Do musculoskeletal conditions increase the risk of chronic disease: a systematic review and meta-analysis of cohort studies

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Introduction & Purpose: A growing body of research shows that musculoskeletal conditions are associated with chronic diseases. A suggested mechanism for this relationship is that musculoskeletal conditions contribute to the development of other chronic diseases. For example, pain and disability may limit physical activity and subsequently increase the risk of obesity, cardiovascular disease, diabetes, or cancer. We undertook a systematic review to investigate the causal relationship between common musculoskeletal conditions (neck and back pain, and osteoarthritis of the knee or hip) and chronic diseases (cardiovascular disease, cancer, diabetes, chronic respiratory disease and obesity).

Methods: We searched relevant databases up to November 2016 and identified longitudinal cohort studies that estimated a temporal association between the prevalence of musculoskeletal conditions (neck or back pain, and osteoarthritis of the knee or hip) at baseline and chronic disease (cardiovascular disease, cancer, diabetes, chronic respiratory disease and obesity) throughout follow up. Risk of bias was assessed using a modified version of the QUIPS tools. We pooled adjusted hazard ratios and incidence rate ratios, using random-effects meta-analyses. We conducted subgroup analyses separated by musculoskeletal conditions and by outcome where possible.

Results: We identified 13,736 articles of which 16 articles reporting on 11 studies met the inclusion criteria. The primary meta-analysis included data from 10 studies and 2,669,751 persons. Cardiovascular disease was the outcome in 9 studies and cancer in 1 study. Two

studies measured back pain as the exposure and eight measured osteoarthritis. The primary meta-analysis revealed a statistically significant increase in the risk of developing ‘chronic disease’ in those reporting musculoskeletal conditions at baseline (HR= 1.18; 95% CI, 1.13 to 1.22; I^2 57%). Subgroup analysis by condition revealed a similar result for osteoarthritis and chronic disease. No meta-analysis was performed for back pain. The two studies of back pain found people with back pain had an increased risk of cardiovascular disease (HR=2.13; 95% CI, 1.32 to 3.44) and 10-year incidence of cancer (IRR= 1.25; 95% CI, 1.19 to 1.32).

Conclusions: Patients with musculoskeletal conditions have an increased risk of subsequent chronic disease. Effective treatment of musculoskeletal conditions and comorbid lifestyle risks, such as inadequate physical activity, may play a role in preventing other chronic diseases.

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