


PART 1 OF A 2-PART WEBINAR SERIES

PRIMED TO THRIVE

Guidelines for a Plant-Based Pregnancy

January 15, 2020, 2-3 PM EST

PRESENTED BY
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Learning Objectives

- 1** List three benefits of a plant-based diet for pregnant women and their babies.
- 2** Identify five nutrients of concern for pregnant women.
- 3** List five ways to optimize nutrients of concern in a plant-based diet.
- 4** Describe strategies for easing pregnancy-related symptoms with plant-based foods.

Is a Plant-Based Diet Safe for Pregnancy?

- Appropriately-planned vegetarian, including vegan, diets are healthful, nutritionally adequate, and may provide health benefits in the prevention and treatment of certain diseases
- Appropriate for all stages of the life cycle, including pregnancy, lactation, infancy, childhood, adolescence, older adulthood, and for athletes
- Plant-based diets are more environmentally sustainable than diets rich in animal products because they use fewer natural resources and are associated with much less environmental damage



Melina V. Craig W. Levin S. Position of the Academy of Nutrition and Dietetics: Vegetarian Diets.

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Additional Benefits

- Vegan women have lower rates of cesarean section, neonatal and maternal mortality, and postpartum depression¹
- Plant-Based diets may reduce risk of preeclampsia, gestational diabetes, and excessive weight gain²
- Plant-based diets tend to be lower in saturated fat and sugar and higher in fiber, factors believed to contribute to preeclampsia
- Women who consumed more than 3 servings of vegetables a day had a reduced risk of preeclampsia compared to lower intakes³

1. Melina et. al.; 2. Pistofallo et. al.; 3. Longo-Mbenza et. al.

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Additional Benefits

- 52% decreased incidence of excessive weight gain during pregnancy¹
- Vegetarian diets are associated with less weight gain compared to diets with higher protein and animal fat consumption that lead to more weight gain²
- Children of mothers with high animal protein intake during pregnancy were more likely to be overweight 20 years later³
- High maternal consumption of fruits and vegetables during pregnancy may reduce risk of asthma, eczema, T1 diabetes, and neural tube defects

1. Stuebe et. al.; 2. Streuling et. al.; 3. Maslova et. al.



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Whether your patients choose to follow a vegan, vegetarian, or predominantly plant-based diet, know that the choice is safe, healthy, and provides benefits to both mom and baby — as long as you do it right.

Prenatal Nutrition: General Overview

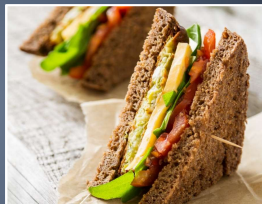
- Nutrition from a nutrient standpoint; nutrients matter more than specific foods
- Supplementation to help cover gaps, especially with food aversions, and nausea and/or vomiting
- Nutrient needs increase across the board



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Calories

- Approximately 340 calories extra are needed for second trimester, and 450 calories during the third
- Ideally calories come from added whole grains, leafy green vegetables, 1-2 additional servings of protein-rich foods to meet nutrient requirements
- Poor weight gain is associated with low-weight babies; higher risk of chronic health issues¹
- Lower birth-weight babies in vegans is almost always due to restrictive diets²
- Do not recommend macrobiotic, raw, fruitarian, or other restrictive diets during this time



1. Strauss et. al.; 2. Dagnelie et. al.

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Protein: 71g/Day

- Protein needs increase by almost 50% during pregnancy
- Sources: beans, lentils, tofu, soy milk, hemp seeds, nuts
- All plant foods contain all amino acids, limiting not incomplete
- Beans, legumes, and soy are rich sources of lysine, which may be more limiting
- Stick to 3 servings/day



