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VIETNAM - FRANCE - ASIA - PACIFIC
CONFERENCE ON OBSTETRICS AND GYNECOLOGY
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16th

NUTRITION FOR PREGNANT WOMEN



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REVIEW

Role of nutrition during pregnancy



Mother

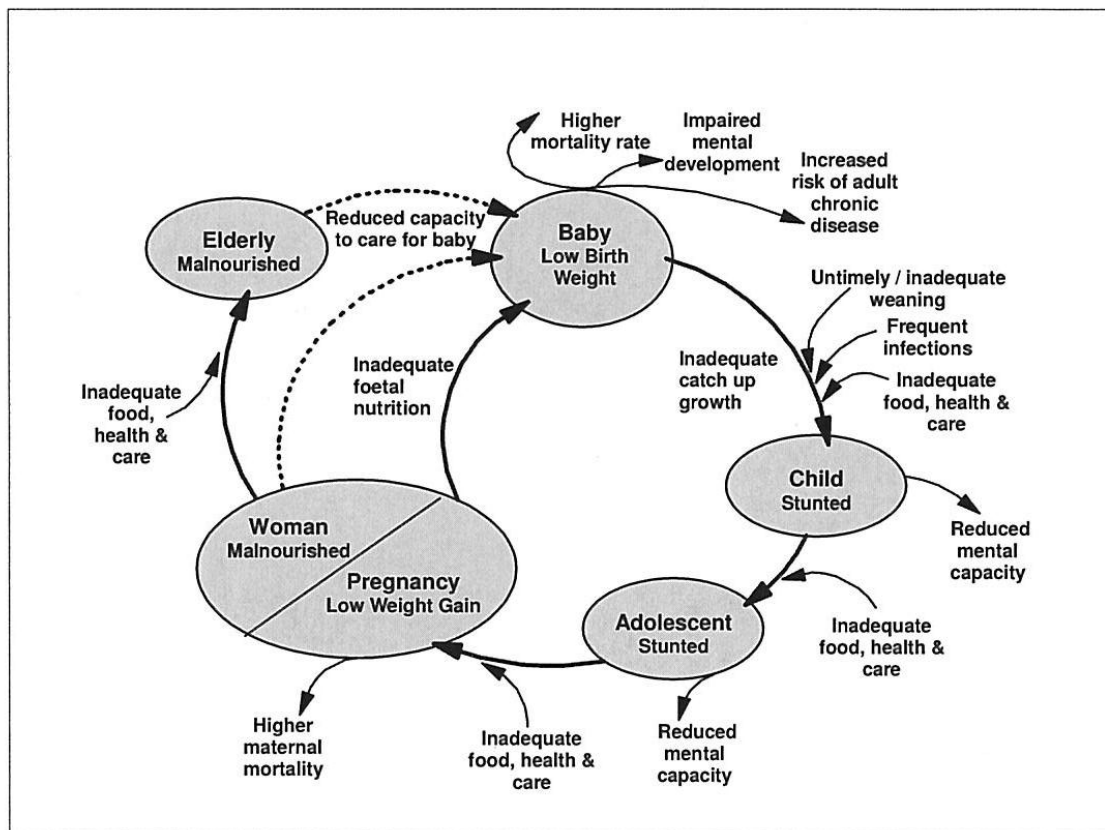
- *Prepare for delivery*
- *Milk production*
- *Health recovery*

