



A comparison of abdominal and visceral fat, energy intakes and perceived stress between shift and non-shift workers

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Shift work has been linked with adverse health and unhealthy behaviours including obesity⁽¹⁾, cardiovascular disease^(2,3), increased snacking⁽¹⁾, fatigue, sleep and digestive problems, depression, anxiety, disruptions in circadian rhythm and perceived stress⁽⁴⁾. The present workplace study is part of the NeuroFAST project, which examines the link between stress and eating behaviour in shift and non-shift workers.

Body composition measurements were made using the Tanita AB 140 abdominal fat analyser to assess abdominal and visceral fat in 83 male and 222 female non-shift workers with a mean (SEM) age of 42.4 (0.70) years and mean body mass index (BMI) of 25.6 (0.28) kg/m² and 93 male and 24 female shift workers with a mean age of 38.7 (0.72) years and mean BMI of 26.8 (0.32) kg/m². Energy intake (EI) was measured by 7-d weighed intake food diary record. Perceived stress levels were measured using the DASS-21⁽⁵⁾ questionnaire and 'daily hassles' or stressors⁽⁶⁾ were recorded using daily diaries for 7-d.

Mean (SEM) abdominal fat percentages for non-shift workers were 27.8 (0.87)% for males and 35.1 (0.66)% for females, 27.5 (0.82)% for male shift workers and 34.1 (1.99)% for female shift workers. Mean EI/d for non-shift workers was 1,957 (27.5) kcal/d and 2,297 (71.4) kcal/d for shift workers for the 7-d period. ANOVA and regression analyses showed that, after controlling for age and BMI, there was a significant effect of mean EI kcal on abdominal fat percentage for males ($p = 0.005$) and for females ($p = 0.042$). However, there were no significant effects of DASS-21 stress or total number of daily hassles per week. Mean (SEM) visceral fat levels for non-shift workers were 8.80 (0.29) (not split by gender) and 11.22 (0.52) for shift workers. After controlling for age and BMI, this difference was found to be statistically significant ($p < 0.001$). There was no statistically significant effect of mean EI kcal ($p = 0.149$), DASS-21 stress ($p = 0.164$) or total number of daily hassles per week ($p = 0.317$) on visceral fat level after controlling for age, BMI and shift pattern.

In conclusion, our results support previous studies which have shown the detrimental health effects of shift work. An excess of visceral fat, the fat which surrounds the internal organs of the body, can predispose individuals to a greater risk of diseases such as cardiovascular disease and diabetes. An online study is currently underway, as part of the NeuroFAST project, to further examine health and eating behaviours, including snacking, and daily hassles and stressors. The project will provide the necessary evidence to inform future health policy initiatives.

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