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The Key

Vary your plant-foods diet with sources of beans, legumes, and/or soy

Vegetables Are Complete Proteins									
	Isoleucine	Leucine	Lysine	Phenylalanine + Tyrosine	Methionine	Threonine	Tryptophan	Valine	Histidine
Need	■	■	■	■	■	■	■	■	■
Brown Rice	■	■	■	■	■	■	■	■	■
Tomatoes	■	■	■	■	■	■	■	■	■
Potatoes	■	■	■	■	■	■	■	■	■
Green Peppers	■	■	■	■	■	■	■	■	■
Corn	■	■	■	■	■	■	■	■	■
Lettuce (Iceberg)	■	■	■	■	■	■	■	■	■
Celery	■	■	■	■	■	■	■	■	■
Cucumbers	■	■	■	■	■	■	■	■	■
Dais	■	■	■	■	■	■	■	■	■
Carrots	■	■	■	■	■	■	■	■	■
Broccoli	■	■	■	■	■	■	■	■	■
Pinto Beans	■	■	■	■	■	■	■	■	■

Analysis is for each individual food supplying all protein and calorie needs (closest to the "low active" category for a 5'11" 150lb 2500kcal male, as per the FDA).
Amino acid need from the World Health Organization's food composition from the USDA nutrient database.

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Carbohydrates and Gestational Diabetes

- Carbohydrates are a necessary and beneficial component of any healthy pregnancy
- 9-11 servings of complex carbohydrates per day, with fruits, veggies, whole grains, and legumes being the ideal sources
- GDM is on the rise: 7% of all pregnancies, likely fueled by more T2 diabetes and undiagnosed T2 Diabetes¹



¹ American Diabetes Association, <https://www.diabetes.org/>

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Carbohydrates and Gestational Diabetes

- High intake of fiber may help prevent GDM
- The addition of 10g of fiber/day in total fiber intake is associated with 26% reduced risk of GDM¹
- 5g of fiber/day in cereals or fruit fiber is associated with 23-26% reduction in GDM¹
- Random controlled trial²
 - 52 women with GDM were assigned to one of two diets: control or DASH diet
 - DASH diet is high in fruits, vegetables, whole grains, and low-fat dairy products; low in saturated fat, cholesterol, refined grains and salt
 - Results: DASH diet less likely to have C-section (46% vs. control at 81%) or start insulin therapy (23% vs. control at 73%)



1. Zhang et al. 2. Assimi et al.

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Fat: 20-35% of Calories

- Linoleic Acid: abundant in a PB diet, so it's easy to meet needs
- Alpha Linolenic Acid: PB omega-3; found in walnuts, chia seeds, flax
- DHA: Critical role in fetal development and may play a role in gestation length and perinatal depression



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Fat: 20-35% of Calories

- Conversion process from ALA to DHA is inefficient in pregnancy
- Increasing ALA does not increase DHA in blood or breast milk
- Only preformed DHA is able to raise levels
- Fish or supplement? Contaminants in fish include mercury and dioxins¹
- Algae DHA supplementation for all pregnant/breastfeeding women²
 - 200mg/day during pregnancy
 - 300mg/day breastfeeding



1. Bose-O'Reilly et al, WHO; 2. Arterburn et al, Carlson et al., Rogers et al.

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Too Much Fat?

- Limited evidence suggests that too much saturated fat may be harmful to infant development
- High-fat diet associated with greater anxiety-like behavior¹
- Inflammatory cytokines cross the placenta and change in-utero environment (more research needed)
- High-fat, "keto" diets have not been well studied and should be avoided
- Mice studies show alternations in organ growth²



Iron: 27-48 mg/Day

- Most common deficiency, even in omnivores.
- Vegans typically consume more, but absorption rates are much lower
- Low iron status may affect baby's growth and development and increase the risk of preterm delivery, low birth weight, and postpartum hemorrhages
- Iron deficiency during pregnancy sets children up for an increased risk of cardiovascular disease later in life¹
- Vegetarians/vegans need more than omnivores; the Institute of Medicine (IOM) recommends 1.8x, not based on adding in Vitamin C



1. Marangoni et. al.

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Iron: 27-48 mg/Day

Absorption Inhibitors

- Phytates (phytic acid), oxalates, and polyphenols
 - Bind to iron and other minerals
 - Reduce their absorption into the body
- Not all bad: phytates possess anti-inflammatory properties and may decrease risk of cardiovascular disease¹
- Polyphenols are considered disease-fighting phytochemicals:
 - Antioxidant
 - Anti-inflammatory
- Yes, they affect absorption but we shouldn't avoid them!