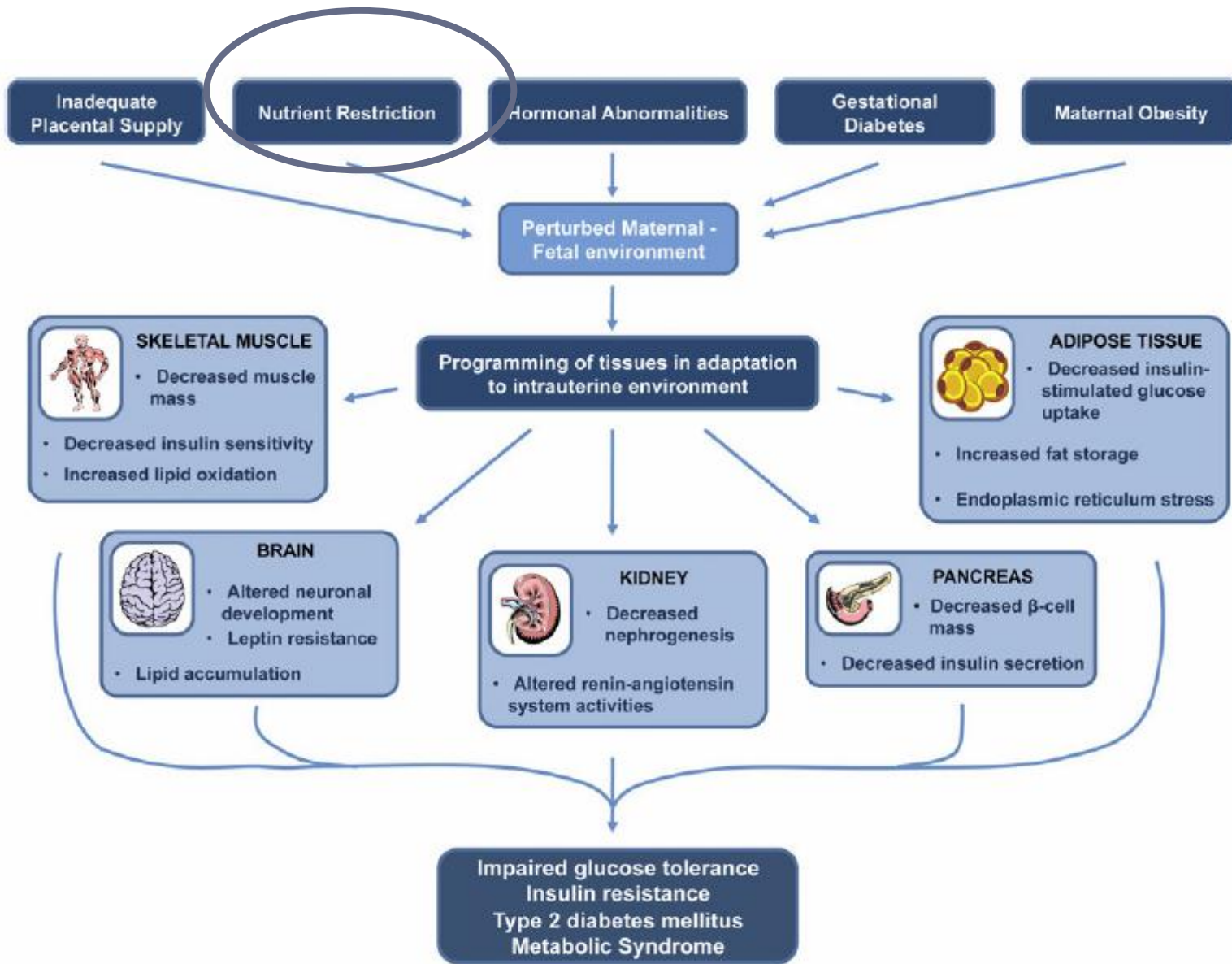
Child

- *↓ Fetus malnutrition*
- *↓ Fetus failure*
- *↓ Mental and motor retardation*

Role of nutrition during pregnancy

Nutrition throughout the life cycle.





Model of how a perturbed intrauterine environment, induced by a variety of physiological disturbances can → changes in the structure and function of multiple organs, → to development of features of metabolic syndrome. (Warner & Ozanne, 2010)

