Depression and anxiety are the 2 most prevalent mental health conditions worldwide, co-occur with chronic pain at particularly high rates, and result in more years lived with disability than most medical conditions. Additionally, impairment in physical function is a common fellow traveler with the pain-anxiety-depression triad. Research has shown that amelioration of depression and anxiety is associated with concomitant improvement in pain and physical function. The opposite is less certain, namely whether improvements in pain or physical function result in parallel benefits for depressive and anxiety symptoms.

This is the question that Zhang et al examined in a large retrospective cohort study spanning 6 years in which patient-reported outcome measures were serially administered to patients seeking evaluation and management of musculoskeletal conditions in the orthopedic clinic of a tertiary US academic medical center. What the authors found was that improvements in pain and physical function were associated with improvement in anxiety but not in depression. However, quite large improvements in pain and physical function were required for meaningful improvements in anxiety. For example, a 12-point improvement in the Patient-Reported Outcomes Measurement Information System (PROMIS) Pain Interference score was required for a clinically meaningful improvement of 3 points in the PROMIS Anxiety score. This degree of pain improvement corresponds to a 4- to 5-point change on a 0- to 10-point pain numeric rating scale, which is more than double what is considered a meaningful change in pain and, frankly, difficult to achieve with most pain interventions.

Strengths of the study by Zhang et al include a very large sample size (n = 11,236), multiple (4 to 6) longitudinal assessments per patient, use of well-validated PROMIS scales for both physical and psychological domains that are all normed on the same standardized T score, and sophisticated longitudinal analyses. The authors also acknowledged several limitations. One in particular is that the available data did not allow adjusting for many important confounders. As Zhang et al noted, it is possible that other patient, diagnosis, and treatment characteristics could have influenced the associations they identified. In interpreting the study findings, we do not know whether the minimal association of improvements in pain and physical function with mental health found in the overall cohort might vary depending upon the musculoskeletal diagnosis or the specific types and intensity of treatment.

The key outcomes modeled in this study were depression and anxiety which on average were not elevated at baseline but instead close to the population norm. Furthermore, mean scores increased (worsened) substantially over the course of the study, with final anxiety scores being 12 points higher than baseline scores, and final depression scores being 8 points higher. These represent substantial worsening of depression and anxiety over time, because a 10-point change on PROMIS scales is a full standard deviation, which corresponds to a large effect size. This considerable worsening of depression and anxiety over the 6-year study period may have partially constrained the degree to which this observational study could test the association of improved physical functioning and pain with improved mental health. In settings where pain or physical function is explicitly a treatment target (such as clinical trials or practice), the mental health benefits of improving pain and physical function might be more demonstrable than in an observational study where levels of anxiety and depression were low to start with and markedly worsened over time.
Previous longitudinal studies have reached varying conclusions on whether there is a reciprocal association between changes in pain and depression. One study (substantiated by other longitudinal studies) found a bidirectional influence of pain and depression on one another. However, changes in pain had a much smaller association with depression than changes in depression had on pain. In fact, large pain changes were required for relatively small changes in depression. Another study, consistent with Zhang et al, found that depression and anxiety longitudinally predicted pain, but pain predicted neither depression nor anxiety. Collectively, evidence suggests a larger and more consistent association of improvements in mental health with improvements in pain than the converse.

This study by Zhang et al has clinical implications for addressing psychological distress in patients with pain or impaired physical functioning. Screening for depression and anxiety is easy to do with brief, self-administered measures such as the PROMIS scales, the Patient Health Questionnaire-9 and General Anxiety Disorder-7 (or the ultra-brief Patient Health Questionnaire-4), or other validated scales. Elevated screening scores could be handled in one of several ways. Depending upon patient preferences and severity of depression and/or anxiety, one approach might be sequential treatment of pain followed by therapy targeting mood symptoms if the latter persist or if pain does not improve. Another approach would be treatment that initially targets both pain and mood symptoms. In specialty settings where there may be inadequate time or expertise to address psychological conditions, asking patients to follow up with primary care or referring them to mental health services may be warranted, particularly for individuals with very high or persistent levels of depressive or anxiety symptoms.

Some treatments can jointly benefit the pain-anxiety-depression symptom triad, including cognitive behavioral therapy, exercise, and serotonin-noradrenaline reuptake inhibitor antidepressants such as duloxetine. In other cases, both pain and psychological treatments may need to be combined for maximum benefit. Regardless of whether watchful waiting or active treatment of depression and/or anxiety is the initial approach, monitoring and adjusting therapy to optimize mental health outcomes (ie, measurement-based care) is desirable. As far back as ancient Greece, the adverse effects of mental distress on physical health were recognized; as Ovid wrote: “I am no better in mind than in body; both alike are sick and I suffer double hurt.”

ARTICLE INFORMATION
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