

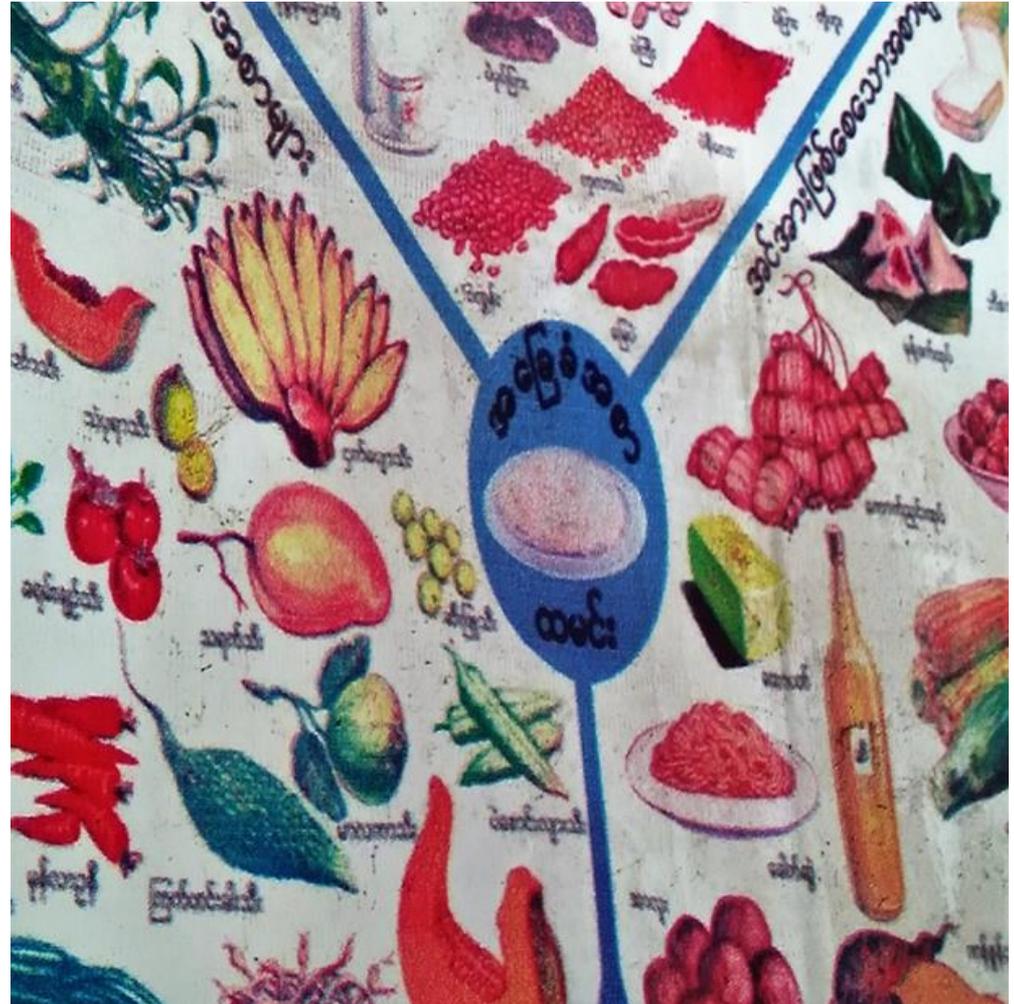
Diet for Pregnant Mother

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Diet for pregnant mother



Diet for pregnant mother



- **What is Antenatal diet (Diet for Pregnant mother)**
- **Why is nutrition important for a pregnant women?**
- **How does the nutrition of the mother affect the fetus ?.**
- **Required nutrition during pregnancy.**
- **Summary of recommendation.**

2- What is Antenatal diet .?

- **Eat a variety of foods** to get all the nutrients you need. Recommended daily servings included 6-11 servings of bread and grains two to four serving of fruits, four or more serving of vegetables, four serving of dairy products, three serving of protein(**meat**, **poultry**, fish , **eggs** or nuts) A nutrient rich maternal diet before and during pregnancy is associated with : **Mineral** and **vitamins** .

3- why nutrition is important for a pregnant women ?

- improved fetal health , more appropriate *birth weight* , and
- can reduce the risk of **many birth defects** and **mental retardation** due to **specific deficiency** of mineral and **vitamins**
- increase rate of maternal and infant survival.
- reduce **the risk of anemia** , as well as other un pleasant pregnancy symptom such as fatigue and **morning sickness** . Care providers need a better understanding of the role of diet **in shaping fetal out comes**

4-Physiological changes in pregnancy.