Common health issues during pregnancy



MICRONUTRIENTS
DEFICIENCY



MORNING
SICKNESS



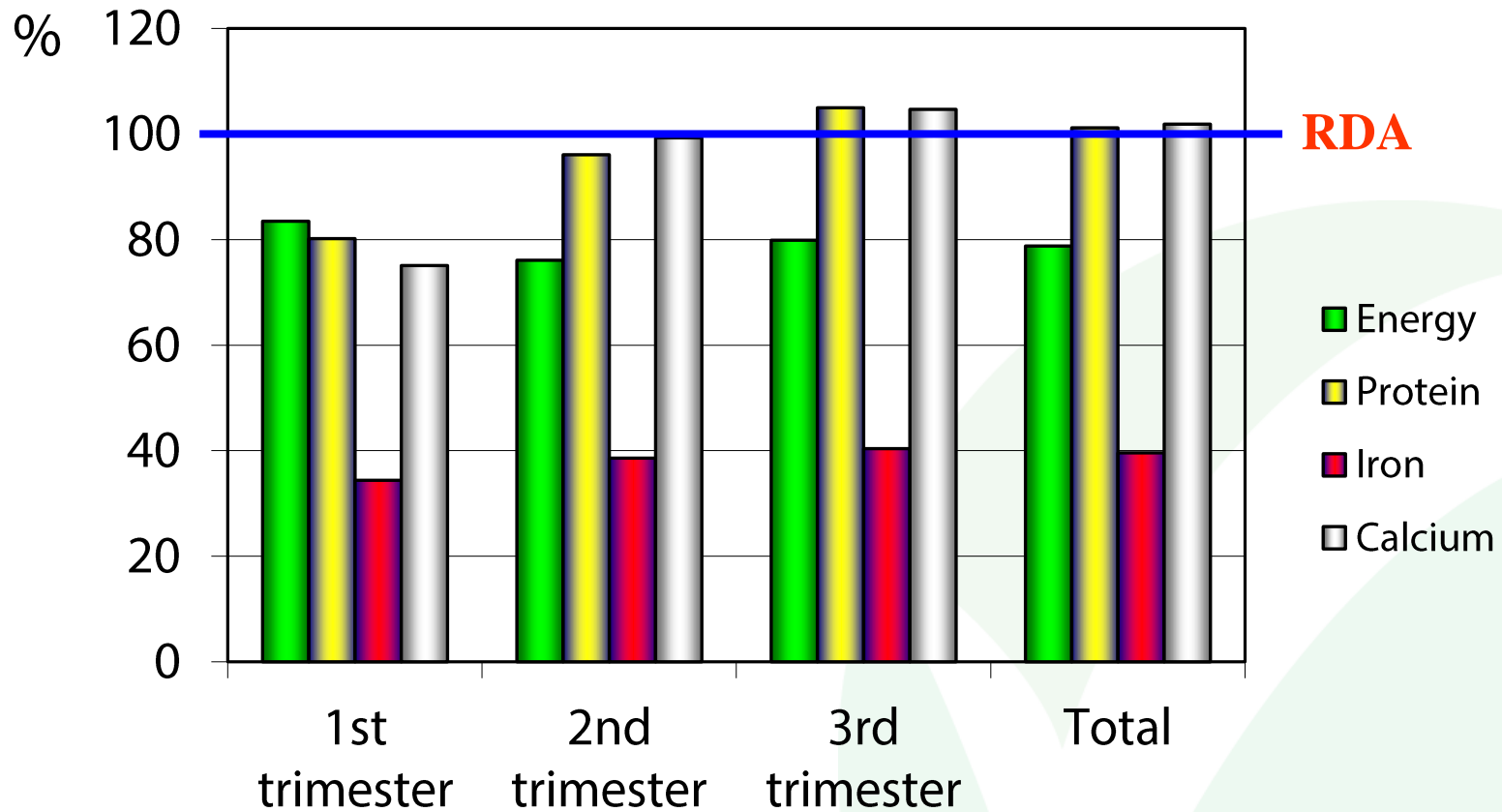
ENERGY DEFICIENCY

Nutritional anemia : **36,5%** (NIN-2009)

Iodine deficiency : **72,8%** (NC-2008)

Low BMI <18,5 : **19.6%** (2010)

Energy and nutrients consumption of pregnant women in Ho Chi Minh City



Source: Nutrition Centre HCMC 2008

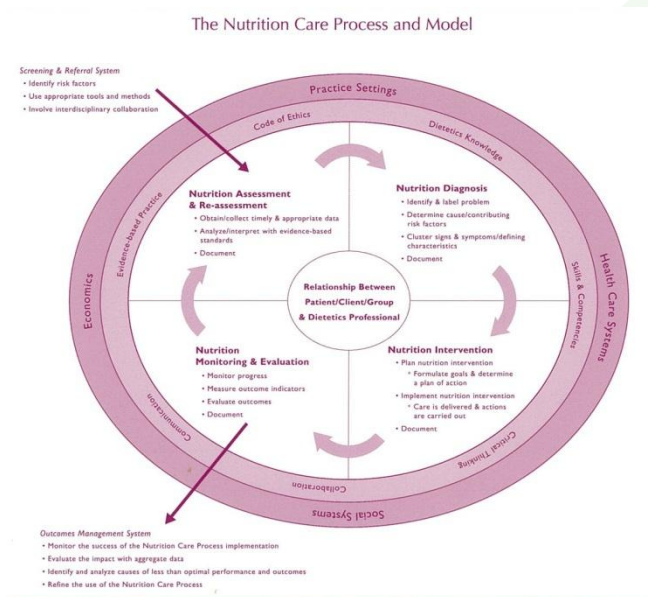
Some physiological changes during pregnancy



