

## Maternal and Child Nutrition

- ✚ An important service in primary health care is nutrition which is more important for some categories than others, and these categories are: Pregnant women , Infants: because they're growing , Adolescence: because of their eating habits. ~healthy adolescence => healthy adulthood , Elderly: we have to control their diet along with medication.
- ✚ A lot of chronic diseases affect elderly: diabetes, hypertension, hypercholesteremia, IHD
- ✚ Good nutrition is a prerequisite for the well-being of individuals and for national development. Although problems related to poor nutrition affect the entire population, women and children are particularly vulnerable because of their unique physiology and socioeconomic characteristics .  
(Pregnant woman needs special physiological and nutritional needs and the baby whether embryo or child he/she is growing)
- ✚ An important cause for mortality in the developed countries and becoming one of mortality causes in the developing countries is non-communicable diseases that have a direct effect on nutrition . Today, more than 95% of all chronic disease is caused by food choice, toxic food ingredients, nutritional deficiencies and lack of physical exercise.” ~Mike Adams  
Of course we should do exercise along with having good diet so that we can burn the food that we intake, otherwise fat deposition and obesity occur.
- ✚ *Why to talk about maternal and child nutrition?*  
Nutrition is the major intrauterine environmental factor that alters expression of the fetal genome and may have lifelong consequences.  
-Many nutrients during pregnancy may affect the growth of the baby, especially his brain that starts to develop in the first trimester.
- ✚ Alterations in fetal nutrition and endocrine status may result in developmental adaptations that permanently change the structure, physiology, and metabolism of the offspring, thereby predisposing individuals to metabolic, endocrine, and cardiovascular diseases in adult life.  
-The nutritional status (whether being obese or having chronic diseases) of every individual starts to be established while he's an embryo.
- ✚ It is very important that expecting mothers should change their personal habits like smoking, alcohol, caffeine, using certain medications and street drugs as soon as they know they are pregnant or even when they are planning to conceive.
- ✚ All these can affect the development of the organs like brain, which happen in early stages of pregnancy. They can cause irreparable damage to the growing fetus.

✚ Promoting optimal nutrition will not only ensure optimal fetal development, but will also reduce the risk of chronic diseases in adults .

### ✚ *Maternal Nutrition :*

"Tell me what you eat, I will tell you who you are" That's what was said about nutrition. Nutrition doesn't only affect the physiology of the individual, it also affects his personality. So along with chronic diseases (IHD and hypertension) associated with bad nutrition we have also a negative effect on personality, psychology and mood.

You are what you eat. That's old news. So is the fact that your diet during pregnancy affects your newborn's health. But the new news is that what you eat in the next nine months can impact your baby's health, as well as your own, for decades to come .

### ✚ *10 easy nutrition rules that will benefit you both :*

**1. Get enough folic acid** Ideally, you need 400 micrograms of this B vitamin daily before conceiving. Because sufficient intake in the first trimester reduces neural-tube defects such as spina bifida by 50 percent to 70 percent, you should increase the dose to 600 micrograms when pregnancy is confirmed .

-Vitamin B deficiency is associated with neural defects. -Usually, we give vit B and iron as supplements since the mother may not get it by diet.

**2. Don't "eat for two"** As many as half of women gain too much weight during pregnancy. The upshot: an increased risk for preclampsia, gestational diabetes and delivery of either a preterm or a too-large baby.

**3. Eat your fish** Getting enough DHA (found in abundance in seafood and flaxseed) is one of the most important things you can do for your and your developing baby's health, nutritionists say. DHA is the omega-3 fatty acid that can boost your baby's brain development before birth, leading to better vision, memory, motor skills and language comprehension in early childhood. Eat at least 12 ounces a week of low-mercury fish, or take a DHA supplement (both are safe).

**4. Avoid alcohol** Behavior problems, learning disabilities, attention deficit disorder, hyperactivity and aggressive behavior in children can result when mom drinks during pregnancy. No amount of alcohol has been shown to be safe.

-Hyperactive attention deficit disorder is the most common learning problem in the US, it also exists in our community but still undiagnosed and improperly dealt with.