- Pregnancy and its changes is *a normal physiological process* that *happens all mammalian in response to the development of fetus* .
- These changes happen *in response to many factors ,hormonal changes . Increase in the total blood volume ,weight gain ,and increase in fetus size* .

Fetal Development Month by Month



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2 Months



Your baby weight slightly less than 15-g- Your baby is 5 cm in length about as long as your thumb & Weight slightly less than 15 g. Has all her vital organs liver, kidneys, intestine and brain.

Has webbed hands and feet. Soon they will be spate and she will be able to close her fingers and curled her toes.

Has taste buds forming on her tongue

Has eyelids which completely cover her eyes and tiny earlobes that are now visible. Is busy kicking and stretching.

3 Months



**Your baby
Is about-10-cm long and weight
about100g**

**Has a fully working circulatory system
and urinary tract .**

**Has developed sucking muscles in her
cheeks.**

**Has started to develop ultra-fine
downy hair (lanugo) all over her body**

Can grasps , squint ,frown & grimace.

**Is playful and with enjoy pulling and
grapping her umblical cord.**



Your baby

Is about 16.5 cm and is steadily gaining weight.

Is covered in whitish creamy substance called vernixcaseosa . This protects her skin and makes the birth easier.

Is developing sweat glands .

Is swallowing amniotic fluid which is good practice for her digestic system.

Is developing all her sentences- taste, smell, hearing , seeing and touch.

Has begin to spout hair on her head.

5 Months



**Measure about 30cm and weight more than 600g.
Has eye browns eye lids that blinks.
Has fully form taste buds. Has foots prints and figure prints.
Can hear your voice**

6 MONTHS



- **Your baby**
- **Weight a little over 1kg and is about 40cm long.**
- **Well sleep and wake at**
- **Regular interval.**
- **May suck a fingure and thumb. Some babies are born with a sucking blister.**
- **Is getting use to blinking her eyes which now have eyelashes.**
- **Has a prominent clitoris**
- **If she is a girl , If he is aboy**
- **His testicales have descended from near the kidneys toward the scrotum.**

7 Months



Weight about 2kg measure around 45cm .

Has almost nfully developed lung and digestive tract.

May have ahead of hair already

Is getting ready for birth by turning upside down.

Head should be pointing down ,ready for her journey in to the world.

Your baby Head

Has a pliable skull. The plates of bone that makeup

Her skull have not completely fused .This makes it easier for her to pass through the relatively narrow birth canal



Your baby

Weight close to a kg and may be almost 50 cm long.

Is filling out and getting rounder .

She will need her fat layer later to regulate her body

temperature once she born .

Will stretch and squirm about inside you .

You may see the shape of her elbow or feel on your bump.

Has full length finger nails and toe nails.

Has now lodged her head in your pelvic cavity surrounded and protected by your pelvic bones.

9 Months



Your baby

Won't grow much in length now, but may put on half kilo or so in the last month.

Continue to build the fat store that will help regulate body temperature after birth

Has lungs that are ready to work Even after your baby is born. It may take a few hour before he establish a normal breathing pattern.

Is ready to greet the world.

5- Fetal development

- **First trimester**

Your baby will grow from a fertilized egg into a moving fetus with eyes, ears and working organs.

- **Second trimester**

Your baby features develop and you may be able to feel your baby move .

- **In the third trimester**

your baby will grow rapidly to get ready for birth.

- **6- The first trimester is the most crucial to your baby's development. During this trimester your baby's structure and organ system develop . Most miscarriages and birth defects occur during this period . Your baby also undergoes changes during the first trimester.**
- **Nutrition recommended ; rich source of vitamin, minerals and macronutrients for your body and your baby's developing body need to thrive.**

7--Lean meat, a good source of iron and protein

Yogurt, The calcium and protein in each cup .

Edamame ,These soybean pods are packed with vegetarian protein ,plus some calcium, iron and foliate.

Bananas - banana are among the best source of potassium, beans and lentil.

8- During second trimester

The weight of your fetus will multiply more than seven times over the next few month , the fetus becomes baby that can survive outside of the uterus. By the end of the second trimester, your fetus will be 13 to 16 inches long and weight about 2-3 pounds.

The baby,s brain and spinal cord will develop from the neural tube . The heart and other organs also are starting to a form and the heart begins to beat. Structure necessary to the formation of eyes and ears develop. Small buds appear that will soon become arms.

9- Third trimester----- Fetal development continues during the third trimester . Your baby will grow rapidly .your baby will open his or her eyes, gain more weight and prepare for delivery. The end of your pregnancy is near .By now you are eager to meet your baby face to face.