- ✔ **Increase uterus weight:** from 50 to 1000g
- ✔ **Decrease progesterone** → muscle relaxant
 - → *Acid and food reflux.*
 - → *Constipation*
- ✔ **Osteoporosis** due to calcium mobilization for bone formation in fetus.
- ✔ **Basis metabolism, P-L-G** increase.
- ✔ Present **water retention** in body
- ✔ **Increase requirements of several nutrients**
- ✔ **Serum calcium, magnesium decrease:** may lead to convulsion related to pre-eclampsia.



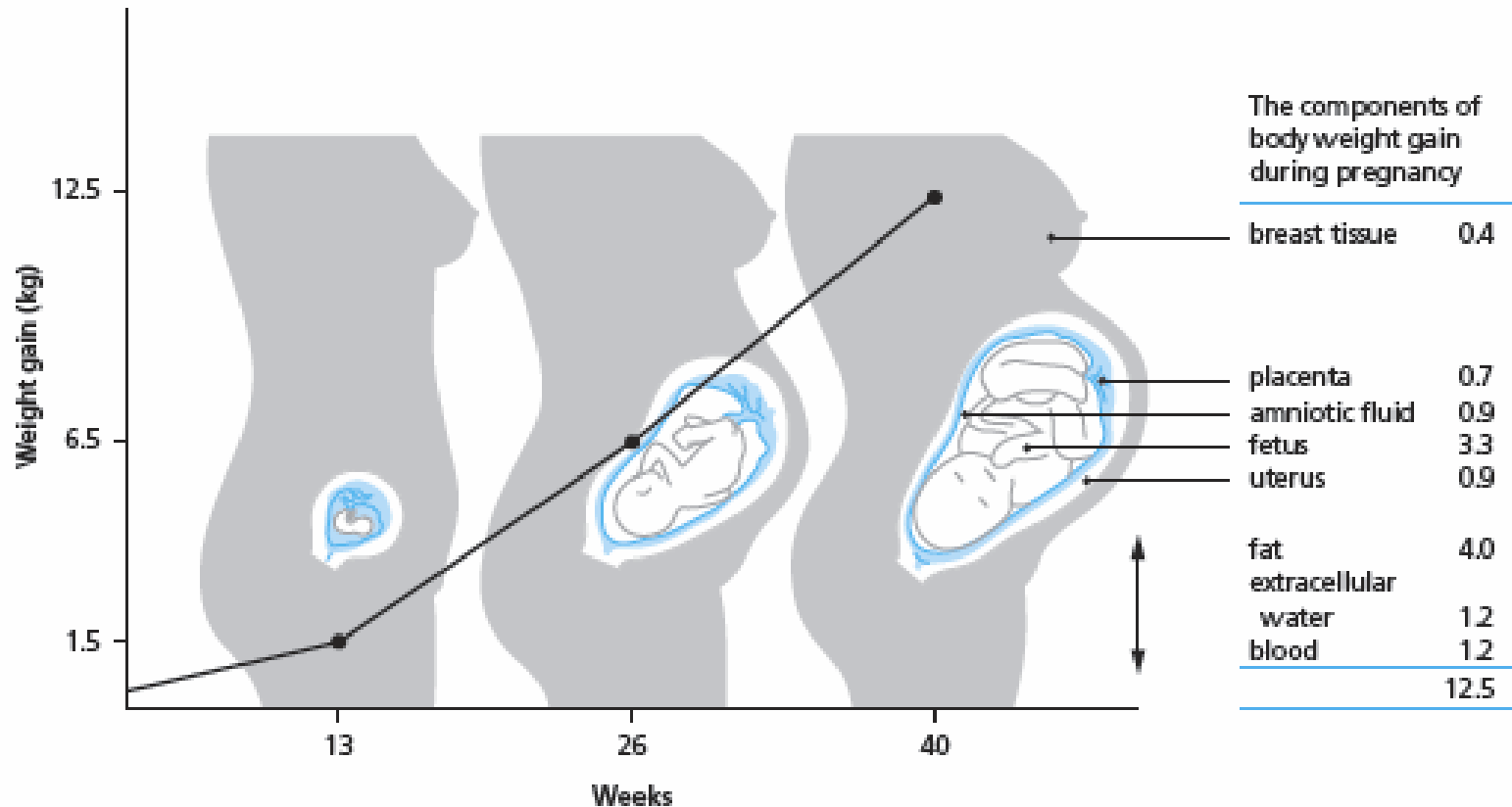
NUTRITION ASSESSMENT DURING PREGNANCY