**5. Get adequate iron** During pregnancy, your iron needs nearly double, to about 30 milligrams per day, to support your 20 percent increase in blood volume and promote fetal iron storage. Iron transports oxygen, and your baby benefits from a healthy supply. To boost absorption, combine iron-rich foods with vitamin C.

-Iron Sources: Spinach, cauliflower, meat and certain legumes like Humus, lentil and bean. -As mentioned previously, food sometimes is not enough so we give folic acid and iron supplements as a routine to avoid iron deficiency anemia.

**6. Ban bacteria** To protect your baby from harmful bacteria such as Listeria, Salmonella and E. coli (any of which can, in severe cases, cause miscarriage or preterm delivery), steer clear of soft cheeses made with unpasteurized milk, as well as raw or undercooked meat, poultry, seafood or eggs.

- toxoplasma (present in undercooked meat) causes toxoplasmosis which in turn affects the fetus and causes congenital abnormalities and may cause abortion.

**7. Limit caffeine** About 300 milligrams of caffeine per day, the amount in about two cups of coffee, has long been considered acceptable during pregnancy.

-Caffeine is one of the causes of premature labor.

**8. Trash junk food** If you constantly indulge in fries and shakes now, your child might clamor for Dairy Queen in the future, animal research suggests. “Somehow a salty, sugary, high-fat, low nutrient diet seems to program a baby’s taste preference,” says Elizabeth Somer, M.A., R.D., author of *Nutrition for a Healthy Pregnancy*

The pregnant woman should stick to a diet with high fiber, low fat content

**9. Bone up on calcium** Aim to get at least 1,000 milligrams a day; **your baby needs it for tooth and bone development in the second and third trimesters.** Plus, if you don’t get enough calcium in your diet the fetus will leach it from your bones, which may increase your osteoporosis risk later in life.

**10. Focus on fiber** A diet high in fruits, vegetables and whole grains helps prevent constipation and hemorrhoids and keeps you feeling full so you are less likely to overeat. High-fiber foods also are packed with vitamins, minerals and phytochemicals essential to your baby’s development

### **YOUR DAILY DOSE :**

*What to eat to get the nutrients you need*

**CALCIUM** > 1,000 mg *where to get it:* Dairy foods, dark leafy greens, calcium-fortified foods.

**FIBER** > 25 to 35 mg *where to get it:* Fruits, vegetables, whole grains, legumes (beans and peas).

**FOLATE** > 600 mcg *where to get it:* Legumes, broccoli, asparagus, oranges. (Folic acid is the synthetic form, available in supplements and prenatal vitamins.)

**IRON** > 27 mg *where to get it:* Dry beans, meat, oatmeal, tofu.

**VITAMIN C** > 85 mg *where to get it:* Citrus fruits and juices, strawberries, dark leafy greens.

✚ *In respect to weight gaining during pregnancy for the mother, the recommended weight gain is illustrated in the following schedule:*

-If the BMI is low, the total weight gain should be more. -The Normal range for weight gain is 11-15Kg and shouldn't exceed 15kg. ~the dr. was surprised that the table "WHO recommendations" says up to 16kg and said that 15 is the maximum gain. -The increase in weight should start in the 2nd trimester.

Pre-pregnancy BMI	BMI	Total weight gain	Rates of weight gain 2nd and 3rd trimester (average range/week)
Underweight	Less than 18.5	13kg to 18kg (29lb to 40lb)	0.5kg to 0.6kg (1lb to 1.3lb)
Normal weight	18.5 to 24.9	11kg to 16kg (25lb to 35lb)	0.4kg to 0.5kg (0.8lb to 1lb)
Overweight	25 to 29.9	7kg to 11kg (15lb to 25lb)	0.2kg to 0.3kg (0.5lb to 0.7lb)
Obese	30 or more	5kg to 9kg (11lb to 20lb)	0.2kg to 0.3kg (0.4lb to 0.6lb)

