

« PREGNANCY AND NUTRITION »

Editorial

A better diet during the pregnancy for a healthy baby

Obesity is the 21st century disease. This epidemic is mainly attributable to increasingly sedentary lifestyles, overnutrition and junk food. Obesity is posing a growing threat to health in countries worldwide and will be the leading cause of death and disability this century. It has been declared by the World Health Organisation as the largest global chronic health issue in adults, which, by 2025, will emerge as a more serious world problem than malnutrition.

As more and younger women are affected, it is obvious that obesity will concern more and more pregnant women. Maternal obesity and increased weight gain during pregnancy have been linked with the delivery of macrosomic infant. Moreover, under the hypothesis of the developmental origins of adult disease, there is evidence linking macrosomia to diabetes, obesity and metabolic syndrome in adolescents as well as adults.

Hopefully, obesity development is not inevitable! We – doctors, nurses, midwives, governments and public authorities – have to help pregnant women, not only for obese women but for all of them, to get a better diet and to manage a healthy pregnancy for a healthy baby. The pregnancy is probably the better moment to change the habits of pregnant women. Sz wajcer *et al.* reported that women are more aware to lifestyle advices during this period. In addition, when they report excessive intake of high-fat and high-sugar foods, they are more likely to intend to reduce the intake of these foods (Gardner B *et al.*).

Although the rules are simple and easy – at least five fruits and vegetables a day - it seems that everything is still yet to be done! Indeed, Zhao *et al.* have shown that, over the last decade, the consumption of fruits and vegetables ≥ 5 times/day during pregnancy did not increase sufficiently. We need to improve this result. Roll up our sleeves!

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Nutrition awareness of dutch women before, during and after pregnancy

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An adequate nutrition pattern is of major importance for one's health and well-being, especially during pregnancy when a woman undergoes major biological, physical, psychological and social transformations. It is likely to be one of the few critical periods in life when women are able to change health-related behaviours that are difficult to modify at other times. In the literature, this phenomenon has been introduced as the "Life Course Perspective" (LCP).

The two studies that we describe below are intended to provide a greater understanding of the LCP in relation to nutrition behavior and pregnancy and postpartum.

Nutrition awareness before and throughout different trimesters in pregnancy – Quantitative study

The purpose of the first study¹ is to examine cross-sectionally the nutrition awareness of women before and during pregnancy in order to provide a greater understanding of the LCP in relation to nutrition behavior and pregnancy. The sample consisted of five groups each of 100 Dutch nulliparous women:

- women who did not wish to become pregnant in the following year;
- women who had stopped using contraceptives in order to become pregnant; and
- women in their first, second and third trimester of pregnancy.

The conceptualization of "nutrition awareness" developed for this study was based on three constructs of awareness derived from integrated theory (Table 1).

Constructs of awareness	Examples
Saliency of nutrition	"I need to eat vegetables every day"
Pre-occupation with nutrition	"I never think about whether or not I eat enough vegetables"
Deliberate control of nutrition behaviour	"I make sure that I eat enough vegetables every day"

Table 1: Nutrition Awareness

These three constructs were applied to each of the nine nutrition topics singled out by the Dutch Nutrition Centre: healthy eating, fruits and vegetables (F&V), bread, dairy, calorie intake, saturated and unsaturated fats, soft drinks, breakfast.

• The importance of healthy nutrition as a lifestyle factor

Data analysis showed that all groups of women perceived unhealthy nutrition as the third most important factors (after excessive alcohol consumption and smoking) and more important than little physical exercise, stress and bad hygiene.

• The highest nutrition awareness on pregnant women

Significant differences in scores on the nine nutrition-related areas between the five groups were found for F&V, dairy and calorie intake. The group of women not trying to conceive had the lowest

nutrition awareness score, followed by the group of women trying to conceive and then the pregnant group. Data showed that there were no significant differences in nutrition awareness among the three trimester groups in pregnancy. Women not trying to conceive had significant lower nutrition awareness than women in their second and third trimester of pregnancy.

Nutrition awareness and motivations after pregnancy – Qualitative study

The purpose of the second study² is to explore postpartum nutrition awareness and to explore the associated motivations for it. The sample consisted of 30 women between two and four months postpartum (breastfeeding/bottle-feeding) and 15 women between 10 and 14 months postpartum. Nutrition awareness was operationalized by asking them about saliency, pre-occupation with, and supervision of, nutrition and nutrition behaviours and they were asked how they felt about this compared to earlier phases in their lives.

The results of analyses of the interviews suggest that over time (throughout the first three to four months and first postpartum year) intensity shifts in nutrition awareness occurred. Women's nutritional awareness in the postpartum period could be adequately categorized into four different routes (Table 2):

Routes	Nutrition awareness
New healthy routine route New postpartum lifestyle identity	The new routine is particularly manifested in the consumption of dairy products, F&V, eating breakfast and preparing meals less fat.
Attentive route	Nutrition is still, or becomes even more, personally relevant after giving birth.
Relapse route	Nutrition awareness acquired during pregnancy reverts to prenatal levels.
Steady route	Nutrition awareness does not change throughout the transition to pregnancy and motherhood.