Areas for assessment

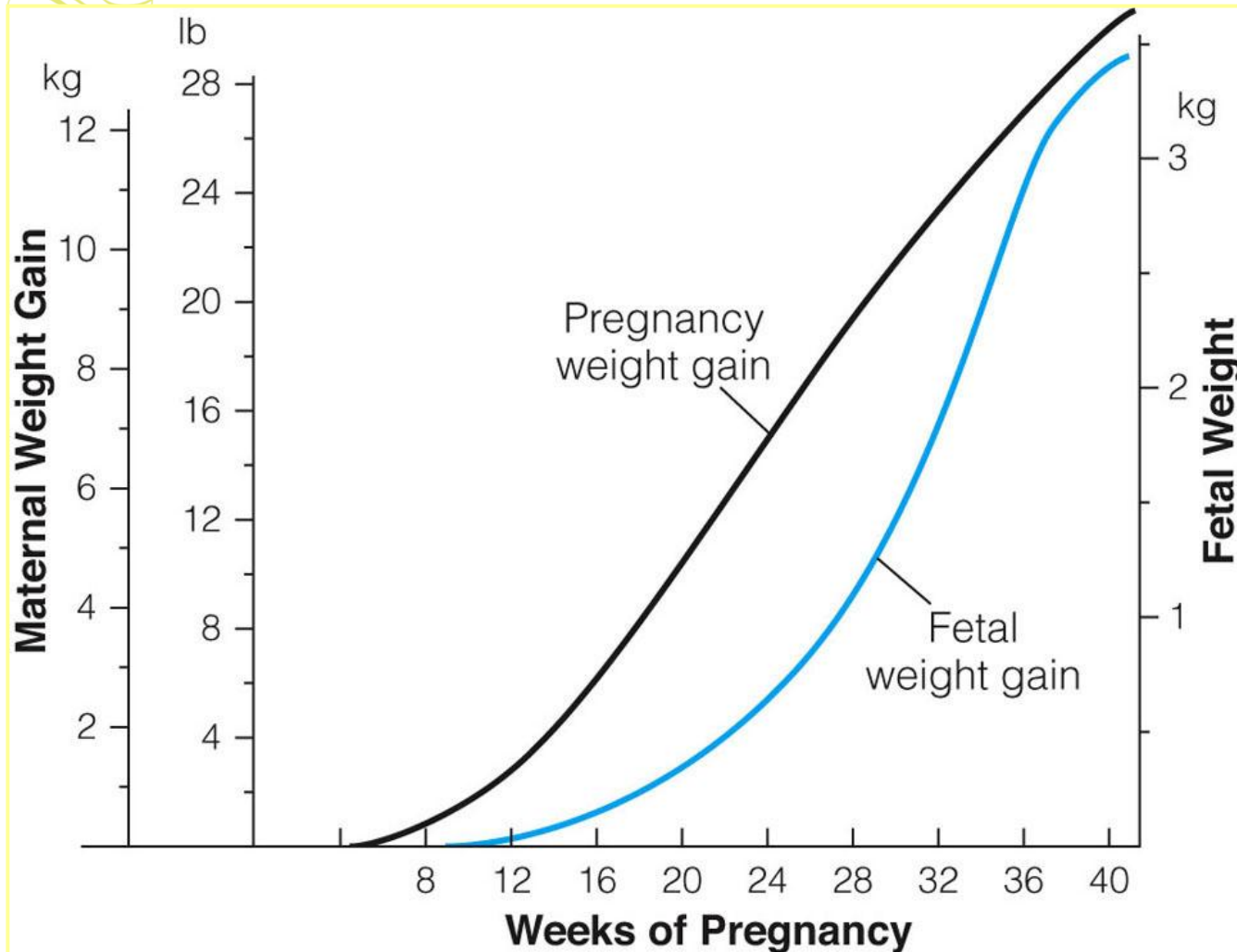
Areas	Contents
Medical and pregnancy history	Pregnancy history Nutrition-related diseases
Anthropometrics	Height Current weight and weight before pregnancy BMI before pregnancy Arm circumference
Biochemical	Blood glucose, serum lipid
Digestion	Vomiting, Constipation, Reflux... Low appetite, cramps,...
Diet	Number of meals Amount and type of food Cooking methods Type of food, preferred foods
Lifestyles	Type and time of work, Family. Physical activities