## Infant and Child Nutrition

✚ *Why is Nutrition Important?*

- 1) Energy of daily living
- 2) Maintenance of all body functions
- 3) Vital to growth and development prevention especially for infectious diseases. ~measles infection in a well-nourished child will be recognized as any other respiratory tract infection with minimal complications, but in a malnourished child it'd be very serious and may develop otitis media, encephalitis and pneumonia
- 4) Therapeutic benefits ( Healing , Prevention )

✚ *Growth in Infants :*

Rapid body growth and brain development during the first year:

- Weight increases 200% Baby's weight starts for example 3.5 Kg, it doubles at 6 months old and triples at one year old.
- Body length increases 55% Baby's height starts by 50 cm, at the end of the 1st year will be 75 cm.
- Head circumference increases 40%.
- Brain weight doubles.

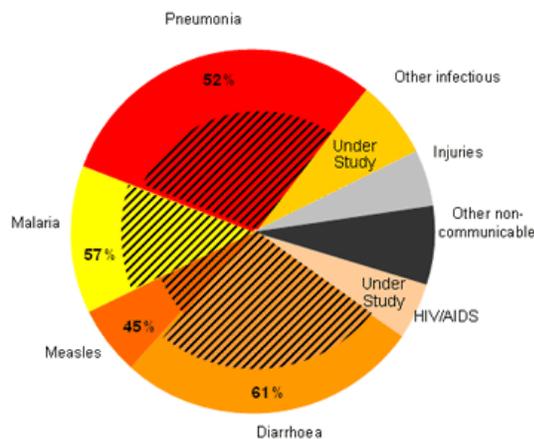
### ✚ *Pre-school (1 to 6 Years) :*

- 1 to 2 years: on average, grows 12 cm, gains 3.5 kg.
- Rate of growth slows by 4 years.  
6-8 cm/year                      2-4 kg/year
- Brain growth triples by 6 years.

- ✚ More than 3.5 million women and children under age five in developing countries die each year due to the underlying cause of under nutrition.

### ✚ *Deaths among children under 5 years old :*

**Deaths among children aged 28 days to five years**  
6.6 million/year



- The major cause of mortality in the developing world is infectious diseases. Mal-nutrition means less immunity so higher susceptibility to infections.

The shaded area shows the % of deaths from this infection that are due to the presence of undernutrition

### ✚ *Breast feeding :*

Breastfeeding contributes to the health of both mother and child, in the short and long term. For example, babies who are not breastfed are many times more likely to acquire infections such as gastroenteritis in their first year . (because Igs are passed by mother milk).

- ✚ Severely malnourished mothers have reduced lactation performance contributing to the increased risk of child mortality.

- Maternal requirements increase during lactation by 500 calorie while during pregnancy by 300 calorie. The total calories she needs in addition to: □ Pregnancy: 1800+300 =2100 C. □ Lactation: 2000 + 500 = 2500 C.

### ✚ *Breastfeeding and its benefits :*

- Immunity gaining (immunoglobulins : IgG to IgM ,antiviral and antibacterial),decrease incidence of ear ,urinary tract infections , gastroenteritis and respiratory illnesses.
- Convenient are ready to drink. Always at right temperature. There's no need to cool it or heat it.
- Reduce chance of overfeeding.
- Boost mother and child bonding. It has been proven that postpartum depression occurs less in breast fed mother, so she will feel that her baby is more related to her if she is breast feeding.
- Delay the ovulation as lactation proceeds at least 6 months.
- Reduce the excess adipose tissue and weight gain that is associated with pregnancy.
- Suppress postpartum bleeding. □ Decrease breast cancer rate.

( babies do not come with bar codes ..... neither should their food )

