


Beyond Demographic Shifts: Reassessing Workforce Aging and Methodological Bias in Occupational Low-Back Pain Analyses [Letter]

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Dear editor

We have carefully read “The Impact of Population Aging on Ergonomic-Related Low Back Pain Across Regions with Different Development Levels”,¹ and value the authors’ effort to connect demographic change with the global burden of occupational low-back pain (LBP). Before these findings are translated into clinical guidelines or workplace policy, three design choices warrant closer scrutiny.

First, the study equates population aging with workforce aging. LBP attributable to ergonomic load, however, affects only those still employed. Labour-force participation between ages 55 and 64 differs markedly across advanced economies, being roughly twice as high in the European Union as in Japan,^{2,3} and drops further after statutory retirement. Regions with earlier or more complete retirement therefore absorb an inflated “aging” component even though many older residents no longer face workplace exposures. Re-weighting the decomposition with age-, sex- and sector-specific employment rates (available from Eurostat or the ILO) would produce a truly actionable “working-population aging” measure and would probably shrink the excess burden assigned to jurisdictions with low late-career participation.

Second, ergonomic exposure is assigned via nine broad occupational groups. Within-group heterogeneity is substantial: inertial-sensor field data show warehouse pickers spending more than 7% of each shift in trunk flexion beyond 30°, whereas industrial-robot operators in the same “manufacturing” group seldom exceed 2%.⁴ Such non-differential misclassification dilutes exposure contrasts, leaving residual variance to be captured by the aging term. Merging GBD job codes with national job-exposure matrices (eg., FINJEM, O*NET) or validated posture-sensor libraries, then repeating the decomposition as a sensitivity analysis, would clarify how much of the DALY increase is modifiable through workplace design rather than an unavoidable effect of demographic change.

Third, the analysis does not adjust for the Healthy Worker Survivor Effect (HWSE). Workers who develop disabling LBP often leave high-load jobs early; those remaining into older age constitute a healthier subset. A contemporary methodological review shows that ignoring HWSE systematically underestimates age-specific risks and can exaggerate sex differences unless g-methods or employment-exit data are applied.⁵ Incorporating such approaches, or at minimum testing robustness after censoring at job termination, would isolate genuine physiological susceptibility before attributing excess DALYs to aging.

Addressing workforce weighting, fine-grained exposure assignment and HWSE correction would likely reduce the crude aging component and redirect preventive resources toward ergonomic redesign, graduated duty modification and timely rehabilitation—interventions squarely within the remit of occupational-health teams. Until these refinements are undertaken, age-targeted screening programmes or resource allocations should be interpreted with caution.

Thank you for considering these comments, offered in the spirit of strengthening the translational value of this important work.



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