Bioavailability Enhancers

- Vitamin C
 - Increases absorption 4-6x
- Fermentation can reduce phytates:
 - Soaking grains
 - Sprouted grain products



1. Reddy and Sathu

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Calcium: 1,000 mg/Day

- 50-330 mg of calcium/day is needed to support a developing fetal skeleton
- A mother's calcium needs increase, but absorption also increases which is why RDA is the same
- Some research indicates that vegan/vegetarian women need 20% more¹
- Calcium supplementation may be beneficial for reducing the risk of preeclampsia, preterm birth, gestational hypertension²



1. Penney, 2. Beinder

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B12: 2.6 mcg/Day

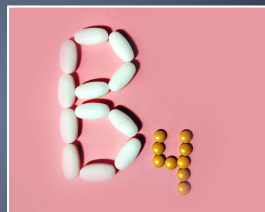
- B12 is the one nutrient that plant-based eaters absolutely must get from supplementation
- Much higher doses than the RDA are needed in order to absorb an adequate amount
- Research varies: 25-250mcg for proper absorption during pregnancy
- 25mcg minimum needed to absorb 2.4mcg in one dose; after this, absorption rate is 1-1.5%



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Choline

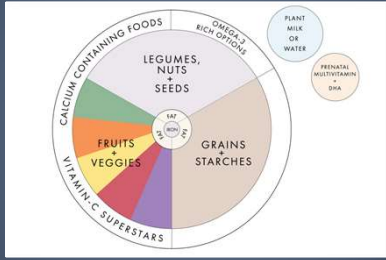
- Choline is a B vitamin essential for cell membrane structure and integrity
- Low plasma choline levels are associated with neural tube defects¹
- Best sources are animal-based foods, though soybeans, shiitake mushrooms, soy milk, wheat germ, beans, and quinoa also contain choline
- 85-95% pregnant women consume less choline than recommended, and during pregnancy the RDA is 450mg/day
- Obtain through prenatal vitamins or additional choline supplementation
- Excess choline intake is associated with Trimethylamine N-oxide, or TMAO; upper limits 3000-3500 mg/day for pregnant women



1. Shaw et. al.

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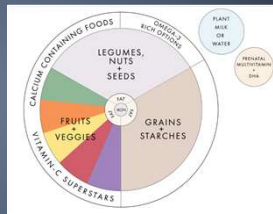
The PB3 Plate



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Optimizing Nutrient Needs

- Ensuring adequate intake from each PB3 group:
 - Fruits/Vegetables (F/V)
 - Grains, Starches (G/S)
 - Legumes, Nuts, Seeds (L/N/S)
- Consuming a wide variety of fruits and vegetables during pregnancy lowers risk of GDM, potential increased IQ scores, reduced depressive symptoms¹
- Diets high in whole grains are associated with lower rates of heart disease, diabetes, and cancer. Whole-grain rich diets result in higher live birth rates following IVF²
- One study showed substituting 1 serving of refined grains with a serving of whole grains while pregnant lead to 10% reduced risk of child being overweight or obese³
- F/V and G/S help with fiber levels: 28g minimum per day



