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Is there a relationship between dietary intake and sleep in pregnancy?

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In non-pregnant female adults, both short sleep and disturbed sleep are independently associated with obesity and unhealthful eating patterns[(1)]. However, it is unknown whether this relationship exists in pregnancy. Dietary intake in pregnancy can influence excessive gestational weight gain and gestational diabetes risk[(2)]. Therefore, the aim of this study was to investigate whether there is a relationship between sleep in pregnancy and nutritional intake.

Data from pregnant women enrolled in the Australian Longitudinal Study on Women's Health (ALSWH) cohort, aged 31–36 years in 2009, were analysed (n = 804). Subjective sleep data (both sleep quantity and adverse sleep symptoms) were collected. Dietary intake was collected via a validated 74 food frequency questionnaire. Women were excluded if: (i) sleep duration was <3 hours or >12 hours (n = 313) or (ii) energy intake was <4·5 or >20·0MJ/d[(3)] (n = 54). Latent class analysis (LCA) was used to identify sleeping behaviour patterns. Dietary analysis included energy (kJ, macronutrient intake in both grams/day (g/day) and percentage energy (%E), glycaemic index and glycaemic load. Results are presented as median and interquartile range. To compare Latent Class groups the Kruskal-Wallis test was utilised. Data were log transformed and multiple linear regression models were used to adjust for confounding factors which included: area of residence, BMI, depression, difficulty managing in income, education level and parity.

LCA identified three sleep patterns: (LC1) average sleep (~7·8 hours) with minimal adverse sleep related symptoms (n = 188); (LC2) average sleep (~8·3 hours) with sleeping difficulties and severe tiredness (n = 191); and (LC3) short sleep (~ 6·6 hours) with sleeping difficulties and severe tiredness (n = 112). In crude analyses, Latent Class 2 had lower median percentage energy of monounsaturated fat [LC1: 13·4 (12·1, 14·3) vs. LC2: 12·7 (11·6, 13·8), p = 0·03], higher median percentage energy of starch [LC1:19·8 (16·8, 24·0) vs. LC2: 21·4 (18·4, 27·7), p = 0·012] and higher median glycaemic load [LC1: 86·2 (73·6, 107·5) vs. LC2: 94·8 (76·7, 117·0), p = 0·019] compared to Latent Class 1. Latent Class 3 had a lower median percentage energy from fibre [LC2: 5·1 (4·4, 5·8) vs. LC3: 4·5 (4·0, 5·5) p = 0·017] compared to Latent Class 2. There were no significant differences between Latent Class 1 and Latent Class 3. After adjusting for potential confounders, Latent Class 2 was associated with lower percentage energy of total fat ($b = -0·032$ 95 %CI: 0·064, 0·002, p = 0·035), percentage energy of monounsaturated fat ($b = -0·053$ 95 %CI: 0·089, 0·018, p = 0·003) and higher percentage energy of carbohydrate ($b = 0·034$ 95 %CI: 0·007, 0·060, p = 0·012), compared to Latent Class 1. There were no significant relationships between Latent Class 1 and Latent Class 3 in fully adjusted models.

This study suggests that adverse sleeping behaviours during pregnancy may be associated with changes in dietary fat and carbohydrate intake. Further research is required to confirm whether sleep influences dietary intake or dietary intake influences sleep, in order to support strategies to improve nutritional intake in pregnant women.

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