Nutritional aspects of behaviour and biology during pregnancy and postpartum

Anette Lundqvist

Akademisk avhandling

som med vederbörligt tillstånd av Rektor vid Umeå universitet för avläggande av medicine doktorsexamen framläggs till offentligt försvar i Sal 135, byggnad 9A bottenvåningen, fredagen den 8 April, kl. 13:00. Avhandlingen kommer att försvaras på svenska.

Fakultetsopponent: Docent, Margareta Larsson, Institutionen för kvinnors och barns hälsa, Obstetriks och gynekologi, Uppsala Universitet, Sverige.
Abstract
A well-balanced nutritious diet is important for the pregnant woman and the growing fetus, as well as for their future health. A poor nutrition results from both over-consumptions of energy-rich foods which can lead to a higher weight gain than is healthy and under nutrition of essential nutrients. Food intake is regulated in complexed biological systems by many factors where steroid hormone is one factor involved.

The overall aim of this thesis is to describe dietary intake, vitamin D-levels, dietary information and dietary changes and study the relation between allopregnanolone and weight gain during pregnancy and postpartum. Study I was a qualitative study with focus groups interviews with 23 pregnant women. The text was analysed with content analyses. Study II, was a quantitative cross-sectional study conducted in early pregnancy (n=209) with a referent group (n=206). Self-reported dietary data from a questionnaire was analysed using descriptive, comparative statistics and cluster analysis model (Partial Least Squares modelling). Study III, had a quantitative longitudinal design. Vitamin D concentrations were analysed in 184 women, collected at five occasions during pregnancy and postpartum. Descriptive, comparative statistics and a linear mixed model was used. Study IV was a quantitative longitudinal study with 60 women. Concentrations of allopregnanolone was analysed at gestational week 12 and 35. Descriptive and comparative statistics and a Spearman’s correlation (rs) were used to describe relationship between weight gain and allopregnanolone concentrations.

The focus group interviews showed that women wanted to know more about different foods to reduce any eventual risk for their child but the information about foods was partly up to themselves to find out. They perceived feelings of insecurity and guilt if accidentally eat something "forbidden". The recommendations were followed as best as possible along with common sense to deal with diet changes. The main themes were “Finding out by oneself”, “Getting professional advice when problem occur”, “Being uncertain” and “Being responsible with a pinch of salt”. Some differences in the dietary patterns were found among the pregnant women compared to referents, with less, vegetables (47 g/day), potatoes/rice/pasta (31 g/day), meat/fish (24 g/day) and intake of alcohol and tobacco/snuff but a higher intake of supplements. Both pregnant and referents had intakes of folate through diet by 45% (pregnant) and 22% (referents) lower than current recommendations which is (500 vs 400 g/day). Vitamin D intake was 34% lower than the recommendations of 10 mg/day. At least a third of the participants had insufficient plasma levels below 50 nmol/L of vitamin D. Season was a strong factor influencing the longitudinal pattern. Gestational week, season, total energy intake, dietary intake of vitamin D, and multivitamin supplementation over the previous 14 days were factors related to vitamin D levels. A correlation between allopregnanolone concentrations at gestational week 35 and weight gain from week 12-35 was seen (p = 0.016). There was also a correlation between the increase in allopregnanolone (week 12-35) and weight gain (see above) (p = 0.028). In conclusion, Dietary recommendations were described as contradictory and confusing and the dietary advice felt inadequate. The women faced their diet changes and sought information on their own but would have wished for more extensive advice from the midwife. The intake of vitamins essential for pregnancy was lower than recommended, which is also confirmed by low plasma levels of vitamin D in at least one third of the pregnant women. Vitamin D levels peaked in late pregnancy. Aside from gestational week and season which were related to plasma levels, intake from foods and supplements also affected the levels. Reasons for weight gain are complex and depend on many factors. Allopregnanolone is a factor that was seen to relate to the weight gain of the studied pregnant women.

Keywords
pregnancy, antenatal care, dietary advice, qualitative, dietary intake, cross-sectional, vitamin D levels, allopregnanolone, weight gain, longitudinal