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Pregnancy and Its Complication

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ABSTRACT

Pregnancy is the period from conception to birth. After the egg is fertilized by a sperm and then implanted in the lining of the uterus, it develops into the placenta and embryo, and later into a fetus. Pregnancy usually lasts 40 weeks, beginning from the first day of the woman's last menstrual period and divided into three trimesters, each lasting three months. It include sign and symptoms, stages of pregnancy, nutrients required during pregnancy, complication, risk factor, food safety and things to avoid during pregnancy.

Keyword: Pregnancy, Placenta, Trimester, fertilization, Abortion.

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INTRODUCTION

Pregnancy is the presence of developing offspring in the uterus, an event resulting from Fertilization in which transport of sex cells occurs where sperm cells must reach the upper one-third of the uterine tubes for fertilization under the influence of estrogen during the first half of the menstrual cycle. Pregnancy is the period from conception to birth. After the egg is fertilized by a sperm and then implanted in the lining of the uterus, it develops into the placenta and embryo, and later into a fetus. Pregnancy usually lasts 40 weeks, beginning from the first day of the woman's last menstrual period and divided into three trimesters, each lasting three months. Pregnancy is the time during which one or more offspring develops inside a woman and it is also known as gravidity or gestation.

A multiple pregnancy involves more than one offspring, such as with twins. Pregnancy can occur by sexual intercourse. It usually lasts around 40 weeks from the last menstrual period and ends in childbirth.

Fertilization

i. With the aid of the acrosomal enzyme, the sperms cells erode away the corona radiate and zona pellucida surrounding the secondary oocyte, and one sperm cell penetrates the egg cell membrane.
ii. When penetration occurs, changes in the egg cell membrane and zona pellucida prevent the entry of additional sperm cells.
iii. Fusion of egg and sperm nuclei completes fertilization.
iv. Fertilization results in a diploid zygote. [1]

Sign and symptoms:

i. Bleeding from birth canal(vagina)
ii. Sharp pain in tummy
iii. Feeling dizzy on like you night faint
iv. Loss of consciousness
v. High fever
vi. Chills or rash after had a fever
vii. Vomiting or throwing up a lot
viii. Feeling more sad, worried or angry than usual
ix. Crying a lot [2]

Stages of pregnancy:

Pregnancy lasts about 40 weeks. Counting from the first day of your last normal period. The weeks are grouped into three "trimesters".

- First trimester
- Second trimester
- Third trimester

First trimester:

Figure 1: First stage of pregnancy

During the first trimester body undergoes many changes. Hormonal changes affect almost every organ system in your body.

i. Extreme tiredness
ii. Tender, swollen breasts. Your nipples might also stick out.
iii. Upset stomach with or without throwing up (morning sickness)
iv. Cravings or distaste for certain foods
v. Mood swings
vi. Constipation (trouble having bowel movements)
vii. Need to pass urine more often
viii. Headache
ix. Heartburn
x. Weight gain or loss [3]

Second trimester (week 13-week 28):

Figure 2: Second stage of pregnancy

During the second trimester abdomen will expand as the baby continues to grow. And before this trimester is over, feel baby beginning to move.

As body changes to make room for growing baby, you may have:

i. Body aches, such as back, abdomen, groin, or thigh pain
ii. Stretch marks on your abdomen, breasts, thighs, or buttocks
iii. Darkening of the skin around your nipples
iv. A line on the skin running from belly button to pubic hairline
v. Patches of darker skin, usually over the cheeks, forehead, nose, or upper lip. Patches often match on both sides of the face. This is sometimes called the mask of pregnancy.
vi. Numb or tingling hands, called carpal tunnel syndrome
vii. Itching on the abdomen, palms, and soles of the feet Swelling of the ankles, fingers, and face.[3]

Third trimester (week 29-week 40):

Figure 3: Third stage of pregnancy

During third trimester many women find breathing difficult and notice they have to go to the bathroom even more often.