1. Sahariah et al., Baskin et al., Freitas-Vilela et al.; 2. Gaskins et al.; 3. Zhu et al.

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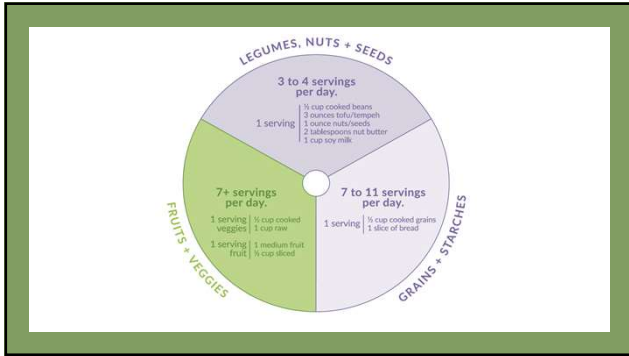
Optimizing Nutrient Needs

- MUFA and PUFA intake may reduce risk of GDM
- Cruciferous vegetables have twice the bioavailability of animal-based calcium; encourage consumption daily
- For L/N/S:
 - Soaking dry beans reduces phytates by 25-100% and increases availability of iron and zinc²
 - Pair vitamin C with iron-rich foods to increase absorption by 4-6x



1. Assaf-Balut; 2. Luo et al.

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The PB3 Plate in Action

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Is Organic Important?

- The most important thing is produce exposure – conventional produce is better than none
- Pesticide exposure is linked to preterm birth¹
- There have been improved IVF results with more organic produce²
- Washing produce reduces residues significantly
- Consider access to these foods and their cost first

¹ Gore et. al.; ² Chiu et. al.

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Supplementation

Prenatal "Must-Haves"

- B12: 25 mcg/day (supplement additional if not)
- Folate: 600 mcg/day
- Iodine: 150-220 mcg/day
- Iron: 27 mg/day
- Selenium: 30 mcg/day
- DHA/EPA:
 - 200mg/day pregnancy
 - 300mg/day breastfeeding
- Choline: 450 mg/day, and generally recommended in all diets, if prenatal doesn't contain enough
- Probiotics may offer a protective role against preeclampsia, GDM, vaginal infections
- Vitamin D: 600IU/day pregnancy and breastfeeding
- AAP recommends all exclusively/partially breastfed babies receive 400 IU vitamin D/day
- Supplementing with 6400 IU/day of vitamin D can raise D levels in breastmilk to an equivalent amount

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Dealing with Pregnancy Symptoms

Nausea and Vomiting (N/V)

- 70% will experience N/V during first 6-12 weeks of pregnancy
- N/V in first trimester is associated with a decreased risk of miscarriage, preterm delivery, low birth weight, and still birth¹
- Eat small, frequent meals; ginger may help
- Studies show 40-75 mg of vitamin B6 may help reduce nausea²

Constipation

- Exercise
- Avoid artificial sweeteners
- Increase fluid levels (~12-13 cups/day)

1. Matthews et. al.; 2. Chittumma et. al.

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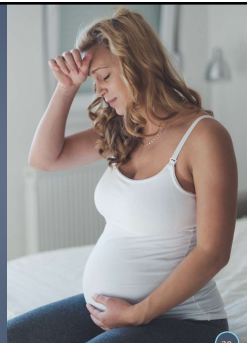
Dealing with Pregnancy Symptoms

Heartburn

- Smaller, frequent meals
- Avoid high-fat, greasy food
- Possibly avoid tomatoes, pepper, coffee, chocolate, citrus, mint, and spicy foods
- Avoid tight fitting clothes
- Avoid eating 2 hours before bedtime, and raise the head of the bed 6-8 inches

Headaches

- Stay hydrated, get plenty of rest
- Good posture: muscle tension from carrying extra weight can cause headaches
- Small, frequent meals to help with blood sugar fluctuations



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Putting It Into Practice

- A plant-based diet can be beneficial during pregnancy if it's appropriately planned and includes essential nutrients
- RDs can support expectant mothers with food and recipe ideas
- Supplement recommendations are helpful to ensure mama and baby get everything they need
- Use PB3 plate modeling as your guide!



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Questions?

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Wednesday, February 12, 2020, 2-3 PM EST



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