10 - What are the nutrition requirement during pregnancy ?

- To Maintain a healthy pregnancy, approximately **300 extra calories are needed each day** . These calories should come from a balanced diet of **protein , fruits ,vegetables and whole grains , sweets and fats should be kept to minimum .**

11---In general

- The first trimester (first 3- month) does not require any extra calories .**
- For normal weight pregnant women the right amount of calories is about -1800- calories per day during first trimester , about - 2200-calories per day during second trimester about - 2400-calories per day during third trimester**
- Typically women who begin pregnancy over weight need an additional 200 calories per day during the second trimester (second three months) and additional 400 calories per day during the third (last) trimester. ,**

12-What is the most common nutrient deficiency in pregnancy ?

- **Iron**
- **Iodine**
- **Folic or Vitamin A**
- **particularly common among pregnancy due to increased nutrient requirements of the mother and development of fetus.**

13 -What are Macro and Micronutrients ?

Macro nutrients **are Nutrients**

- Need in large amount namely
- **Carbohydrate**
- **Fats**
- **Dietary Fiber**
- **Mineral**
- **Protein**
- **Vitamin and water**

14- What is micro nutrients?

- Micronutrients are only **needed in very small quantities** but are also essential **for normal Physiological function ,growth and development**
- Deficiencies of micronutrients such as **vitamin A, iron, iodine and foliate** are particularly common among during pregnancy due to increased requirement for the mother and developing fetus - ***Negative impact for health of mother and new born baby,.***

➤ **15--WHO-recommended quantities of mineral and vitamins per day during pregnancy.**

Micronutrient	WHO recommendation
• Thiamin B1mg	1.4mg
• Riboflavin B2 mg	1.4mg
• Vitamin A ug	800.0ug
• Niacin vitamin b3	18.0 mg
• Vitamin 6 mg	1.9 mg
• Vitamin 12ug	2.6 ug
• Vitamin C, mg	55.0mg

16--WHO-recommended quantities of mineral and vitamins per day during pregnancy

Micronutrient	Recommendation
• Vitamin D ,ug	5.0 u g
• Vitamin E ,mg	15.0 mg
• Folic acid, ug	600.0 u g
• Iron , mg	27. 0mg
• Zinc , mg	10. 0 mg
• Copper, mg	1.15 mg
• Selenium, ug	30.0 u g
• Iodine ,ug	250.0 u g
• Calcium, g	1.5-2.0 g

, 17- WHO recommended quantities of minerals and vitamin per day

Folic acid – 600ug **rapid dividing cells rapid cell growth,**
cell replication, cell division, nucleotide synthesis
for **fetal** and **placental** development, to **reduce neural**
tube defect, associated with megaloblastic anemia in
pregnancy.

source - citrus fruits , dark-green leafy vegetables
nuts and liver.

18- **Iron** - 27.0mg -

Supplements have

routinely been recommended in pregnancy because iron **needed nearly double in pregnancy** .

Deficiencies --- Iron deficiency anemia – associated with **lower immune** and **higher risk of infectious disease**, less productivity – **cognitive disorder** –emotional stress- **pre term delivery**, low birth weight , **placenta abruption**, **blood after delivery** .

new born by the age of three months **delayed psychomotor** and /or **mental development**. (Negative effect on social and emotional behaviour . Later in life .

Rich sources

lean red meat , **pork** , fish., **eggs** , vegetable, **whole grain**

19 Iodine 150- 250.0 uGu Vitally important---development of fetal central nervous system one of the preventable cause for cognitive and behavioural development ,--
To ensure an adequate iodine intake before conception .

Main source are fish , sea foods

Calcium 1.5--2.0 g requirements increased . Help to build strong bones and teeth .

Source---- Dairy products including milk are main products

oat, almon and soya milk , Small bony fish legume , broccoli pumpkin seeds .

20- Vitamin B₆ (pyridoxine)

- participated in amino acid metabolism and is also catalyst in reaction such as the production of neurotransmitters. B6 helps to reduce nausea and vomiting.
- The main source are meat,(beef, pork, and chicken), fish(tuna, salmon)legume, oat, bananas, plum, avocado and potatoes.
- No supplementation require.

