

Healthy Nutrition and Gestational Weight Gain in Pregnancy

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Faculty/Presenter Disclosure

- Presenters: Lindsay Tumback and Angela Bowen
- Relationships with commercial interests:
 - None

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 - No conflicts of interest

Mitigating Potential Bias

- Does not apply

SOGC Guidelines

- ▶ Review of the “Canadian Consensus on Female Nutrition: Adolescence, Reproduction, and Menopause” by the Society of Obstetricians and Gynecologists of Canada (SOGC).
 - ▶ Document contains 7 chapters
 - ▶ The focus of this presentation is Chapter 5: Nutrition in Pregnancy
- ▶ Professionals will be able to promote health in pregnant women using the most current evidence-based nutrition recommendations

SOGC Guidelines

▶ Review Process:

- ▶ Following librarian-led searches, a working group from across Canada reviewed published literature, government and health agency reports, clinical practice guidelines, grey literature, and textbook sources
- ▶ Optimal nutrition through the female lifecycle was evaluated by a multidisciplinary group over a two-year span
- ▶ Quality of evidence was rated using the criteria described in the Report of the Canadian Task Force on Preventive Health Care

Presentation Overview

1. Gestational weight gain
2. Nutrients of special concern during pregnancy
 - ▶ iron, folate, choline, omega-3 fatty acids, and iodine
 - ▶ unsafe foods
3. Case Study: Pregnant woman with nutritional concerns
4. Questions
5. References and relevant links

1. Gestational Weight Gain: Why are we concerned?

- ▶ Maternal nutritional intake during pregnancy may program future energy and nutrient metabolism
 - ▶ may increase the risk of chronic disease in childhood and beyond
- ▶ The number of fat cells does not decrease even with weight loss attempts
- ▶ Women with excessive gestational weight gain are at a 10-40% increased risk of having a child who is overweight or obese early in life

Gestational Weight Gain: Why are we concerned?

- ▶ Mothers with excessive gestational weight gain are at increased risk of complications of pregnancy:
 - ▶ Gestational diabetes
 - ▶ Preeclampsia
 - ▶ Emergency Caesarian delivery
 - ▶ Preterm birth
 - ▶ Having a LGA (large for gestational age) baby
 - ▶ Postpartum weight retention
 - ▶ Often less likely to initiate and maintain breastfeeding

Gestational Weight Gain: Why are we concerned?

- ▶ Low pregnancy BMI and GWG below the recommended range are associated with:
 - ▶ Greater risk of low birth weight baby
 - ▶ Preterm birth
 - ▶ SGA (small for gestational age) infants
 - ▶ Failure to initiate breastfeeding

Gestational Weight Gain: Promotion of healthy nutrition

- ▶ Pregnant women are advised to follow *Canada's Food Guide (CFG)* recommendations as they apply to pregnancy
 - ▶ Note: expected changes to CFG
- ▶ Emphasis: selecting variety of nutrient dense foods from the 4 food groups
 - ▶ Versus “empty calories”
- ▶ DRIs for many nutrients are elevated during pregnancy
- ▶ However, the incremental increase in energy required is only modest

Gestational Weight Gain: Promotion of healthy nutrition

- ▶ Strategies to increase nutrient density of foods:
 - ▶ Choose lower fat milk and alternatives
 - ▶ Select lean meat and alternatives prepared with little or no added fat
 - ▶ Choosing meat alternatives more often (e.g., beans, lentils, tofu)
 - ▶ Satisfy thirst with water instead of juice or sugar-sweetened beverages
 - ▶ Focus on limiting foods and beverages that are high in calories, fat, sugar, or salt, or that are not a part of the 4 food groups

Table 5 section 1. Energy and macronutrient dietary intake recommendations for pregnancy for women with a pre-pregnancy BMI of 18.5 to 25

Nutrients	Recommendation
Energy	
First Trimester	Estimated Energy Requirement (EER) for non-pregnant female (i.e., no additional energy required)
Second Trimester	EER + 340 kcal/day
Third Trimester	EER + 450 kcal/day

A gap in knowledge:

- ▶ Currently, there are no energy requirement guidelines for women who enter pregnancy with a BMI >25 (those women in the overweight or obese categories)

Table 5 section 2. Energy and macronutrient dietary intake recommendations for pregnancy for women with a pre-pregnancy BMI of 18.5 to 25

Nutrients	Recommendation
Protein	10-35% energy + 1.1 g/kg/day
Total fat	20-30% energy
Saturated fat	Choose lean meat, milk, and alternatives to help reduce the amount of saturated fat in diet
Polyunsaturated fat	
n-6	5-10% energy (13 g/day)
n-3	0.6-1.2% energy (1.4 g/day)

Table 5 section 3. Energy and macronutrient dietary intake recommendations for pregnancy for women with a pre-pregnancy BMI of 18.5 to 25



Nutrients	Recommendation
Trans fat	Avoid sources of industrial trans fats
Carbohydrate	45-65% energy
Fibre	28 g/day

Examples of trans fats: deep fried foods, ready to eat frozen foods, toaster pastries, commercially baked goods (e.g donuts), chips...

Table 6. How much weight should a woman gain during pregnancy?