### **ADVANTAGES OF BREASTFEEDING FOR BABY :**

1. Due to the anti-infective properties of breastmilk, breastfed babies tend to have less incidence of or less pronounced symptoms of ear infections, respiratory illness, allergies, diarrhea, and vomiting.
2. Due to the digestibility of breastmilk, breastfed babies are rarely constipated.
3. The stools of breastfed babies are mild-smelling.
4. SIDS (Sudden Infant Death Syndrome) is less common in breastfed babies.
5. Breastmilk is constantly changing in its composition to meet the changing needs of the baby. It has the exact combination of protein, fats, vitamins, minerals, enzymes, and sugars needed for the human infant at various stages of his growth.
6. Breastfed babies are constantly exposed to a variety of tastes through their mother's milk.
7. Breastfed children are at less risk for chrohn's disease and juvenile diabetes.
8. Children who were breastfed are less likely to need orthodontic work such as braces due to the unique sucking action required with breastfeeding. They also seem to have better overall dental health than formula-fed children. Children who were breastfed need speech therapy less often than those who were bottle-fed.
9. IQ levels are an average of 8 points higher in children who were breastfed.
10. Adult daughters who were breastfed are at less risk for breast cancer.
11. Adults who were breastfed have a lower risk for high cholesterol and asthma.
12. The bond between mother and child seems to be enhanced with breastfeeding.

### **ADVANTAGES OF BREAST FEEDING FOR MOTHER :**

1. Nursing immediately following delivery causes the uterus to contract lessening the risk of postpartum hemorrhage.

2. The uterus of a breastfeeding mother shrinks to its pre-pregnancy size more quickly.
3. Calories are burned while breastfeeding. It takes approximately 20 calories to produce an ounce of milk.
4. Women who nurse their babies for at least 6 months lessen their chances of pre-menopausal breast cancer.
5. Osteoporosis and cervical cancer are less common in women who breastfed.
6. The return of fertility is delayed with breastfeeding.
7. Breastfeeding is more economical than formula feeding. The cost of formula for 12 months is approximately \$1000 - \$1200.
8. Breastmilk is always available, clean, and the right temperature.
9. Many mothers feel a special satisfaction in knowing that they alone are meeting the nutritional needs of their babies.

### *Breast feeding :*

The most common questions about breastfeeding:

- When? Breast feeding should be on demand, no battle so no overfeeding, feeding the baby as much as possible.
- How often/The duration? Every 2-3 hours usually and 10 minutes duration.
- How long? As much as possible but at least for 6 months. According to WHO recommendations, breast feeding should be at least 6 months exclusively, but what happens here in Jordan: the EXCLUSIVE breast feeding period is 2 months and after that we add other nutrients like fruits and Cerelac.

### *Exclusive Breastfeeding :*

Current World Health Organization guidelines recommend exclusive breastfeeding for the first 6 months of life.

-  WHO recommends that infants start receiving complementary foods at 6 months of age in addition to breast milk, because by that age, breast milk alone is not sufficient to maintain a child's optimal growth.

supplements include:

Cereals & grain

Fruits

Vegetables

Meat & poultry

Oil, fat and butter

We should add those nutrients gradually , type by type and by quantity. At age of one year, the baby takes almost all these in addition to breast feeding.

### *Nutritional Concerns in Childhood and Adolescents :*

< Adolescence also has nutritional problems like: iron deficiency, anorexia nervosa and obesity. >

- Malnutrition and poverty.
- Growth spurt-onset of menses for girls-changes in body size/image.
- Food fads, vitamins, athletes.
- Eating disorders: anorexia and bulimia nervosa.
- Overweight and obesity.
- Hyperlipidemia and heart disease.
- Bone mineralization and osteoporosis.

Anorexia nervosa : lack or loss of appetite for food. It is a psychic problem that is otherwise leads to starvation.(for both male and female but female is much more, 4:1).

Bulimia nervosa: eating because of stress

The less calcium intake at the adolescence, the more bone demineralization to compensate this lack of calcium, later on the bone will be more susceptible to fracture and many diseases like osteoporosis

### *Poverty and Malnutrition :*

- 18 million (22.7%) of children under 18 in the US live in poverty.
- Income <\$14,306/year for family of 2 adults and 2 children.
- Iron deficiency anemia most problematic.
- Low vitamin C intake.
- Exposure to lead.
- Poor nutrition and cognitive function:

Decreased brain growth and or CNS development.

Poor performance on measures of cognitive ability.

Malnourished children are unprepared to benefit from age-appropriate educational experiences.

