Height and weight in two English towns

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Obesity is a suggested risk factor for several diseases, for example, ischaemic heart disease, diabetes, and gallstones,¹ that show geographical variation in incidence/prevalence within Britain. However, little is known about the geographical distribution of obesity.² Our objective was to obtain preliminary data on the distributions of height and weight in two towns with different reported incidences of non-insulin dependent diabetes mellitus (NIDDM).³ In Chester, the annual incidence was measured as 8 per 100 000 population aged 18-50 years per annum; in Stoke-on-Trent it was 22 per 100 000. Chester has 'better' and Stoke-on-Trent 'worse' socioeconomic conditions.³

A sample of 1249 men and 1363 women resident in Chester, and 1029 men and 1035 women resident in Stoke-on-Trent, aged 50-59 years was randomly selected from Family Practitioner Committee registers. A self-administered questionnaire asking for present height and weight and maximum weight ever (other than during pregnancy) was sent to each subject. Self-reported heights and weights have been shown to be valid,⁴ even in groups where poor results might be expected, such as the severely overweight.⁵

The response rate in each town after two mailings was 66% after allowing for the 163 subjects in Chester and 222 subjects in Stoke-on-Trent who were registered but had moved or died. The results are given in the table.

The table shows that men and women in Chester were on average taller than in Stoke-on-Trent, the difference being statistically significant. There were no statistically significant differences in weight. The average BMI was significantly greater in Stoke-on-Trent for men when based on present weight and for both men and women when based on maximum weight ever.

The definition of obesity in the Royal College of Physicians Report¹ was BMI >30.0 for men, >28.6 for women. By this definition 6% of the men in Chester were currently obese compared with 7% in Stoke-on-Trent; this difference between proportions was not statistically significant. For women, the figures were 13% compared with 16%, a difference

Mean and standard deviation of height, weight, and body mass index (BMI = weight/height²) based on present weight and maximum weight ever, for men and women aged 50-59 years in Chester and Stoke-on-Trent

	Chester			Stoke-on-Trent		
	No	Mean	SD	No	Mean	SD
Men						
Height (m)	767	1.74	0.70	593	1.72	0.07***
Weight (kg)	765	76.2	10.5	594	75.8	11.2
BMI (kg/m ²)						
Present	765	25.0	3.0	591	25.4	3.2**
Maximum	760	26.7	3.6	591	27.3	3.9**
Women						
Height (m)	846	1.61	0.06	617	1.60	0.07*
Weight (kg)	846	63.8	10.9	615	64.3	11.1
BMI (kg/m ²)						
Present	844	24.5	4.0	614	24.9	4.2
Maximum	836	26.3	4.6	613	27.0	4.7**

Numbers vary because some replies were incomplete.

*p < 0.05; ** p < 0.01; *** p < 0.001 (two tailed t test)

that was statistically significant (p<0.05). These levels of obesity are typical for the general population (6% for men and 13% for women with a BMI of 30 or over¹). By contrast, when BMI was calculated using maximum weight ever, 17% of men in Chester had been obese at some time in their life, compared with 23% in Stoke-on-Trent (p<0.05); among women, 23% in Chester were at one time obese compared with 30% in Stoke-on-Trent (p<0.05). Of the men who were obese at some time, two-thirds were no longer obese at the time of the study; of the women who were obese at some time, just under half were no longer obese.

It appears that community differences in the prevalence of obesity based on maximum weight ever may be greater than those based on present weight, and this may have important implications when assessing the relation between obesity and disease in different communities.

References

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