

CHAPTER : 4

PREGNANCY

Symptoms and signs of pregnancy

The gestational period or duration of pregnancy is 9 months and 7 days. The gestational period is counted from the last day of menstrual cycle till the day of childbirth. Human fertilization is the union of a human egg and sperm and the egg is known as fertilized egg. This fertilized egg undergoes quick division and undergoes growth and development. When this fertilized egg gets implanted in the uterus and starts receiving nutrition from mother's placenta then the signs of pregnancy start appearing.

Symptoms and signs of first 5 months

1. A late period
2. Morning sickness- dizziness and vomiting
3. Urge for more sleep- Because of hormonal changes and onset of new activities in the body requires additional rest and sleep.
4. More secretion of saliva- More saliva secretion at the sight of sweet and sour food.
5. Experiencing laziness and lethargy
6. Frequent urination- A growing uterus puts more weight on the bladder leading to frequent urination.
7. The movement of the womb- This is experienced during 16-18th weeks. The mother

can experience the movement of foetus' arms and feet.

8. Enlargement of stomach- Due to growth of uterus stomach too grows in size.

The signs of first 5 months as known by a doctor

1. **Changes in breast-** The size of breasts increases. In the 4th month, nipples and areolas will probably become darker.
2. **Changes in shape, size, and location of uterus-** Uterus become spherical compared to normal shape. The front and middle part of the uterus reaches the umbilicus by the 4-5th month of gestational period.
3. **Signs generated due to presence of a foetus-** The foetus develops by the 4th month and starts movement which the mother can feel. Amniotic fluid increases in the uterus as the foetus grows in size. The heartbeats of the foetus can be heard through a stethoscope.
4. **Vagina turns blue-** From the second month of pregnancy vagina may take on a blue color which increases to its maximum when the time of childbirth approaches.
5. **Changes in skin-** The face of the pregnant lady turns yellow and the skin below eyes and above the lips grow darker in color.

Symptoms and signs of last 5 months-

1. The self-activity of foetus continues while the mobility of foetus increases continuously.
2. The weight of breasts goes on increasing.
3. Due to increase in blood pressure the muscles of legs contract and swell.
4. During the last 2-3 months the pregnant lady may experience difficulty in breathing due to excessive pressure on the diaphragm.
5. Uterine contraction occurs.

Internal physical changes during pregnancy

1. **Changes in metabolism-** The body of the mother require more nutrition, foetus requires more nutrition due to breastfeeding, growth and development in uterus causes metabolic changes. Stomach secretions reduce as a result of which food stays a bit longer in the stomach. Intestinal muscles relax in the presence of progesterone hormone. Constipation, vomiting, nausea are common problems.
2. **Changes in urinary tract-** Blood circulation towards the kidneys increase and so the kidneys have to work more. The glomerular filtration rate increases by 50%, as a result more urea is removed. Because of this, the rate of glucose re-absorption decreases and more glucose is ousted with the urine. Because of excessive progesterone secretion urinary tract swells and grows curvy.
3. **Changes in blood circulation-** Due to increase in blood in the body, the heart has to work more. Volume of tissues increases. The hamoglobin percentage in blood decreases. Blood pressure too increases by the 4-5th month. Due to increase in blood pressure, blood vessels in the legs undergo inflammation.
4. **Respiration related changes-** The growing uterus exerts pressure on muscles as a result respiration becomes difficult.
5. **Hormonal changes-** Adrenocorticol hormones and thyrotropin becomes more active during pregnancy. Corticosterone hormone is secreted in excess from the adrenal glands as result some marks appear on stomach. Breathing becomes shallow due to presence of progesterone hormone in the blood. Thyroid gland too grows in size.
6. **Changes in vascular system-** Due to changes in vascular system, the expecting mother experiences stress, fear, anxiety, headache, etc.
7. **Changes in vaginal tract, cervix and uterus-** Hormones affect the reproductive organs. Estrogen causes the mucosa of vaginal tract thicker and the color turns blue. Blood vessels increases in cervix and cervical connective tissue becomes more receptive.
8. **Changes in abdomen and pelvic joint-** Growth of stomach cause the skin to stretch whereby the skin becomes flexible and breaks. As a result, wrinkles appear on stomach.
9. **Changes in muscular and skeletal system-** Motion of voluntary muscles reduce. Muscles of back and waist stretch. Stress is experienced by the muscles of rectum resulting in swelling of anal veins. This can cause hemorrhoids.

Fertilization

Developmental process starts with fertilization and the zygote so formed as a result of fusion of ovum and sperm, which after a fixed duration forms an entire human, stores the coded genetic information.