Weight gain



Components of body weight gain in normal pregnancy (Wahlqvist 3rd ed, p 385)

Weight gain



© Thomson - Wadsworth

Weight gain recommendation



BMI	Amount weight gain (kg)
<18,5	12,5 - 18
18,5 – 24,9	11,6 - 16
25-29.9	7 - 11,5
>30	5-9

Weight gain speed



- ✔ *First trimester: 1-2 kg*
- ✔ *From second and third trimesters:*
 - Women with normal weight: 0,4 kg/week
 - Women with low weight: 0,5 kg/week
 - Women with high weight: 0,3 kg/week
- ✔ **Total : 9-13 kg**



NUTRITIONAL CARE DURING PREGNANCY

Energy and nutrients requirements



- ✔ Average energy for women: **1920-2450kcal/day** .
- ✔ Second trimester: **add 360kcal/day**
- ✔ Third trimester: **add 475 kcal/day**.

Protein



- ✔ **Need to increase more 10-18g/day**
- ✔ Food high in protein: *meats, sea foods, egg, milk, beans and nuts.*
- ✔ Note: *Tendency of increase nutritious foods during pregnancy ↔ over intake of protein*



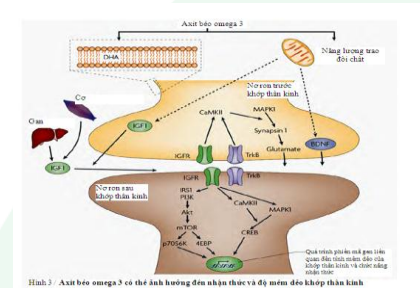
Fat



- ✔ **25-30% of total energy.**
- ✔ Should use both saturated and unsaturated fatty acids
- ✔ *Remember the role of DHA, EPA*
- ✔ Use **vegetable oil** to provide more unsaturated fatty acids.
- ✔ Saturated fatty acids: *lard, coconut oil, palm oil*

Role of DHA- EPA during pregnancy

- ✔ **Constitute of human brain cells**
- ✔ **Require for the development of synapse in child**
 - *DHA concentrate at nerve development cones during the transition to synapse.*
 - *DHA promote the synthesis of synapse membrane*
 - *Vision function of baby.*
- ✔ **Risk prevention:** obstetric incidents, cardio-vascular, cognitive impairment, injure joint and skin.



Requirement of vitamins and minerals



- ✔ The requirement of some vitamins and minerals increase during pregnancy

Micronutrients	Normal requirement	Pregnancy
Vit A	500	800
Vit C	70	80
Vit B1	1.1	1.4
Acid folic	400	600
Calci	1000	1200
Iod	150	200
Sắt	39.2	59.2

Calcium



- ✔ **Role:** Fetus develop the skeleton and teeth
- ✔ **Requirement of Ca every day:** ↑ 200mg/ day #
1200mg/ day
- ✔ **Foods:** milk and dairy products , fish, shrimp, bean, green vegetable.

Source of food



Foods	Amount of Ca (mg/100g)		
Milk and dairy products		Sesame	1200
Fresh cow milk	120	Soya	165
Fresh goat milk	150	Tofu	150
Yoghurt	120	Mushroom	357
Full cream milk	939	Spinach	341
Skim milk	1400	Red spinach	288
Condense milk	307	Rau đay	182
Cheese	500- 1300	Mùng tơi	176
Sea foods		Rau ngót	169
Fish with bone	437	Rau muống	100
Shrimp	161	Rau bí	100
Small shrimp	910	Bông cải xanh, bắp cải	80
Fresh water crabs	3520	Măng khô	100
nail	1300		

