Disadvantages In Social Determinants Of Health Linked To Reduced Odds Of Revealing A Specific Etiology Of Nonspecific Low Back Pain

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INTRODUCTION: Low back pain is a leading cause of disability worldwide, imposing a significant social, economic, and healthcare burden. While literature has shown that nonspecific low back pain (NS-LBP) often resolves within 6 weeks, some patients may have an underlying specific lumbar spine pathology (SP-LBP) that is later identified. With growing impetus to address social determinants of health (SDOH) disparities within musculoskeletal care, this study investigates the potential correlation of SDOH on the diagnostic trajectory of NS-LBP, uncovering critical disparities.

METHODS: A patient sample of adult patients of all sexes with an initial diagnosis of NS-LBP were identified from the 2010-Q1 2023 PearlDiver M170 database. Exclusion criteria included: age <18 years, prior SP-LBP diagnosis, or diagnoses of trauma, neoplasm, or infection within 3 months prior to initial NS-LBP diagnosis.

Patients were then assessed for SDOH disadvantage across the 5 domains defined by the U.S. Department of Health and Human Services—economic, education, social, environment, and healthcare—using established International Classification of Disease (ICD) codes. Patients who subsequently received an SP-LBP diagnosis within 12 months of initial NS-LBP diagnosis were then identified based on the NASS ICD-code Crosswalk of Common Spine Pathologies.

To compare SDOH-disadvantaged patients and non-disadvantaged patients, multivariable logistic regression controlling for age and sex was used to compare the odds of subsequent SP-LBP diagnoses, imaging within 90 days of NS-LBP diagnosis, and diagnosis in an emergency department (ED) setting. Kaplan-Meier curves and Cox regression controlling for age and sex were used to compare the incidence of subsequent SP-LBP diagnosis between SDOH-disadvantaged and non-disadvantaged patients over time.

RESULTS:
In total, 17,830,505 patients were initially diagnosed with NS-LBP (6,905,712 male, 10,924,362 female, 431 unspecified sex). Among these patients, subsequent SP-LBP diagnosis was made within 12 months for 1,391,565 (7.80%). Of the overall NS-LBP population, 160,193 (0.90%) were identified as SDOH disadvantaged. SDOH-disadvantaged patients demonstrated reduced odds of receiving a subsequent SP-LBP diagnosis (Odds Ratio [OR]: 0.77, p<0.001), with significant reductions in 4 of the 5 SDOH domains—economic (OR: 0.94, p=0.013), education (OR: 0.86, p=0.016), social (OR: 0.83, p<0.001), and environmental (OR: 0.74, p<0.001) [Figure 1].

Furthermore, SDOH-disadvantaged patients had increased time to subsequent SB-LBP diagnosis (Hazard Ratio: 0.800, p<0.001) [Figure 2], were less likely to undergo MRI within 90 days of NS-LBP diagnosis (OR: 0.71, p<0.001), and were more likely to be diagnosed in the ED (initial NS-LBP: OR 2.72, p<0.001; subsequent SP-LBP: OR 3.35, p<0.001). Among those receiving a subsequent SP-LBP diagnosis, the SDOH-disadvantaged patients had higher odds of specific diagnoses including neoplasm (OR: 1.49, p<0.001) and infection (OR: 1.22, p<0.001), highlighting the importance of such workups and diagnoses.

DISCUSSION: The current study revealed critical disparities in the diagnostic trajectory following NS-LBP diagnosis. SDOH-disadvantaged patients had reduced odds of being diagnosed with SP-LBP within 12 months of an initial NS-LBP diagnosis and experienced longer time to SP-LBP diagnosis. SDOH-disadvantaged patients had higher odds of being diagnosed in an ED setting, received different imaging, and ultimately had different diagnostic profiles than non-disadvantaged patients. Though causality cannot be established due to the retrospective nature of the study, these findings underscore the need to further investigate and address healthcare inequities in longitudinal care for disadvantaged populations with LBP.

SIGNIFICANCE/CLINICAL RELEVANCE: This study highlights disparities in evaluation of nonspecific low back pain, demonstrating that SDOH-disadvantaged patients have lesser odds of receiving a specific diagnosis and timely imaging. These findings underscore the need to further study and address inequities in clinical practice and workflows to enable earlier diagnosis of serious pathologies and improve access to equitable musculoskeletal care.

IMAGES:

Figure 1. Odds ratios for subsequent SP-LBP diagnosis within 12 months of NS-LBP diagnosis of SDOH-disadvantaged vs. non-disadvantaged patients

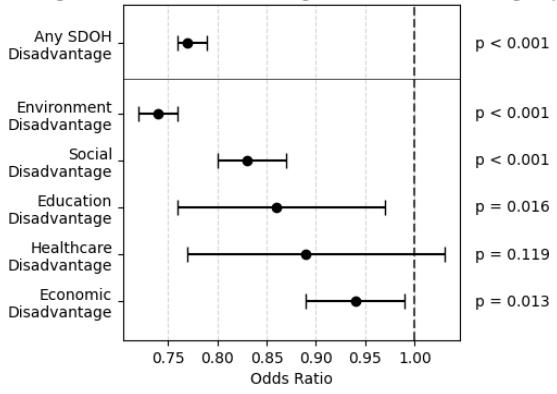

Figure 2. Time to SP-LBP diagnosis after initial NS-LBP diagnosis for SDOH-disadvantaged vs. non-disadvantaged patients