Some new body changes might notice in the third trimester includes:

i. Shortness of breath
ii. Heartburn
iii. Swelling of the ankles, fingers, and face.
iv. Tender breasts, which may leak a watery pre-milk called colostrum.
v. Your belly button may stick out
vi. Trouble sleeping
vii. The baby "dropping", or moving lower in your abdomen

viii. Contractions, which can be a sign of real or false labor. [3]

NUTRIENTS:

Energy:

Energy (calories) is needed for the growth and development of the baby. Most women do not need to have any additional energy above their normal needs until the final stage of pregnancy (weeks 27-40).Energy is provided by the fat, carbohydrate, protein and alcohol in the foods and drinks we consume, but the main source of energy should be from carbohydrate foods such as Potatoes, rice, pasta, bread, other grains and starchy root vegetables such as yam. [4, 5]

Protein:

Protein is needed for the growth and repair of tissues, but more is needed in pregnancy. Protein is found in a wide variety of foods including cereals, dairy foods such as milk, yoghurt and cheese, meat, fish, poultry, nuts, seeds, eggs, peas, beans and pulses. [5, 6]

Fiber:

Fibre in the diet helps to prevent constipation and other bowel problems. Fibre is found in the indigestible parts of foods such as in wholemeal cereals and vegetables, beans and fruits. Oligosaccharides are a component of dietary fibre and these encourage the growth of bacteria which are beneficial to the gut. Eating a good mixed diet will encourage these good bacteria to thrive, and there is no need to take a supplement Which contains prebiotics or probiotics to do this. Good sources of fibre include wholemeal bread, wholegrain breakfast cereals, peas, beans, lentils, vegetables, fresh and dried fruit and seeds. [6]

Carbohydrates

Carbohydrates and fats provide energy and other nutrients and pregnant women need to have them in the same proportions in the diet as for all adults. If the ideas for meals and snacks in this guide are followed, these will be consumed in about the right amounts. [7]

Vitamin A

Vitamin A is needed for eye health, cell growth and to support the immune system. Extra vitamin A is needed during pregnancy, but too much of the animal form of vitamin A (retinol) can be toxic. 700 micrograms of vitamin A a day are recommended. Safe sources of vitamin A can be found via carotenoids in some types of fruits and vegetables. Fish is a good source of vitamin A. Some types of animal products such as liver and liver pâté or liver sausage have high

Levels of vitamin A and should be avoided. [7, 8]

Folic acid

Folic acid is important before pregnancy and in the first few weeks of pregnancy to prevent neural tube defects, and in later pregnancy to prevent a particular type of anaemia. 400 micrograms a day are recommended. Women should take a supplement of folic acid But good sources of folic acid should also be included in any healthy diet. [8]

Calcium

Calcium is important for bone health and, although calcium needs are increased in pregnancy, the body adapts to ensure more calcium is absorbed, so higher intakes are not needed. 700mg of calcium a day is recommended for women. The exception to this is for teenagers in pregnancy where additional calcium is needed for the teenagers' own growth. [7, 8]

Iron:

Iron is important for the production of red blood cells and it supplies oxygen to the cells. Pregnant women are recommended to have 14.8mg of iron a day. Low iron status in pregnancy is associated with low birth weight babies and premature birth. All pregnant women will be screened at antenatal booking-in to see if they need to take an iron supplement in pregnancy.

Encourage women to have this simple blood test if you think they might be anaemic. Good sources of iron include red meat, fish, peas, beans and lentils, and leafy vegetables. [8]

Iodine:

Iodine helps regulate metabolism and plays an important role within the thyroid in controlling many body processes. Pregnant women are recommended to have 140 micrograms of iodine a day. [8]

Food Safety:

i. Wash your hands before, during, and after you handle food.
ii. Wash the skin of all raw vegetables and fruit well.
iii. Cook meat, poultry, seafood, fish, and eggs well. Hot dogs and
    a. Deli meats should be heated until steaming hot.
iv. Check "best before" dates on food packages. Do not eat the food after that date has passed.
v. Raw fish and food made with raw fish (for example, sushi).
vi. Fish liver oil.
vii. Raw seafood such as oysters and clams.
viii. Undercooked meat, poultry, and seafood.
ix. Unheated hotdogs and deli meats.
x. Patés, meat spreads, smoked seafood, and fish products that are not in a can.

xi. Foods made with raw eggs, or that contain eggs that are not fully cooked.