Acid folic



- ✔ **Acid folic deficiency** during pregnancy: lead to anemia and malformation in the neural tube.
- ✔ A. folic high in vegetable and egg.
- ✔ Supplement a. folic: **400 µg/day**
- ✔ Or: **2800 µg / week**
- ✔ **Should supplement folic acid early right after conception and continuous to 12 weeks**



Iron



- ✔ Fe need for both mother and child
 - *Reduce the risk of prematurity, bleeding, peri-natal mortality*
 - *Reduce the risk of anemia*
 - *Reduce the risk of low birth weight*
 - **Child:** *Immune, Cognitive and development*
- ✔ Requirement of Fe increase 1 mg → 3 mg/day
- ✔ Take 60mg Fe supplement/day



Factors influence the iron absorption



Dietary components

Absorption

Calcium (dairy products)



Meat, fish, poultry, sea-food



Phytate (grain products)



Polyphenols (tea, spices, vegetables)



Vitamin C



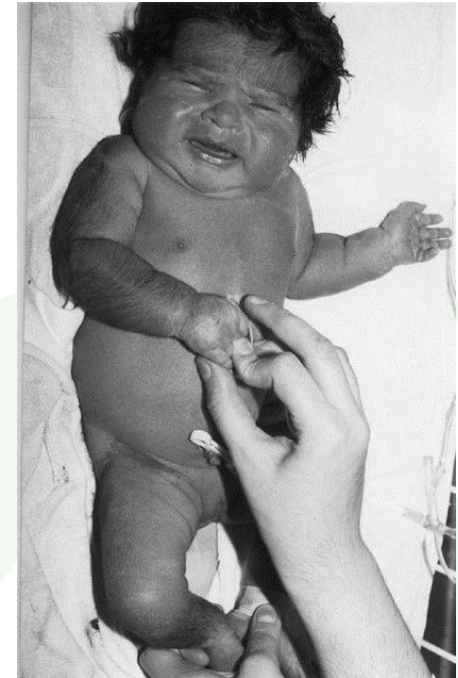
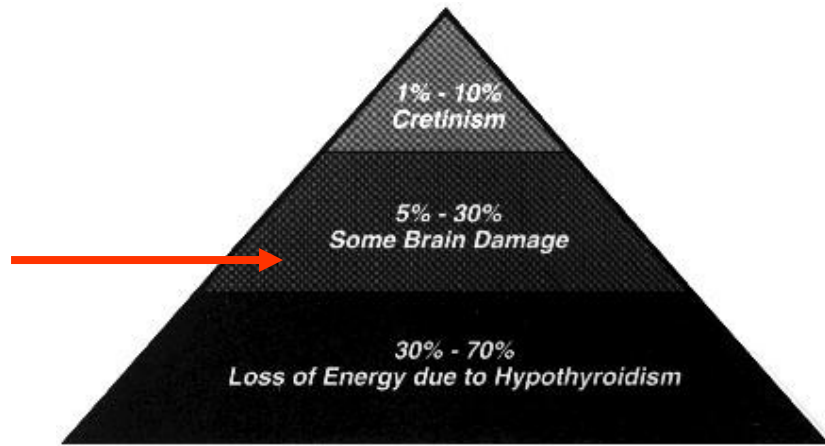
Iod



- ✔ Requirement among pregnant women is higher: 200 $\mu\text{g}/\text{day}$
- ✔ Foods high in I: sea fish, seaweed, meats.
- ✔ **Use iodized salt:** effective, safe, natural



Consequence of iodine deficiency in pregnant women



Miscarriage, stillbirth, hypothyroidism,
goiter, deaf, retardation

Nguồn: Faustino R. Pérez-López. Iodine and thyroid hormones during pregnancy and postpartum. Gynecological Endocrinology, 2007, Vol. 23, No. 7 : Pages 414-428

Vitamin A



- ✔ **Requirement:** higher than normal, **800 µg/day**
- ✔ Over consumption of vit A may lead to teratogenic: malformation in head and neck, heart, genital, central nervous system
- ✔ **WHO:** pregnant women should not consume more than 3000 µg /day

Diet



- ✔ **Should not have any restriction in the diet**
- ✔ **Variety in foods intake ≥ 15 foods**
- ✔ **Consume more fruits: *vitamin, mineral and fiber***
- ✔ **No stimulated substances: alcohol, caffeine, and nicotine**
- ✔ **Limit strong spices: chili, pepper, garlic, vinegar**
- ✔ **Select fresh foods: fresh, high nutritional values, hygiene and food safety.**



