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Dietary intake, body composition and energy expenditure in women with polycystic ovary syndrome (PCOS) compared with healthy controls: an observational study

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PCOS affects $\leq 10\%$ of women of reproductive age in the UK. Obesity is a common feature of the syndrome, with approximately 33% of UK women with PCOS (wPCOS) being obese⁽¹⁾ compared with 20% of women in the general population⁽²⁾. The present study aims to compare the diet and energy expenditure of wPCOS with matched controls to further elucidate the complex relationship between weight and PCOS presentation.

A 7 d food diary and a medical questionnaire were completed by thirty-seven wPCOS and thirty-one age- and weight-matched controls. A pedometer was also provided to record physical activity levels on the same 7 d. Anthropometric data (BMI, waist:hip ratio (WHR) and percentage body fat (%BF), using bioelectrical impedance) were measured. Energy expenditure was estimated in a subset (sixteen wPCOS, seventeen controls); values derived from BMR, which was measured by indirect calorimetry, were used to calculate metabolic equivalent intensity levels for activities⁽³⁾ from the 7 d activity diary.

The mean age of the sample as a whole was 31 (SD 6) years, with 97% of the sample being white British women. Mean BMI (kg/m²) were 24.4 (SD 4.1) and 24.2 (SD 4.5) for wPCOS and control women respectively (NS). Mean WHR and %BF for wPCOS were 0.77 (SD 0.07) and 30 (SD 7) respectively, compared with 0.7 (SD 0.06) and 29 (SD 7) respectively for controls (NS). A similar percentage of women reported their weight as being stable (wPCOS 62, controls 72) and a similar percentage reported their weight to be increasing (wPCOS 19, controls 13). Mean energy intake for wPCOS was 7980 (SD 1516) kJ (1906 (SD 362) kcal)/d, not significantly different from that reported by controls (7624 (SD 175) kJ (1821 (SD 418) kcal)/d). However, percentage energy (%E) from fat was significantly higher for wPCOS (40 (SD 6)) compared with controls (35 (SD 5); $P=0.001$). %E from carbohydrate for wPCOS was significantly lower (41 (SD 8)) compared with controls (46 (SD 5); $P=0.003$) with no differences in %E from protein. The mean number of steps per d was 9308 (SD 2672) for the whole sample, with no significant difference between wPCOS and controls (9240 (SD 2699) and 9392 (SD 2682) respectively). Mean energy expenditure for wPCOS ($n=16$) was 9772 (SD 2010) kJ (2334 (SD 480) kcal)/d, which was not significantly different from that reported by controls ($n=17$; 9010 (SD 1369) kJ (2152 (SD 327) kcal)/d).

Results indicate qualitative differences in the dietary intakes of wPCOS compared with age- and weight-matched controls. However, no significant differences in activity levels or body composition have been identified. Analysis of biochemical data, including lipid profiles and insulin resistance would help to further elucidate the relationship between behaviour, weight and risk factor profile in wPCOS. The present study is the first to report the habitual dietary intake of UK wPCOS compared with matched controls, and results are similar to US findings⁽⁴⁾. Identification of suboptimal dietary patterns in wPCOS in the UK will allow dietary information for this population to be more effectively tailored to help maximise the success of lifestyle interventions.

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