Background: Recent trends suggest that the sharpest increases in the prevalence of obesity are in countries of the Middle East, such as Qatar, especially amongst women. A diet rich in fat and carbohydrates, combined with a lack of physical exercise, may be contributing factors to the obesity epidemic in the region. Obesity is manifest by an expansion in adipose tissue. In South Asian populations much of the increase in fat accumulation appears to be in the omental abdominal compartments. Proinflammatory signals derived from adipose tissue, adipokines, such as leptin, MCP-1 and IL-6, may contribute directly to the development of insulin resistance and endothelial dysfunction of obesity.

Purpose: To assess the relationship between indices of obesity, body composition, physical fitness, glycaemia, insulinaemia, serum lipids and adipokines in a cohort of Qatari women.

Methods: Non-diabetic, premenopausal, Qatari women (n=143; age mean (SD) years) were studied in the morning after an overnight fast. Indices of obesity (BMI and waist circumference), body composition (dual energy X-ray absorptiometry (DEXA)), aerobic fitness, blood lipids (cholesterol, high-density lipoproteins (HDL), low-density lipoproteins (LDL), triglycerides), glycaemia (glucose, HbA1-C), serum insulin, inflammatory markers (C-reactive protein (CRP), interleukin-6 (IL-6)) and adipokines (adiponectin, leptin) were determined.

Results: A greater degree of central/trunkal obesity was apparent in this cohort. Significant associations were found between BMI and insulin (p<0.01), HbA1-C (p<0.01) and abdominal adiposity (p<0.01). In the whole group, BMI was not related to inflammatory markers or adipokines. However, sub-group analysis based on WHO criteria for obesity showed that the obese (BMI 30-40kg.m-2) and morbidly obese (BMI >40.1 kg.m-2) women were more insulinaemic, had higher levels of inflammatory markers (CRP, RANTES, MCP-1, leptin) and lower adiponectin compared to normal weight (BMI<25kg.m-2) subjects. The obese groups were significantly less fit compared to the normal weight women, but had greater bone strength and comparable levels of circulating lipids.

Conclusion: Obesity in premenopausal Qatari women is associated with a higher degree of fat accumulation, especially in the central depots, than has been reported for European women. It is accompanied by hyperinsulinaemia, inflammation and poor aerobic fitness but surprisingly free of dyslipidaemia.