

Factors Associated with Incidence and Recurrence of Lower Back Pain: A large population analysis of the UK biobank

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INTRODUCTION: Lower back pain is thought to occur in as high as 36% of the population each year and recur in as high as 90% of patients over multiple years. Several small studies have investigated risk factors for lower back pain, but these risk factors have not been confirmed with high levels of evidence with a large population cohort and are therefore reported as inconclusive in national guidelines. The purpose of this study was to investigate the influencing factors of back pain and recurrent back pain.

METHODS: Patients were collected from the United Kingdom (UK) Biobank, a large cohort in the UK. The database contains detailed socioeconomic, lifestyle, employment, diet, mental health, and medical history information about each patient. 45 total explanatory variables were collected. Our outcome variables was the presence of back pain that interferes with a patient's usual activities at the initial visit collected in 2006-2010, and continued/recurrent back pain, defined by back pain that interferes with the same patient's life in 2014. Bivariate analysis was conducted between our explanatory variables and outcome variables. Due to high number of variables, we conducted covariance testing to remove highly colinear variables before multivariable logistic regression. In total, 40 explanatory variables were used to identify risk-adjusted risk factors associated with our outcome variables.

RESULTS:

501,509 patients were included in this study, of which 145,855 (29.1%) had low back pain at their initial visit. In multivariable regression, overweight/obese BMI (OR 1.17/1.45), Asian race (OR 1.5), driving to work (OR 1.13), having an active job (OR 1.15), salary <30K/year (OR 1.15), spending more than 3h/day watching TV (OR 1.2), decreased sleep (OR 1.09), symptoms of anxiety/depression (OR 1.20/1.26), and opioid use (OR 3.8) were associated with increased risk of back pain ($p < 0.05$ for all). 51,131 patients were seen in follow-up in 2014, and 10,706 (21.0%) had low back pain at that visit. In multivariable regression, male sex (OR 1.36), active job (OR 1.16), thyroid disease (OR 1.19), and being retired (OR 1.20) were associated with having back pain in 2010 that did not get better by 2014 (all $p < 0.05$).

DISCUSSION AND CONCLUSION:

Several factors believed to be risk factors for back pain and recurrent back pain, such as high BMI, Asian race, and a sedentary lifestyle, required a large population-level analysis to confirm their significance. In addition, this study found that several social-factors – such as decreased sleep, poor mental health, and poverty- are important risk factors for back pain.