xii. Unpasteurized milk and foods made from unpasteurized milk.

xiii. Soft cheeses made from unpasteurized milk such as brie, camembert,

a. Feta, goat cheese, queso blanco, and blue cheese.

xiv. Juices that are not pasteurized, such as unpasteurized apple cider.

xv. Raw sprouts, especially alfalfa sprouts and bean sprouts.

xvi. Fish that is high in mercury

xvii. Do **not** eat more than 1 serving (75g) of liver every 2 weeks. [9,10]

Things to Avoid:

i. Pesticides (used for killing insects).

ii. Mercury (in some fish).

iii. Lead (for example lead paint).

iv. Asbestos (in some home insulation).

v. Solvents (in some paints).

vi. Extreme heat (for example hot tubs and saunas).

vii. Plastics.

viii. X-rays

ix. Some cleaning products.

x. Smoking

xi. Alcohol [10,11]

Complications and management of pregnancy:

Pregnancy is one of the most profound times in a woman's life. Complications can occur that cloud the experience and put the woman and her unborn child at risk. These complications include bleeding in early or late pregnancy, hyperemesis gravidarum, pregnancy-related hypertension, gestational diabetes mellitus, preterm rupture of membranes, and preterm labor and birth.[12]

Ectopic Pregnancy:

Ectopic pregnancies occur when the ovum is fertilized by the sperm but implants outside the uterus in the fallopian tubes, cervix, ovary, or abdominal cavity. Most ectopic pregnancies occur in the fallopian tubes.

Management:

An ectopic pregnancy implanted in a fallopian tube requires either pharmacologic or surgical management. Pharmacologic management with methotrexate is indicated if the tube is

enraptured, the ectopic pregnancy is less than 3.5 cm, the fetus is not living, and the patient is stable thermodynamically. Often, patients require more than one dose of methotrexate for effective treatment. [13, 14]

HYPEREMESIS GRAVIDARUM:

Nausea and vomiting occur normally during pregnancy. However, nausea and vomiting that persists beyond the 20th week of gestation and interferes with the intake of food and fluid as well as adequate weight gain during pregnancy is termed *hyperemesis gravidarum.*

Management:

When diagnosing hyperemesis gravidarum, it is important to investigate the underlying causes of nausea and vomiting. These causes can include gastroenteritis, pancreatitis, hepatitis, peptic ulcer disease, and pyelonephritis. Patients usually require intravenous fluids and antiemetic's to manage hyperemesis. While most care for hyperemesis is provided in the patient's home, some patients may require hospitalization for nutritional support via enteral or parenteral access. [15, 16]

PREGNANCY-RELATED HYPERTENSIVE COMPLICATIONS:

Gestational hypertension,

It refers to hypertension occurring for the first time during pregnancy. Diagnosis of gestational hypertension requires a blood pressure that is greater than or equal to 140/90 mm Hg. The diagnosis is made after 20 weeks' gestation and is characterized by a blood pressure that returns to normal by 12 weeks postpartum. Patients with gestational hypertension do not present with proteinuria, which is a characteristic of preeclampsia. However, gestational hypertension may progress to preeclampsia. If gestational hypertension does not progress to preeclampsia, it is reclassified as transient hypertension.

Management:

Medical treatment for patients with pregnancy-related hypertension greatly depends on the severity of hypertension and the gestational age of the fetus, as well as the potential risk to the patient and fetus. During early pregnancy, outpatient management is usually appropriate; these patients are monitored at home for blood pressure and proteinuria. Regular fetal monitoring is necessary to evaluate fetal well-being. In addition, placental perfusion tests can also be performed to assess and monitor uteroplacental sufficiency. , antihypertensive medications may be administered to decrease blood pressure, thereby prolonging fetal growth in utero. Glucocorticoids are administered to enhance fetal lung maturity. Healthcare practitioners may prescribe magnesium sulfate (MgSO4) during labor and delivery to prevent seizures. Magnesium

sulfate is not used to control hypertension. Magnesium sulfate is administered intravenously via an infusion delivery device during delivery and for 24 hours post-delivery.[17]

GESTATIONAL DIABETES MELLITUS:

Gestational diabetes mellitus occurs with the onset of pregnancy and is characterized by the inability of the pregnant patient to tolerate glucose. Patients who develop gestational diabetes may develop diabetes later in life. However, gestational diabetes often resolves after delivery. The cause of gestational diabetes is largely unknown. However, it is believed that as the fetus grows, glucose demands increase for the pregnant patient.