Table 2: Routes of women's nutritional awareness after pregnancy

The existence of the new routine route and the attentive route provide indications in favor of the LCP, whereas the relapse route and the steady route do not.

• Nutrition awareness in relation to motivations for nutrition behavior

Motivations for women's choice of routes include feelings of responsibilities accompanying pregnancy and motherhood, a lack of energy and the wish to regain old weight and shape.

These motivations vary in extent of autonomy and in character. Generally, women who are more nutritionally aware as a result of pregnancy or who see motherhood as a new beginning for healthy life practices (in order to set an example for the child) are more highly autonomously motivated than women who are more aware of their nutrition because of breastfeeding practices or

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those wanting to lose maternal weight.

The interviews suggest that throughout the first postpartum year three shifts in nutrition awareness and types of motivations took place:

- a) as time elapsed, women who were/had been breastfeeding their child generally became more relaxed and the nutritional restrictions became less personally relevant;
- b) after about four months, other things in life became more important again: women resumed normal life and nutrition became part of a daily routine;
- c) when the child began to eat the same dinner as the rest of the family, women generally became more attentive to their nutrition in relation to health.

Pregnancy and postpartum: important condition for rethinking nutrition habits

Health practitioners should:

- Realize that pregnancy and postpartum can indeed be life transitions, triggering a woman to become more nutritionally aware - something that is difficult to modify at other times. This provides a window of opportunity for the promotion of healthy nutrition of which we need to make more use. Until now, health promotion literature directed at mothers is still mainly focused on improving breastfeeding practices and nutritional restrictions.
- Be aware of the fact that women are driven by different motivations to become more or less involved in their nutrition.
- Bear in mind that autonomous types of motivation for healthy nutrition behavior are more likely to have longer lasting effects.



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Psychological predictors of dietary intentions in pregnancy

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Consuming a healthy diet in pregnancy has the potential to improve obstetric outcome, including minimizing the risk of macrosomia, especially for pregnant women with gestational diabetes mellitus or obesity.

The benefits of low Glycemic Index diets

A recent review found some evidence to support the use of low GI diets, defined by the consumption of carbohydrates that release glucose gradually, in women with gestational diabetes mellitus, although it is less clear whether they could also benefit nondiabetic women¹. Two studies^{2,3}, which included women with a range of body weights, suggest that dietary glycaemic control may benefit both normal and overweight women, although there are some concerns over ensuring adequate foetal growth particularly in normal weight women⁴.

Another study investigating overweight and obese pregnant women found that a low glycaemic load diet (i.e. foods with low values on an index that accounts for both GI value and carbohydrate content) improved cardiovascular risk factors, lengthened pregnancy duration and increased infant head circumference⁵.

Psychological predictors of intentions of pregnant women to improve gestational diet

Reducing GI relies on changing dietary behavior in pregnant women. Behaviour change is often portrayed as a consequence of changes in psychological variables: modifying knowledge, attitudes and beliefs influence intentions⁶ which in turn influences behaviour⁷. However, interventions designed to improve diet in pregnancy, including those designed specifically to lower GI or glycaemic load^{3,5} have neglected psychological changes.

The present study assessed pregnant women's attitudes and motivations concerning intake of high saturated fat, high-sugar foods, and fruit and vegetables (F&V), and aimed to model psychological predictors of intentions to consumer healthier quantities of these foods over the remainder of the pregnancy term. The analysis draws on variables from the Health Belief Model (HBM): threat perceptions and behavioural evaluations⁸ augmented by a measure of perceived social approval (i.e. 'subjective norms'⁹).

Participants were given a questionnaire. One hundred and three pregnant women completed questionnaire measures of intentions

to modify the consumption of the target foods, current intake, perceived vulnerability to and severity of adverse outcomes of unhealthful consumption to these foods (i.e. 'threat'), benefits of dietary change to mother and baby, barriers to dietary changes, and social approval for dietary change ('subjective norms'). Current intake or behavior was estimated based on the perceived adequacy of current dietary intake. Intention items measured the intention to eat more healthily over the rest of the pregnancy, and participants intending to eat less healthily were excluded from respective analyses; perceived benefits related to positive outcomes for mother and baby. Perceived barriers were as follows: barriers to consuming F&V related to difficulty of access and preparation, and cost; barriers to reducing fat consumption related to high-fat foods being easy to cook, satisfying cravings and helping deal with stress; barriers to reducing sugar-consumption related to high-sugar foods satisfying cravings and helping deal with stress. For each behavior, subjective norms items focused on anticipated approval from family and healthcare professionals, respectively.

A cross-sectional design was used.