Stages of gestational development (figure 4.1)- the period of gestational development is 9 months which is divided into 3 stages-

1. **Zygote formation** – This stage starts with the fusion of an ovum and sperm forming a zygote. It lasts for two weeks. The internal part of zygote undergoes constant cell division as a result the number of cells goes on increasing. After fertilization, for 7-8 days, the fertilized egg floats in the fluid present in mother's uterus. After 10 days, the conceptus adheres to the wall of the uterus which is called implantation. From the first group of cells the body is developed, from the second group of cells umbilicus and placenta develops and the third cell group takes the form of transparent membranes. Inside these membranes the unborn baby develops and grows and stays protected.
2. **Embryonic period** – In this stage the process of development starts. This begins from the third week and continues until the end of the 10th week of gestation. The growing multicellular organism is called embryo. The structural development of the foetus is completed in this period.
 - (a) **Outer membrane**- This is the outermost membrane of the foetus from which hairs, nails, skin, teeth and vascular system of the baby are fabricated.

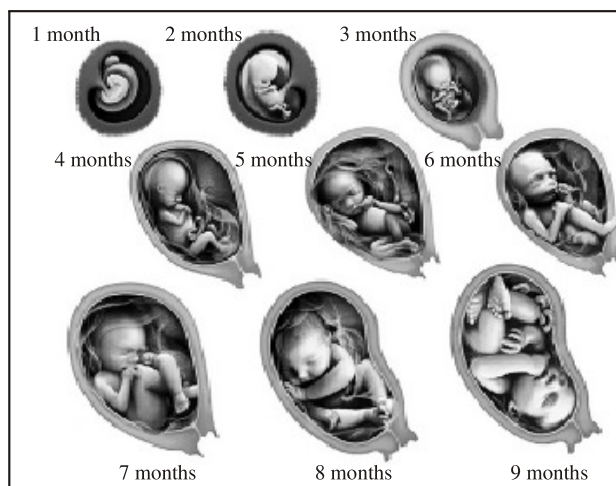


Figure : 4.1 Stages of gestational development

- (b) **Middle membrane**- From this membrane the middle part of skin and muscles are fabricated.
- (c) **Inner membrane**-All the vital organs (lungs, brain, liver, digestive system) are fabricated. With the end of embryonic period the foetus grows up to 1-1/4 inches to 2 inches and has a mass of 15-20 grams. The heartbeat of the baby starts and umbilical cord is developed till the end of this period.
3. **Period of foetus**- This stage is from 3rd month until the baby is born. In this period various organs and muscles of the baby are fully developed and all the organs become functional. Height, size, shape, and weight grow rapidly.
 - 3rd month- In this month the baby looks like a stumpy semicircle. The spinal cord begins to form. The body grows in height and by the end of month hands and feet begin to grow. Pink skin starts forming. The size of the head is 1/3rd that of body and kidneys begin to function. The face too starts developing. External ears, eyelashes are formed and hands continue growing. Height is about 6-8 cm and weight ¾ ounces. Nutrition is supplied by umbilical cord. Uterus grows in size.

4th month- Head grows bigger in size. Hair too begin to grow. Back of the foetus is arched and nails in hands and feet, teeth in gums begin to develop. Reproductive organs also develop in this month. By the end of this month internal organs begin their functions. Height is 11-12 cm and weight grows up to 100-110 grams.

5th month- Heartbeat becomes distinct. Muscles become active thus becoming more functional. Height is 18-20 cm while weight becomes 280-300 grams.

6th month- Soft hair begin to grow on skin and a white cream like sticky, oily fluid called vernix starts depositing on the skin. Mother begins feeling the baby's movements. The eye lashes grow separately. Head grows rapidly. By the end of the month, the foetus grows up to 30-32 cm in height and weight is 600-750 grams.

7th month- The baby is fully developed in this month. Nails in fingers are completely developed. The foetus takes up a single position and activity of the baby decreases. The height grows up to 15-16 inches and weight up to 1.5-2 kg.

8th month- Eyes are fully developed, retina is fabricated, respiration begins and fat on skin and body starts accumulating. The baby attains full maturity.

9th month- Colour of the skin becomes natural. Hair grow. Lips turn thin and pink. Fatty tissues grow quantitatively. By the end of 9th month weight becomes 3.0-3.5 kg and height up to 18-20 inches. Contractions begin at the end of this month. Before birth the baby slowly shifts towards lower part of the uterus.

Factors affecting gestational period

1. Nutrition of expecting mother
2. Health of the mother
3. Consumption of drugs and alcohol

4. Emotional feelings of mother
5. Age of mother-father
6. Attitude of mother-father

Complications of pregnancy

1. Nausea
2. Constipation
3. Chest burn
4. Indigestion
5. Insomnia
6. Hemorrhoids
7. Muscle fatigue
8. Frequent urination
9. Back pain
10. Physical inflammation
11. Vein swelling
12. Vaginal secretions
13. Short breath
14. Anorexia or extreme love for food

Care of pregnant lady

Diet- Diet is of extreme importance during pregnancy. Consumption of balanced diet is best for the health. In this condition, additional food elements (carbohydrates, protein, vitamin, minerals) are also required.