21- B₁₂ (cyanocobalamin)

- **Involve in various enzymatic reaction .It is found only in products of animal origin meat, especially beef , also liver (which is not also recommended during pregnancy) milk dairy product and fish, (mackerel,herring, and tuna) Mussei and oyster contain specially large quantities of this vitamin. B₁₂ and folic acid are required for both the cognitive and motor. Development of the fetus.**

22- Vitamin C (ascorbic acid)

- An antioxidant and required for the synthesis of collagen and for prevention of pre-eclamptic toxemia . During pregnancy , vitamin is required at an additional amount of 10- mg/per day which should be supplied from the diet . Good sources are cabbage, tomatoes, paprika, broccoli, strawberries, pine apple, citrus fruit, blackcurrants and kiwi.

- Vitamin A

Is required for the development of the skin , mucous membranes and *(including those of the gastrointestinal and respiratory systems)* skeletal system, and teeth, and for visual and, *immune functions* .

While vitamin A deficient is undesirable, excessive amount (3000ug or 10000iu of vitamin A) may be *teratogenic* . Women who take medicine or food supplements containing vitamin A or retinol such fish oil supplements, should discontinue them before conception and throughout pregnancy.

23-- Vitamin A is found in food of animal origin

Fish, eggs ,milk, and dairy products

especially

cheese, liver, contains particularly high

quantities of vitamin A and certain food of

plant origin such pumpkin, carrot, red

pepper, Spinach, salad leave, apricots,

contain carotenes which are pro-vitamin

of A; they pose no risk during pregnancy.

- **24- Vitamin E (tocopherol)**
- **Is an antioxidant that ensures the formation and development of healthy cells in the fetus and protects pregnant women from toxins .**
- **Vit -E enters the fetal circulation from maternal blood during the twelfth week of pregnancy**
- **The recommended daily amount during pregnancy is 15 mg . Some premature newborns may have a deficit of vitamin E, although this is very rare.**

25-. **Vitamin E** is found in plant oil
(olive Oil , **sunflower**) whole grain products,
eggs yolk, nuts and **seeds**
(**pumpkin** ,**sun flower** , sesame).

26- Vitamin K

Vitamin K is required for a bone health and coagulation homoeostasis . A deficit of vitamin K during pregnancy may result in severe vomiting and Crohn disease ,especially in women who have undergone gastrointestinal procedures.

Dark green- leafy vegetable such as broccoli, various salads and spinach are rich in vitamin K lesser quantities are contained in animal products , cheese and eggs.

27- Copper

- Deficit may be teratogenic for the fetus **and** may increase the risk for anemia.
- sea foods(oyster, and crustaceans), whole grain products ,bean, nuts, and animal offal contain large quantities of copper .**Dark green leafy vegetables and dried fruit are other sources.**

Zinc. ***This can result in congenital malformation and impaired brain development .***

Red meat, seafood and unrefined cereal products are dietary source of zinc.

28- Magnesium

During gestation, the fetus accumulate 1g/day of meg and pregnant women should have sufficient quantities to prevent leg cramps and pre-lampsia.

Source Nuts whole grains products and dark-green leafy vegetables are sources of magnesium.

- 29- Sodium
- During pregnancy the *maternal blood volume increases*, resulting in a higher glomerular filtration rate, in which the water and electrolyte balance is maintained by compensatory mechanisms nor is use of diuretic. Strict reduction of sodium in the diet during pregnancy is not recommended, nor use of diuretic agents. It is advisable to cut down on salt in the diet and to use iodised salt.
- The recommended quantity is 1.5-2.3 g of sodium per day, equivalent to 4-5g of cooking salt.

30- This quantity of **salt** and an adequate **volume** of liquid ensure a sufficient blood volume for **preventing dehydration** and **premature contractions**.

Most people consume **significantly more salt** than recommended, most of which is in food (added salt constitute only a small part) ; therefore

It is recommended that **the use of cooking salt** during pregnancy **be restricted**.

31- Protein

It is important to consume the required amount of protein, **the basis building block of maternal and fetal tissue.**

The required amount of protein during the first Half of pregnancy is the same as that for non pregnant woman, **0.8-1.0g/kg per day** or **10-15-%** of the energy required and that during the second half of the pregnancy is **1.1g/per day, on the basis** of the diet in developed economies.

Pregnant adolescent required **1.5g/kg of protein** a day. The recommended sources of protein are dairy products with are reduced **fat content**, fish, and **lean meat**;

32- Protein of plant origin ,eg; legumes, nuts and seeds are other sources although their protein content is lower than that of animal product

eg, 100g of protein cooked meat contain 25-35g of protein,120g of fish contain 25-30g protein one egg has 6gof protein ,a slice of cheese has15g of Protein and 150g of beans only 15g of protein

33- Carbohydrates are source of **energy** for both the mother and the fetus . The amount of required are the same as those recommended for the general population (50 -60 % of energy)

Appropriate amount of suitable carbohydrates **help to control blood glucose levels** and provide **protection against ketosis**.