Management:

Patients with gestational diabetes should consume a diet that provides 30 kcal/kg/day. Furthermore, patients with a body mass index greater than 30 kg/m2 may benefit from a 30%–33% caloric restriction. Besides proper diet and exercise, some patients may require insulin or oral hypoglycemia agents to manage gestational diabetes mellitus. Resistance exercise can help overweight patients with gestational diabetes avoid insulin therapy [15, 16]

AMNIOTIC MEMBRANE COMPLICATIONS:

Premature rupture of membranes

(PROM) refers to the rupture of membranes one hour or more before the onset of labor, whereas **preterm premature rupture of membranes** (PPROM) refers to the rupture of membranes prior to 37 weeks' gestation. PROM and PPROM are often associated with preterm labor and birth.

Management:

The first step in determining the appropriate course of action for patients with PROM or PPROM involves distinguishing amniotic fluid from urine. Fluid is tested using nitrazine paper as well as via microscopic examination for the presence of ferning, Ultrasound examination may be performed to determine the amount of available amniotic fluid after the rupture of membranes. Medical treatment for patients with PROM or PPROM depends on a variety of factors. Gestational age, fetal lung maturity, available amniotic fluid, and etiology must be considered before deciding on treatment. Antibiotics are often administered to treat any infection and to prevent chorioamnionitis. [17]

General risk of pregnancy:

High-risk pregnancy:

Some disorders and conditions can mean that pregnancy is considered high-risk (about 6-8% of pregnancies in the USA) and in extreme cases may be contraindicated. High-risk pregnancies are the main focus of doctors specializing in maternal-fetal medicine. Serious pre-existing disorders

which can reduce a woman's physical ability to survive pregnancy include a range of congenital defects (that is, conditions with which the woman herself was born, for example, those of the heart or reproductive organs, some of which are listed above) and diseases acquired at any time during the woman's life. [17, 18]

Low-risk pregnancy:

A Dutch 2010 research showed that "low-risk" pregnancy in the Netherlands may actually carry a higher risk of perinatal death than a "high-risk" pregnancy. A medical news report observed, "Under the Dutch system of obstetric care, women with low-risk pregnancies are supervised by a midwife in primary care, with the choice of a home or hospital delivery, whereas those with potential complicating factors are supervised by an obstetrician throughout their pregnancy and given a hospital delivery". [17, 18]

CONCLUSION

The existing health system does not adequately meet the needs of pregnant women, particularly for complications of pregnancy and obstetrical emergencies. Three major problems need to be addressed: an absence of links between communities, sub centers, and referral facilities; shortages of equipment and trained staff at referral facilities; and a lack of emergency transport. National government, donors, and nongovernmental organizations must commit to addressing policy barriers to reducing maternal mortality, including efforts to increase resources for health care systems. In pregnancy, Pre-eclampsia occurs in 3% to 5% of all pregnancies, comparable to the prevalence of diabetes mellitus at reproductive age, a well-accepted risk marker for cardiovascular disease. Women with a history of pre-eclampsia have a doubled risk of stroke, cardiac ischemia, or venous thrombosis within 10 to 20 years after pregnancy. They have a four-fold higher risk of hypertension and a three-fold higher risk of type 2 diabetes mellitus. Growing evidence indicates that women with a history of pregnancy complications, including hypertensive disorders of pregnancy, gestational diabetes, fetal growth restriction and preterm delivery are at increased risk for cardiovascular disease later in life. The current hypothesis is that the development of these pregnancy-related complications indicates an inability to adequately adapt to the physiologic stress of pregnancy and thus reveals the presence of underlying cardiovascular susceptibility to CVD. Predicting markers for pregnancy complications like pre-eclampsia, gestational diabetes, preterm birth and fetal growth restriction is actively being studied. As a consequence, the next decade is likely to see a paradigm shift in

early pregnancy screening, which will require substantial changes to current models of antenatal care.

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