Evidence: Maternal and Birth Outcomes



- ✔ Iron folate supplementation
- ✔ Maternal supplements of multiple micronutrients
- ✔ Maternal iodine through iodization of salt
- ✔ Maternal calcium supplementation
- ✔ Interventions to reduce tobacco consumption or indoor air pollution

Nguồn: Bryce, Lancet series 2008



MENU FOR WOMEN ON THE FIRST 6 MONTHS OF PREGNANCY



BREAKFAST



⦿ *Broken rice with grill pork :*

- Rice : 93g (1.5 bowl of rice)
- Grill port : 50g (1 piece)
- Lard : 2 spoon

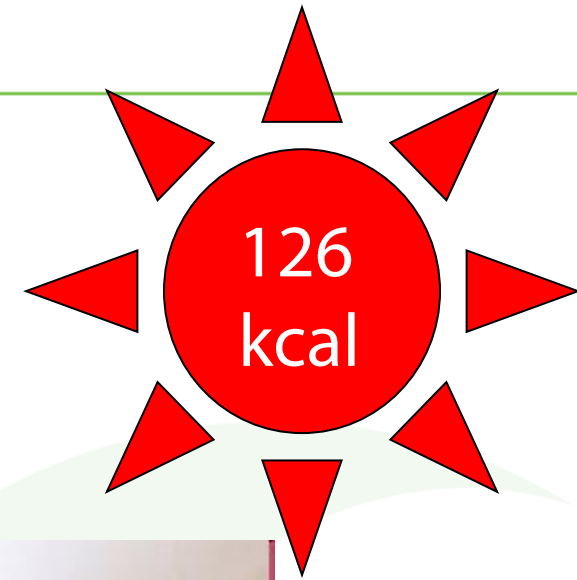


529 kcal

MID MEAL IN THE MORNING



- ⦿ 1 cup of meal for pregnant women



LUNCH



Rice

750 kcl



Beef stir fry with
broccoli



Vegetable soup



Banana

MID-MEAL IN THE AFTERNOON



✔ Orange juice : 1 + 30g sugar



◎ Cheese: 1 piece



DINNER



Rice

750 kcl



*Fish stir fry
with mushroom*



Vegetable soup

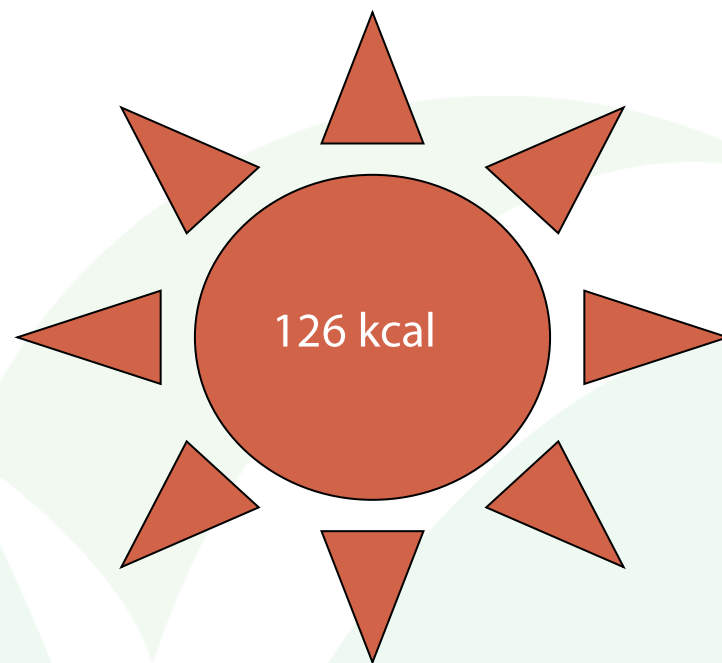


Banana

SUPER



- 1 cup of milk for pregnancy



REFERENCES



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- ✔ WHO- Guidelines on micronutrient deficiency
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- ✔ Lancet Nutrition Series -2008, 2014
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- ✔ Am J Clin Nutr. Vol 71, Anemia and iron deficiency: effects on pregnancy outcome
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