Current behaviour and intentions were negatively correlated for each behaviour

Participants who reported excessive current intake of high-fat and high-sugar foods were more likely to intend to reduce the intake of these foods and participants who felt they ate 'too little' F&V had stronger intentions to increase F&V consumption. Perceived benefits for mother and baby enhanced intentions to eat more F&V and eat less high-fat, and marginally significantly increased high-sugar reduction intentions. Lack of effects for barriers, threat and subjective norms may indicate that pregnant women discount barriers to health-promoting behavior, understand the threat posed by unhealthy eating and perceive social approval from others. Dietary change interventions for pregnant women should emphasize likely positive outcomes for both mother and child.

Notwithstanding some limitations (cross-sectional design, data based on self-report, representativeness and modest size of the sample), the results offer some insight into the health beliefs and dietary choices of pregnant women. Best practice for diet modification in pregnancy is likely to require the adoption of health promotion strategies to target the underlying psychological determinants of gestational diet.

BASED ON:

Gardner B., Croker H., Barr S., Briley A., Poston L. & Wardle J. on behalf of the UPBEAT Trial. (2012) Psychological predictors of dietary intentions in pregnancy. *J Hum Nutr Diet.*

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Risky behaviours in pregnant women

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Health is a precious commodity, especially when two people are concerned as in the case of pregnancy. During this important moment, women are open to considering healthy behaviours. This represents a significant opportunity that should not be missed.

During pregnancy, alcohol consumption, smoking, sedentary lifestyle, unbalanced nutrition, and no influenza vaccination may cause serious short and long term health problems to both mother and child. Alcohol and tobacco consumption may lead to miscarriages, premature birth, dysmorphic or polymalformation syndromes or fetal alcoholism syndrome. Sedentary behaviours and unbalanced nutrition may favour weight gain that could lead to gestational diabetes, malformations, macrosomia, arterial hypertension, premature birth and increased risk of caesarean section.

On the contrary, a diet rich in green leafy vegetables, fruits, fibres, calcium and omega 3 fatty acids has beneficial effects on pregnancy. This shows the importance of prevention efforts in order to acquire beneficial health behaviours. Unfortunately, pregnant women with low income status accumulate these risk factors and thus pay a heavy tribute to these pathologies.

Identifying risk factors

One study has attempted to identify risk factors and behaviours in a cohort of 22,604 pregnant Americans between the ages of 18 and 44 years in 2001 and to follow their evolution until 2009¹. Each year, 2,000 to 2,900 women were examined. The age adjusted prevalence for both leisure physical activities and influenza vaccination increased significantly ($p < 0.05$). There was a non-significant decrease in alcohol consumption ($p < 0.065$). No significant variation in binge drinking, smoking and fruits and vegetables consumption (≥ 5 times/day) was observed.

Encouraging Healthy Behaviour

During the nine-year follow-up study, the percentage of pregnant women with four healthy behaviours (no smoking, no alcohol consumption, regular leisure physical activities and influenza vaccination) steadily increased from 7.3% in 2001 to 21.2% in 2009 ($p < 0.001$).

Socio demographic factors influence behaviours. Thus in this study,

pregnant women with high or satisfactory incomes were more likely to begin a physical activity. Similarly, women who perceive their health status as satisfactory are more inclined to eat over five fruits and vegetables per day.

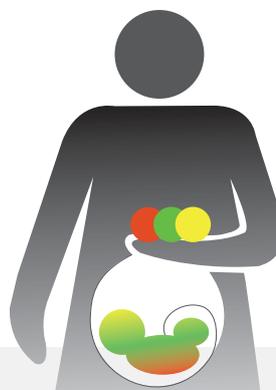
Much remains to be done. The recent literature review by Blumfield² showed that dietary quality remained insufficient with respect to recommendations in pregnant women. The consumption of saturated fatty acids and lipids remained high and the consumption of carbohydrates, fibres, calories and polyunsaturated fatty acids was insufficient. Several studies have attempted to identify the levers for change.

In a recent cross-sectional study, Gardner *et al*³ have shown that pregnant women with elevated lipid and carbohydrate consumption were paradoxically more willing to reduce these foods. However, the perceived benefits to both mother and child would seem to increase their motivation to eat more fruits and vegetables, less fat and slightly less sugar. Threats, barriers or societal norms had no impact.

Testing Awareness and Assistance

Awareness and dietary assistance are two actions that have been tested. In a Dutch study⁴, nutritional education was proposed to multiparous women of child bearing age who either did or did not wish to conceive at the time or were in their 1st, 2nd or 3rd trimester of pregnancy. Pregnant women were much more sensitive to nutritional messages than women in the other group, regardless of their pregnancy stage. There was no difference in impact between the groups of nulliparous women. A dietary assistance program in the form of vouchers for fruits and vegetables was instigated in 602 pregnant Americans⁵ for six months and then followed for an additional period of six months. The intervention led to increased fruit and vegetable consumption that was sustained during the following six months. Interventions occurred near supermarkets or near local farmer's markets. Consumption increased by 0.8 portions in the former case, and by 1.4 portions in the latter. Both results were statistically significant.

Thus, nutrition in pregnant women can be significantly improved and this is a very positive message.



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