Pre-pregnancy BMI	Mean rate of weight gain in second and third trimesters kg/week	Mean rate of weight gain in second and third trimesters lb/week	Recommended total weight gain kg	Recommended total weight gain lbs
<18.5	0.5	1	12.5 to 18	28 to 40
18.5 to 24.9	0.4	1	11.5 to 16	25 to 35
25.0 to 29.9	0.3	0.6	7 to 11.5	15 to 25
\geq 30.0	0.2	0.5	5 to 9	11 to 20

Recommendations

- ▶ Measure and discuss weight gain for pregnancy with all women- early and regularly
- ▶ Women who have not met the minimum or who have exceeded the maximum amount of weight gain require additional follow-up and assessment
 - ▶ They should be encouraged to increase or slow their rate of weight gain to fall within the recommended ranges of weekly weight gain until delivery

2. Nutrients of Special Concern in Pregnancy

- ▶ Many Canadian women, regardless of affluence, do not meet their nutritional needs for several micronutrients without a vitamin and mineral supplement
- ▶ Folate and iron play key roles in pregnancy
- ▶ Also there is emerging evidence that omega-3 fatty acids, choline, and iodine may promote healthy pregnancies

Nutrients of Special Concern

▶ Choline

- ▶ Essential to fetal brain growth and tissue expansion
- ▶ Food sources: meat and eggs; lower concentration in plant sources

▶ Iodine

- ▶ Iodized salt
- ▶ Salt used in processed food does not need to contain iodine
- ▶ Currently, prenatal supplements contain sufficient amounts of iodine

Nutrients of Special Concern

- ▶ Omega-3 fatty acids
 - ▶ Support fetal growth; retinal and neurological development
 - ▶ Fatty fish: salmon, rainbow trout, mackerel, omega-3 eggs
 - ▶ Nuts and seeds and vegetable oils: canola, flax, walnut oil

Iron

- ▶ Insufficient iron = negative consequences for mother and baby
- ▶ MFP (meat, fish, poultry) are most easily absorbed
- ▶ Plant sources best absorbed when combined with vitamin C (legumes, spinach, tomato puree, asparagus, etc.)
- ▶ Most women find it difficult to meet iron needs from diet alone
- ▶ Recommend a supplement that contains 16 to 20 mg of elemental iron
- ▶ Therapeutic doses of iron for women with biochemical evidence of iron deficiency

Folate

- ▶ Sources: beans, lentils, dark leafy vegetables, fortified grain products
- ▶ Pregnant women at low or moderate risk for bearing a child with neural tube defect:
 - ▶ recommend 4.0 mg folic acid supplement 12 weeks before and after conception, followed by 0.4 to 1 mg until weaning.
- ▶ Caution women not to take more than one daily dose of their multivitamin

Fish

- ▶ Health Canada advises women to consume at least 150 g (5 oz) of fish each week
- ▶ But avoid fish with high levels of methylmercury
 - ▶ Shark, swordfish, escolar, marlin, orange roughy
 - ▶ Limit canned albacore tuna: 300 g/week
- ▶ For the most updated information on methylmercury refer to Health Canada <https://www.canada.ca/en/health-canada/services/food-nutrition/food-safety/chemical-contaminants/environmental-contaminants/mercury/mercury-fish.html>

Unsafe Foods During Pregnancy

- ▶ Consumption of certain foods, supplements, and herbs should be limited or avoided all together during pregnancy to prevent harm to fetus:
 - ▶ alcohol
 - ▶ amino acid or soy protein supplements
 - ▶ foods potentially contaminated with bacteria or pathogens (e.g., raw fish, raw eggs, unpasteurized cheeses, sprouts)
 - ▶ liver
 - ▶ caffeine
 - ▶ fish with high levels of methylmercury
- ▶ Please refer to Appendix B of the SOGC document

3. Case Study: Pregnant woman with nutritional concerns

- ▶ Casey a lightly active 32-year old woman who is 22 weeks pregnant. She is 5'6". Her pre-pregnancy weight was 165 pounds. Her current weight is 185 lbs.
- ▶ Casey is a lacto-ovo vegetarian. She drinks 3-4 cups of whole milk a day, and uses cheese as protein for most meals (e.g. from frozen pizza, macaroni and cheese, grilled cheese sandwiches, cheese buns). She likes to have ice cream or chips before bedtime.

3. Case Study: Pregnant woman with nutritional concerns

- ▶ Casey is concerned that she might be gaining too much weight. Is she on track for healthy pregnancy weight gain? What are other nutritional concerns for Casey?

4. Questions?

Thank you

5. References and Relevant Links

- ▶ O'Connor, D. L., Blake, J., Bell, R., Bowen, A., Callum, J., Fenton, S., ... Tumback, L. (2016). Canadian consensus on female nutrition: Adolescence, reproduction, menopause, and beyond. *Journal Of Obstetrics And Gynaecology Canada*, 38(6), 508-554.e18. doi:10.1016/j.jogc.2016.01.001 <https://sogc.org/wp-content/uploads/2016/08/gui333CPG160615E.pdf>
 - ▶ Chapter 5: Nutrition in Pregnancy: page 534
- ▶ Prenatal nutrition: <https://www.canada.ca/en/health-canada/services/food-nutrition/healthy-eating/prenatal-nutrition.html>
- ▶ Iron: <https://www.dietitians.ca/Your-Health/Nutrition-A-Z/Minerals/Food-Sources-of-Iron.aspx>
- ▶ Folate: <https://www.canada.ca/en/health-canada/services/food-nutrition/reports-publications/nutrition-healthy-eating/prenatal-nutrition-guidelines-health-professionals-folate-contributes-healthy-pregnancy-2009.html>