The balanced diet of a pregnant woman should include foods that are rich in carbohydrates, protein, fats, vitamins, minerals (calcium, phosphorus, iron, iodine), water and fiber such as cereals (rice, wheat, millet, barley, maize, ragi, etc), milk, milk products, cottage cheese, pulses, curd, eggs, fish, soyabean, groundnuts, dry fruits, oil, butter, coconut, oil seed, papaya, mango, carrot, green leafy vegetables, jaggery, turnip, turmeric, banana etc.

- Pregnant mother should take short meals 5-6 times a day instead of one or two time full course meals.
 - Spicy, oily, stodgy food
 - Green leafy vegetables, unpeeled fruits, yellow vegetables, salad, milk, buttermilk etc, should make a major portion of the balanced diet.
 - Intake of water should be more.
 - Shelled lentils, bran flour, sprouted grains solve the problem of constipation.
 - Dinner should be consumed 2 hours before the sleeping time.
 - Stale and stodgy food should be avoided.
 - Rest and sleep should be adequate and regular so that physical activities can be carried out easily and blood circulation stays smooth.
 - Light exercise should be done.
 - Fresh air and sunlight should be taken adequately so that mental peace as well as physical health is maintained.
 - Clean body, environment, food, clothes should be maintained.
 - Mental health should be well taken care of. Pregnant mother should remain happy, tension-free, and positive and should go for a walk in open space in fresh air.
3. Growth in self-activity of foetus, increase in weight of breasts, contraction in muscles of legs and uterus etc are some of the symptoms of the last 5 months of pregnancy.
 4. Changes in metabolism, urinary tract, blood circulation, respiration, pelvic joints etc are some of the internal changes in pregnancy.
 5. Three stages of pregnancy- zygote formation, embryonic stage, and foetus.
 6. Nutrition, health of expecting mother, consumption of drugs and alcohol, emotional feelings of mother, age of mother-father affects the gestational development.
 7. Insomnia, hemorrhoids, back pain, inflammation, short breath, constipation, chest burn, vomiting etc are the hardships of pregnancy.
 8. For the good health of baby and herself mother should take a balanced diet.

EXERCISE:**1. Choose the correct option:**

- (i) The gestational period is
 - (a) 10 months 2 days (b) 9 months 7 days
 - (c) 8 months (d) 7 months
 - (ii) The initial symptom of pregnancy is
 - (a) Urge to sleep more
 - (b) late period
 - (c) More saliva secretion
 - (d) frequent urination
 - (iii) Mother gets the indication of foetus' presence in
 - (a) 3rd month (b) 7th month
 - (c) 4th month (d) 6th month
1. The gestational period is 9 months and 7 days. The gestational period is counted from the last day of menstrual cycle till the day of childbirth.
 2. A late period, morning sickness, urge for more sleep, frequent urination, enlargement of stomach etc are some of the symptoms of first 5 months of pregnancy.

IMPORTANT POINTS:

- (iv) The first stage of gestational development is
 (a) Embryonic stage (b) foetus
 (c) Implantation (d) zygote formation
- (v) Implantation in pregnancy is
 (a) Formation of gums in foetus
 (b) adherence of foetus to uterine wall
 (c) Placenta
 (d) formation of organs and muscles
- (vi) In which month is gender decided
 (a) 2nd month (b) 4th month
 (c) 5th month (d) 6th month
- (vii) Factors affecting gestational development
 (a) Nutrition of mother
 (b) attitude of mother father
 (c) Consumption of drugs and alcohol
 (d) all of these
- (viii) Weight of child at the time of birth should be
 (a) 2.5-3.0 kg (b) 3.0-3.5 kg
 (c) 5.0-6.0 kg (d) 4.0-4.5 kg
- (iv) Due to increase in —————, blood vessels in the legs undergo inflammation.
- (v) Presence of ————— hormone causes relaxation of intestinal muscles.
- What are signs and symptoms of first 5 months of pregnancy?
 - What are the internal changes during pregnancy?
 - What are the changes in blood circulation during pregnancy?
 - What is zygote formation?
 - Explain in detail embryonic stage.
 - Explain stages of development during gestation period.
 - Write in detail the factors affecting the gestational development.
 - How can care of a pregnant mother be taken? What are the hardships of pregnancy?

ANSWERS**2. Fill in the blanks**

- (i) The shape of uterus becomes———— compared to a normal woman's uterus.
- (ii) During pregnancy, after implantation foetus receives nutrition from ————
- (iii) Heartbeat of a foetus can be heard using ————
- (i) b (ii) b (iii) c (iv) d
 (v) b (vi) b (vii) d (viii) b
 - (i) Enlarged (ii) Mother
 (iii) Stethoscope (iv) Blood pressure
 (v) Progesterone