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Rearranging meal times during night shift work promotes weight change: a randomised crossover intervention in shift workers

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Abstract

Up to 20% of the population in industrialised countries are employed as shift workers. Shift work is an independent risk factor for metabolic diseases, such as type-2 diabetes, cardiovascular disease (CVD) and obesity. This may be associated with shift workers' typical habit of eating during the night, as it forces the body to process nutrients when the body is expecting a period of fast. This study aimed to examine whether redistributing meal times, to create a defined overnight fast period, can improve CVD risk factors in night shift workers.

Eligible participants were permanent or rotating night shift workers who habitually ate on night shift between 1am to 6am and had abdominal obesity as assessed by waist circumference, but were otherwise healthy. This randomised crossover trial comprised a four-week control period and a four-week intervention period separated by a minimum two-week washout period. During the intervention period, participants were advised to rearrange meal and snack times to create a five hour nightly fast between 1am and 6am. Up to four random 24-hour food recalls per participant were performed during both periods of the study, to check compliance and to assess energy intake. All recall periods included a night shift. Participants attended the research facility at the end of each period to be weighed (seca, gmbh & co. kg, Hamburg, Germany). Work schedule and meals were standardised 24 hours prior to attending the research facility. Data were analysed using paired t-test and reported as mean (SD).

Participants (n = 19) were aged 41(10) years. Daily energy intake was not markedly different between the two study periods, intake was 10633 (3591) kJ/ day in the intervention period vs. 10919 (4276) kJ/ day in the control period (n = 60 recalls in each period, p = 0.670). Body weight was significantly lower at the end of the intervention period compared with at the end of the control period (86.2 (17) vs. 87.1 (18) kg, p = 0.001). Similarly, BMI was lower at the end of the intervention period compared with end of control period (30.7 (6) vs. 31.1 (6) kg/m^2, p = 0.001).

Increasing evidence indicates that working night shifts potentiates weight gain. We show that advising shift workers to avoid eating during 1am and 6am for a four-week period had a positive impact on body weight. Manipulating meal and snack times for shift workers may be a simple strategy to assist in weight management.

Conflict of Interest

There is no conflict of interest