**Longitudinal patterns of back pain across adulthood and their relationship with childhood factors: Evidence from the 1946 British birth cohort**

**Supplementary information**

Figure S1: Four longitudinal classes of back pain from age 31 to 68 years, by sex (n=3271)

Table S1: LCA fit statistics for back pain across adulthood: Combined model, model with parameters constrained to be the same in both sexes (sex invariant) and model without such a constraint (sex variant)

|  | Combined  | Sex variant  | Sex invariant |
| --- | --- | --- | --- |
| Classes | 4 | 4 | 4 |
| No of parameters | 27 | 55 | 31 |
| Log likelihood | -8425.864 | -10661.398 | -10684.605 |
| *Information criteria* |  |  |  |
| Akaike Information Criteria (AIC) | 16905.729 | 21432.796 | 21431.211 |
| Bayesian Information Criteria (BIC) | 17070.236 | 21767.903 | 21620.089 |
| Adjusted BIC | 16984.445 | 21593.143 | 21521.589 |
| *χ2 good-of-fit test* |  |  |  |
| Pearson χ2 | 0.25 | .25 | .11 |
| LRT χ2 | 0.15 | .27 | .024 |
| Smallest class %\* | 10.0 | 14.2 | 10.5 |
| Entropy | 0.568 | 0.725 | 0.711 |

\*based on estimated posterior class membership probabilities

Table S2: Indices of model fit for longitudinal latent class models of back pain based on reports at ages 31, 36, 43, 53, 60-64 & 68 in MRC NSHD (n=1507 participants with all (6) waves of data)

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | 2 classes | 3 classes | 4 classes | 5 classes |
| *Chi-square goodness-of-fit tests* |  |  |  |  |
| Likelihood Ratio χ2 p value a | <.001 | <.001 | 0.113 | 0.324 |
| Pearson χ2 p value b | <.001 | <.001 | 0.148 | 0.399 |
| Bootstrapped LR difference test p value c | <.001 | <.001 | <.001 | .102 |
| *Information criterion* |  |  |  |  |
| Akaike Information Criteria (AIC) d | 9487.1 | 9399.3 | 9370.7 | 9370.1 |
| Bayesian Information Criteria (BIC) e | 9556.3 | 9505.6 | 9514.3 | 9550.9 |
| Adjusted BIC e | 9515.0 | 9442.1 | 9428.5 | 9442.9 |
| Lo-Mendell-Rubin LRT (comparing current model to previous model) p value f | <.001 | <.001 | .0049 | .523 |
| Entropy g | 0.714 | 0.702 | 0.646 | 0.552 |

*a* p>.05 indicates good fit

*b* p>.05 indicates good fit

*c* p<.05 indicates good fit

*d* Lowest value indicates best fit

*e* Lowest value indicates best fit

*f* P<.05 indicates addition of this class significantly improves fit

*g* Values close to 1 (range 0-1) indicate good classification accuracy (Entropy is a measure of between-class separation i.e. how well group membership is predicted given the observed data)

Figure S2: Four longitudinal classes of back pain from age 31 to 68 years, n=1507