

Occupation Classification have performance accuracy which are at least equivalent to manual coding accuracy. Moreover automated coding provides significant time savings. These studies have identified that both natural language processing and machine learning algorithms are effective for auto coding. Whereas NLP based and machine learning approaches both rely on bespoke rules, and existing data sets, machine learning models can proliferate bias from training data if not corrected.

Objectives The goal of the study is to explore the impact of altering sex/gender ratios in training data sets on overall performance of the machine learning based prediction of NOC codes using patient provided job titles.

Methods Using data participant patient data provided by Atlantic PATH, training data sets were prepared for 100 4-digit NOC categories. The data sets were prepared with sex/gender ratios of 50/50 30/70, 70/30. The data sets were used to train ENENOC machine learning platform and tested on a set of manually coded job titles provided by Atlantic PATH CanPATH . Performance levels were contrasted for all 4-digit NOC categories used in the study.

Results Initial results in this preliminary study have identified that sex and gender are variables that can influence auto coding performance, however the extent to which overall coding accuracy is impacted is relative minor. Further studies are required with larger training sets to fully explore the extent of sex and gender as contributing variables to bias to ENENOC.

Conclusion We initiated studies to investigate the impact of sex and gender bias on performance of the ENENOC algorithm. Together, the ENENOC contributed training and test sets provide a suitable framework for ongoing work in this area.

Muskuloskeletal-1

0-21 PATTERNS OF OPIOID DISPENSING AND ASSOCIATED WAGE REPLACEMENT DURATION IN WORKERS WITH ACCEPTED CLAIMS FOR LOW BACK PAIN: A RETROSPECTIVE COHORT STUDY

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Introduction When unable to work due to low back pain a worker may seek income support and funding for healthcare from an income support system such as workers' compensation. Clinical practice guidelines recommend opioids for low back pain are only used for a short duration, at a low dose and with a plan to cease use.

Objectives This study aimed to identify patterns of opioid dispensing in Australian workers with low back pain and determine the association of dispensing patterns with wage replacement duration.

Methods Australian workers' compensation claimants with low back pain and at least one day of wage replacement were included. We used group-based trajectory modelling to identify opioid dispensing patterns over a two and half year period from reported low back pain onset. Quantile regression was then used to compare wage replacement duration between each dispensing pattern group.

Results One third of workers with low back pain (N=3205, 33.3%) received at least one opioid dispense during their claim. Three dispensing patterns were identified. The majority had a short-term low-volume opioid dispensing pattern (N=2166, 67.6%), while 798 (24.9%) had a long-term moderate-volume pattern and 241 (7.5%) had a long-term high-volume pattern. Workers dispensed opioids had significantly longer wage replacement duration than those not dispensed opioids (median (weeks): 63.6 versus 7.1 respectively). In addition, moderate- and high-volume long-term dispensing had significantly longer wage replacement duration compared with short-term dispensing (median (weeks): 126.9, 126.0 and 30.7 respectively).

Conclusion Our study found a high use of opioids for long durations among compensated Australian workers with low back pain. Multifaceted strategies to limit long-term use of opioids are needed. These could include implementation of clinical care standards and indicators that can be used to monitor and regulate opioid use, and implementing financial mechanisms to stem long-term opioid use.

0-179 OCCUPATIONAL DEMANDS ASSOCIATED WITH ROTATOR CUFF DISEASE SURGERY: RESULTS FROM A NOVEL LINKAGE OF A JOB-EXPOSURE MATRIX TO THE UK BIOBANK

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Objective Occupations requiring high physical demands may lead to greater risk of rotator cuff disease (RCD) and corresponding surgical treatment. We linked a job-exposure matrix (JEM) to the UK Biobank to measure physical occupational exposures and estimate associations with incident RCD surgery.

Methods Job titles at baseline and UK Standard Occupational Classification (SOC) codes were recorded during a verbal interview. Lifetime job histories were captured through a web-based survey. UK SOC codes were linked to a JEM based on the US O*NET database. O*NET-based scores for physical demands were assigned to jobs including: static strength, dynamic strength, general physical activities, handling/moving objects (range=1–7), time spent using hands, whole body vibration, and cramped/awkward positions (range=1–5). RCD surgeries were identified through national hospital inpatient records. Cox regression was used to calculate hazard ratios (HRs) as estimates of associations with RCD surgery accounting for confounders. Among those with lifetime job histories, associations were estimated with duration of time with high exposure (i.e. above cut-offs identifying approximately the top quartile of exposure).

Results Job titles were available for 277,808 people, of which 1,345 (0.5%) had a subsequent inpatient RCD surgery. After adjusting for age, sex, race, education, deprivation, and body mass index, all O*NET variables considered were associated with RCD surgery (HR per point increase range=1.10–1.45, all P<0.005). More frequent occupational manual labor self-reported in the UK Biobank verbal interview was also associated with RCD surgery (HR for 'Always' vs. 'Never/rarely'=2.12; 95%CI=1.79–2.50). Lifetime job histories were available for 100,929 people, in which high exposures were