mean a major loss of working years and therefore an advancement of age of disability in the coming years.

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Objectives To identify the employment rate over time, to examine employment trajectories and to determine the predictors of distinct employment trajectories in a cohort of people with spinal cord injury (SCI) in The Netherlands.

Methods The study population consisted of 179 participants from eight rehabilitation centres who had acute SCI, were 18–65 years old, wheelchair dependent, and able to understand Dutch. At the start of rehabilitation, socio-demographics (age, gender, education), pre-injury occupation (level and physical intensity), injury-related factors (age at onset, neurological level and motor completeness), and functional status were measured. Employment status was defined as "≥1 hour of paid work/week". Follow-up measurements were conducted 1, 2 and 5 years after discharge. Employment trajectories were modelled with longitudinal latent class analysis. Determinants of distinct trajectories were identified using multivariable logistic regressions.

Results The employment rate was 79.5% before injury, 28.2% 1 year, 35.1% 2 year and 44.8% 5 year after discharge. Three distinct employment trajectories were identified: 1) never-worked (N = 35; 20%), those who did not work pre- and post-injury, 2) slow return to work (RTW) (N = 56; 30.9%), those who worked pre-injury and had a slow RTW, and 3) fast RTW (N = 88: 49.1%), those who worked pre-injury and had a fast and sustained RTW. Compared to participants with slow RTW, those with fast RTW had a higher functional status (OR = 1.07, 95% CI = 1.02–1.12) and a pre-injury occupation with low physical intensity (OR = 9.83, 95% CI = 2.27–42.57). The model explained 43% of the variance in RTW trajectory.

Conclusion The employment rate increased over time after discharge. Three distinct employment trajectories were identified. Predictors of fast RTW were higher functional status and pre-injury occupation with low physical intensity. Future research should focus on identifying environmental factors that may contribute to a favourable RTW trajectory.

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Objectives Socio-economic position (SEP) and intelligence (IQ) are both predictors of later health, however, the relationships between them have been much debated. Our objective was to examine the separate effects of IQ and SEP on health, as measured by sickness absence (SA).

Methods All live-born males in Norway 1967–1971 (N = 170 678) were followed up in several national registers. Our study included subjects who were healthy at age 18–19 years, and at risk of SA at start of follow-up (N = 99 738). Health outcome was the 4-year risk (2000–2003) of at least one SA episode. IQ test scores were recorded at military conscription (age 18–19 years). Education level at age 28 and income in 2000 served as indicators of adult SEP, whereas parental education level and income during childhood were indicators of childhood SEP. Risk ratios (RRs) adjusted for birth year were estimated using generalised linear models. Direct and total effects were calculated according to our model.

Results A total of 23 506 subjects (24%) had SA episodes during follow-up. There were strong gradients according to participants' IQ, *educational attainment*, and *income*. RRs between the lowest and highest of 5 categories were 5.99, 9.05, and 3.36, respectively. The effects were somewhat weakened when adjusted for childhood SEP, and were further reduced when IQ, education and income were all included in the analysis, to calculate the direct effects (RRs 1.84, 4.79, and 1.65, respectively). According to our model, the total effect of IQ (adjusted for childhood SEP), was RR 4.15.

Conclusions These results suggest that education had a stronger direct effect on health than IQ and income. However, the total effect of IQ was of similar strength and was in part mediated through adult SEP.

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To account for the dynamic aspects of carcinogenesis, we propose a compartmental hidden Markov model in which individuals are either healthy, asymptomatically affected, diagnosed, or deceased. Our model is illustrated using the example of smoking-induced lung cancer.

The model was fitted on a case control study nested in the European Prospective Investigation into Cancer and Nutrition study including 757 incident cases and 1524 matched controls. Model estimation was done through a Markov Chain Monte Carlo algorithm, and predictive abilities of the model were assessed through a simulation study based on the posterior estimates of the model parameters. We considered a logistic function for the risk of entering carcinogenesis. Sensitivity analyses to assess the role of each of model parameters was performed by comparing sub-models on the basis of their (simulated) predictive performances.

We found that once adjusted on its impact on exposure duration, age does not independently drive the risk of lung carcinogenesis, while age at starting smoking in ever smokers, and time since cessation in former smokers were found influential. We estimated the time between onset of malignancy and clinical diagnosis to range from 2 to 4 years. Our approach yielded good performances in reconstructing individual trajectories in both cases (sensitivity >90%) and controls (sensitivity >80%). Results also showed that our data did no support an age-dependent time to diagnosis.

The flexible and general formulation of our compartmental model enables the future incorporation of disease states