Respiratory disease

Breathlessness independently associated with obesity and weight gain in adult life

Middle-aged individuals with a high body mass index (BMI) and those whose BMI had significantly increased since the age of 20 had an increased prevalence of breathlessness, a population-based study has found.

A cross-sectional analysis of the Swedish Cardiopulmonary Bioimage Study (SCAPIS) was carried out. There were 13,437 individuals, mean age 57.5 years, 52.5% women, in the study population.

Current BMI was calculated and BMI at age 20 estimated using recalled weight and current height. Waist and hip measurements were obtained. FEV_1, FVC and CO uptake were also calculated.

Exercise levels were categorised as: high (regular hard exercise ≥ 30 min, > 3 times/week); medium (walking or cycling for at least 4 hours per week) or low (spending most leisure time at sedentary activities with light physical exercise < 2 hours per week).

Activity-related breathlessness was defined as an mMRC breathlessness score ≥ 1. This scale is the most commonly used tool for categorising the functional impact and disability from breathlessness in daily life.

Mean current BMI was 26.8 kg/m^2 and mean BMI at age 20 was 21.9 kg/m^2. Of those with a normal BMI at age 20, 48% had become overweight and 19% obese. Nearly one in ten participants (9.6%) reported breathlessness (mMRC ≥ 1).

Individuals with breathlessness were more likely to be women (67% vs 51%), had similar BMI at age 20 as people without breathlessness but higher current BMI. They also had more central obesity, more comorbidities, were more likely to be smokers, did less exercise and had worse lung function than individuals who were not breathless.

Obesity was strongly associated with increased breathlessness; odds ratio (OR) 3.54 (95% CI: 3.03-4.13) even after adjusting for potential confounders (age, sex, current smoking, airflow obstruction, exercise level and comorbidities).

Irrespective of current BMI, a larger increase in BMI since the age of 20 was associated with a higher prevalence of breathlessness.

Current BMI and change in BMI since age 20 were independently associated with breathlessness when analysed separately.

Those whose BMI had increased since the age of 20 had higher current waist circumference, more central obesity, and were more inactive. Compared with men, women had a markedly steeper increase in breathlessness prevalence with higher BMI.

The probability of breathlessness increased more steeply with higher BMI in people with lower absolute FVC. The higher breathlessness prevalence in obese women compared with obese men was related to their lower absolute FVC.

Obesity is known to be associated with markedly increased prevalence and severity of activity-related breathlessness. However, no previous study has evaluated the relation between change in BMI over time and current breathlessness.

The higher prevalence of breathlessness in overweight and obese individuals does not seem to be explained by a higher prevalence of comorbidities. Only a small part of the association between BMI and breathlessness seemed to be mediated through a decrease in lung volume as evidenced by FVC. It is likely that obesity increases breathlessness mainly through the extra workload and associated increased respiratory demand.

It is important for GPs to be aware of the impact of obesity on breathlessness especially for patients with reduced lung volumes.

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Ekstrom MP, Blomberg A, Bergstrom G et al. The association of body mass index, weight gain and central obesity with activity-related breathlessness: the Swedish Cardiopulmonary Bioimage Study. *Thorax* 2019;74:958-64

Diabetes

Incidence of type 2 diabetes varies markedly between occupations

Men employed as professional drivers, and manufacturing or agricultural workers were three times more likely to develop type 2 diabetes compared with university teachers and architects, in a national study from Sweden.

Likewise, women who were cleaners or kitchen assistants were far more likely to develop the condition than physiotherapists or dental hygienists.

Of particular importance is the finding from the health data that the occupation followed is an association with diabetes incidence and that the occupation itself is not a causative factor.

The Swedish Total Population Register was used to identify all Swedish citizens born between 1937 and 1979. Of this 5,445,478 cohort, 4,550,892 (83.6%) were employed for at least two years between 2001 and 2013, and these subjects formed the study population.

The participants were followed up for the incidence of type 2 diabetes from 2006 to 2015. The Swedish national prescription register was established in 2005 and was the main source of diabetes information. Individuals with diabetes were identified by record linkage to this register and also the national patient register.

Details on participants' occupation between 2001 and 2013 were gathered from the Longitudinal Integrated Database for Health Insurance and Labour Market Studies. Data on lifestyle factors such as