### *Developing Healthy Habits :*

- Offer a variety of healthy foods and snacks.
- Encourage fruit and vegetable intake.
- No junk food snacking.
- Limit intake of juices ( 4 oz per day).
- Increase intake of water (no soda).
- Encourage low fat dairy products (3-4 servings/ day).
- Make fun physical activity a habit.
- Limit TV to no more than 1 to 2 hours per day.
- Track growth and development carefully.
- Be a good role model.

### *Obesity in Childhood and Adolescents :*

- >20% of children/adolescents are overweight.
- Increased by 50-100% over last 20-30 years: More sedentary lifestyle and behavior (TV/video games)
- Prevalence increasing more rapidly among African-Americans.
- Obese children and adolescents become obese adults.

Anorexia Nervosa: is an eating disorder characterized by an abnormally low body weight, intense fear of gaining weight and a distorted perception of body weight. can cause an abnormal menstrual cycle in females. Bulimia Nervosa: recurrent and frequent episodes of eating unusually large amounts of food specially if stressed or depressed, and then inducing vomiting. They have many GI problems.

In Jordan, the three main problems in schools are: -Smoking. -Acne. -Obesity.

### *Obesity : Health Consequences :*

- Cardiovascular disease risk
- Type 2 diabetes (epidemic)
- Hypertension
- Orthopedic
- Sleep apnea

- Gall bladder disease/steatohepatitis
- Psychosocial problems .

### *Pediatric Obesity Etiology and Treatment :*

#### \* Etiology :

- Genetic predisposition: 80% risk if both parents obese
- Environment (stress) .
- Dietary intake
- Physical activity / sedentary activity

#### \* Treatment:

- Multidisciplinary and comprehensive
- Formal behavior modification
- Family-based

### *Prevention of Cardiovascular Disease :*

- Atherosclerotic process begins in childhood.
- Childhood cholesterol levels associated with degree of early atherosclerotic changes.
- Cholesterol levels track.
- Behavior tracking?

### *Disease Prevention , Developing Healthy Eating Habits :*

- Discourage dieting and obsession with weight.
- Pack healthy lunch at least twice a week.
- Limit fast food eating out.
- Encourage a balanced diet.
- 5 servings of fruits/vegetables a day.
- Encourage low fat dairy products (3-4 / day).
- Prepare meals that kids and teens enjoy.
- Encourage teens to learn to cook healthy food.
- Teach kids and teens label reading.
- Be a role model.

### *Briefly about breastfeeding in Jordan :*

- According to Jordan, the PFHS in 2012 that shows that breastfeeding is common in Jordan, among children who were breastfed 18.9 % of mothers begin breastfeeding within an hour after delivery, and 66.7% of infants were breastfed within the first day.

- Ever Breast Fed : 93.3% for males , 92.8% for females.

- Exclusively breast fed : 23%

### *Key Findings/ NUTRITIONAL STATUS Jordan :*

- Eight percent of children under five years of age are stunted, 2 percent are wasted, 3 percent are underweight and 4 percent are overweight.

-STUNTED: low height-for-age, when a child is short for his/her

-WASTED: weight less than 10%..!

- Breastfeeding is common in Jordan with 93 percent of children ever breastfed, and half of children breastfed for about 12 months or longer.

- About one in five children under age 6 months is exclusively breastfed, and the median duration of exclusive breastfeeding is less than one month.

- Complementary foods are not introduced in a timely fashion for all children. Sixty-six percent of children age 6-9 months are breastfeeding and given complementary foods.

- Overall, only one-third of children age 6-23 months are fed appropriately based on recommended infant and young child feeding (IYCF) practices.

- Thirty-two percent of children age 6-59 months are anemic, 20 percent are mildly anemic, 12 percent are moderately anemic, and less than 1 percent are severely anemic .  
only know that 32% are anemic, don't memorize the detailed percentages.

- Five percent of women are too thin, that is, they fall below the body mass index (BMI) cutoff of 18.5. On the other hand, an alarming 55 percent of women are overweight or obese.  
we have an obesity problem.

- Thirty-four percent of women age 15-49 are anemic, 26 percent are mildly anemic, 7 percent are moderately anemic, and less than 1 percent are severely anemic.

- JPFHS 1012