in back pain management need to promote acceptance and sharing of “conceptual change”.

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