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Dietary glycaemic index, glycaemic load and insulin resistance in lean and overweight women with polycystic ovary syndrome and controls

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Polycystic ovary syndrome (PCOS) affects $\leq 10\%$ of women of reproductive age in the UK⁽¹⁾. Obesity and insulin resistance are common features of the syndrome with approximately 33% of UK women with PCOS (wPCOS) being obese⁽²⁾ and $\leq 80\%$ of wPCOS being insulin resistant⁽³⁾. Low-glycaemic index (GI) diets have been shown to be effective at improving insulin sensitivity and are proposed as a useful strategy for the management of insulin resistance in wPCOS⁽⁴⁾. The present research aims to describe the habitual diet of lean and overweight wPCOS compared with matched controls.

Dietary intake, GI and glycaemic load (GL) using a 7 d food diary were compared in thirty-eight wPCOS and twenty-eight age- and weight-matched controls (overall mean age 30.2 (SD 6.1) years). Weight and height were measured and BMI calculated. Fasting and 2 h insulin and glucose following a 75 g glucose tolerance test were measured and insulin resistance (HOMA index) calculated.

	BMI 18.5–24.9 kg/m ²				BMI >25 kg/m ²			
	wPCOS (n 25)		Controls (n 20)		wPCOS (n 13)		Controls (n 8)	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Age (years)	28.8	5.2	29.1	6.8	32.7	6.7	30.2	6.2
BMI (kg/m ²)	22.0	1.8	21.6	1.8	29.3	2.8	29.0	3.9
Dietary G*	53.6	4.3	54.0	3.4	54.8	4.3	54.2	3.1
Dietary GL†	9.5	1.7	9.3	2.1	10.1	2.7	10.2	3.8
Energy (kJ/d)	7732	1322	7849	1770	8422	1782	9017	1866
CHO intake (% energy)	41	6	48	5	42	6	43	6
Fat intake (% energy)	40	6	34	5	39	6	36	6
Protein intake (% energy)	16	3	15	3	15	2	16	4
Fasting glucose (mmol/l)	5.2	0.3	5.1	0.3	5.5	0.4	5.5	0.3
2 h glucose (mmol/l)	5.7	1.3	5.4	1.1	6.3	1.3	6.8	1.3
Fasting insulin (μU/ml)	8.6	3.0	7.4	2.7	11.3	3.7	10.7	1.9
2 h insulin (μU/ml)	26.8	11.6	18.7	7.5	39.2	20.7	33.9	10.7
Insulin resistance (HOMA index)	1.1	0.4	0.97	0.32	1.5	0.5	1.4	0.2

CHO, carbohydrate. *Low <55, medium 55–69, high ≥ 70 . †Low <10, medium 10.1–19.9, high ≥ 20 .

There were no significant differences in dietary GI or GL between lean or overweight wPCOS or controls. Dietary GL was considered low for both lean wPCOS and controls, and medium for overweight wPCOS and controls. Percentage energy from carbohydrate intake was significantly lower ($P < 0.001$) and percentage energy from fat significantly higher ($P = 0.002$) for lean wPCOS than lean controls. The 2 h insulin levels were significantly higher for lean wPCOS than lean controls ($P = 0.013$).

Proposed recommendations for health of a dietary GI of ≤ 45 ⁽⁵⁾ are not being met by wPCOS or controls, additionally wPCOS are not meeting dietary recommendations for fat or carbohydrate intake. The present study is the first in the UK to report the dietary GI, GL and habitual dietary intake of wPCOS compared with healthy controls and the results indicate both qualitative and quantitative differences. These results will help inform future studies by establishing the current dietary habits of wPCOS in the UK and providing essential evidence towards effective dietary management of this syndrome.

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