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## Maternal night-eating and lower diet quality during pregnancy are associated with substantial postpartum weight retention

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### Abstract

Recent evidence suggests that synchronizing eating-fasting schedules with body's circadian rhythms or day-night cycles is important for metabolic health. Besides food quantity and quality, food timing may contribute to weight regulation. However, it is unclear if this factor during pregnancy can influence maternal weight retention after childbirth. Using data from a prospective cohort, the Growing Up in Singapore Towards healthy Outcomes (GUSTO) study, we examined the associations of maternal circadian eating pattern and diet quality in pregnancy with substantial postpartum weight retention (PPWR) at 18 months. We assessed 687 pregnant women for their circadian eating pattern (night-eating, night-fasting and eating episodes) and diet quality (Healthy Eating Index) based on information derived from 24-h dietary recall at 26–28 weeks' gestation. Night-eating was defined as > 50% of total energy intake during 1900–0659 h; night-fasting duration was determined based on the longest fasting interval between consumption of a calorie-containing food or beverage during 1900–0659 h; eating episodes were defined as events that provided  $\geq 210$  kJ with time intervals between eating episodes of  $\geq 15$  min; diet quality was ascertained using the Healthy Eating Index which measures adherence to the Singapore dietary guidelines for pregnant women. PPWR was calculated by subtracting the weight at the first antenatal clinic visit from weight at 18-month postpartum. Substantial PPWR was defined as weight retention of 5 kg or more. Adjusting for maternal age, ethnicity, education, parity, night shift, mood, body mass index and total energy intake, multivariable binary logistic regression analysis was performed to estimate odds ratio (OR) of substantial PPWR in relation to circadian eating pattern and diet quality. Of 687 women, 110 (16%) had substantial PPWR. After confounders adjustment, night-eating (OR 1.95; 95% confidence interval 1.05, 3.62) and lower diet quality (1.91; 1.17, 3.10) were independently associated with higher odds of substantial PPWR. No associations with substantial PPWR were observed for night-fasting duration and number of eating episodes. During pregnancy, women with higher caloric consumption at night and lower diet quality had a greater likelihood of substantial PPWR. These findings suggest that aligning eating time with day-night cycles and adherence to dietary guidelines during pregnancy may help to alleviate overweight and obesity risk in postpartum life. There is a possibility that these eating patterns persist beyond pregnancy and pose implications for long-term obesity development. Further investigation on this area is required.

### Conflict of Interest

KMG, YSC and FY have received reimbursement to speak at conferences sponsored by companies selling nutritional products. KMG and YSC are part of an academic consortium that has received research funding from Abbott, Nutrition, Nestle and Danone. Other authors declare that they have no conflict of interest.