The recommended sources of carbohydrates are whole grain products and potatoes , which **should be boiled** or baked and **not deep-fried** or **fried**.

34- Fats

Fats are ***integral part of the diet*** and a sources of energy; they are also required for numerous Metabolic process . Expectant mothers need not change their intake of fats The recommended amount is 30% of total ***energy consumption*** .

Omega 3 fatty acid -eicosapentaenoic (EPA, and dosahexaenoic (DHA) are required for ***the development of the fetal brain, retina*** and they reduced for ***premature birth***, the child future risk for Cardiovascular disease and ***the risk of mother for perinatal depression***.

Omega fatty acids are especially important during the ***second*** and third ***trimester***.

35- The recommended amount of docosahexaenoic acid is 200-300mg /day , which can be ensure by two serving (150-300g)of fish a week ,of wich one should be oily fish (salmon ,sardine,)

Attention should be paid to the choice of fish and the way it is cooked .Fish should be boiled , steam , or oven–baked

Over consumption of fish may lead to excessive intake of mercury .*Which Can damage the Child 'nervous system.*

If a women does not eat fish she should choose an omega -3 fatty acid of plant origin eg- linolenic acid which is found for example in ground linseed and hemp. expectant mothers require omeger-3 fatty acid supplements. Fish oil supplement are not recommended because of their high vitamin A contents , and foods that contain omega -3fatty acids. Such as eggs, and milk, are recommended .

36- Other biologically active substances .

. Fibre

The required intake of fibre is 30-35g Fibre is required to prevent constipation and thus reduce the risk of haemorrhoidal vein disease;reduced the risk for gestational diabetes and pre- eclampsia .

Fibre - rich products contain minerals, vitamin, and other biologically active substances.

The main sources of fibre are whole grain products,legumes,dried and fresh fruits, vegetables, nuts and seeds.

37- Water

The volume of liquid required per day is 2-2.5 L, mostly in the form of water. The volume should be increased gradually as the pregnancy progresses and the expectant mother gains weight.

During the last months of pregnancy, the volume required increased by 300ml/day. The volume depends on the body mass of the woman: the recommended amount of water (*from both food and drink*) is 35ml/kg body weight per day and in no case lower than 1.5L /day. More water **not only ensures the vital functions** but also **reduces the risks for urinary infection, urinary calculi** and **constipation**.

38- Caffeine

Large quantities of caffeine restrict fetal development, and it is recommended that pregnant women **not exceed 200mg/day**. The amount of caffeine in foods and drinks varies; however, **two cups of coffee** or four **small mugs of tea contain** 200mg caffeine. Caffeine containing energy drinks should be **avoided during pregnancy**.

39- Alcohol

Consumption of alcohol during pregnancy is harmful for the fetus . Children heavily exposed to alcohol antenatal may suffer from a number of physical and mental disorders before and after delivery and during their life course . *They have higher risk for impaired growth* and may have neural disorders, resulting in serious learning and behavioral problems Children exposed to smaller quantities of alcohol may develop similar but *milder symptoms*.

40- The consequent of alcohol consumption depend on the period of the pregnancy. During the first 3 months, the risk for structural malformations is increased, where as later , the risk for stunting and abnormal brain development increase. Reduced IQ has been observed in **genetically susceptible** descend and **even after consumption of small quantities** of alcohol during pregnancy.

- 41- **Summary of recommendation.**
- The BNI should be *normal* before conception .
- **During pregnancy the energy requirement increase by as little as 10-15% .But the increase requirement for micro nutrients is the much higher .**
- The diet should be *comprehensive* and **balanced** ,with healthy foods.
- Meal should be distributed regularly through out the day **although the number of meals may vary according to needs.**
- The amount of protein should be *slightly increase*.

42- Daily calcium intake should be *1000mg* preferable with foods.

- **Mineral and vitamins should be sufficient in a comprehensive diet.**
- **Vegetable, fruits whole grains products, dairy products with low fats .lean meat and oily fishes should contain diet.**
- **Water intake should be sufficient .**

43- *Food contain large amount of saturated fats and high calories sweet and snack should be eaten only frequently and in limited quantities.*

- **Iodized salt should be preferred but consumption should not exceed 5g/day.**
- ***Iodine formulation at 150ug/day, starting from pregnancy planning. And continuing throughout pregnancy & lactating.//***



Thank you
for
your attention