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**Complications during pregnancy - epidemiology
and risk factors**

Diploma thesis

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Written Declaration

I declare that I completed the submitted work individually and only used the mentioned sources and literature. Concurrently, I give my permission for this diploma/bachelor thesis to be used for study purposes.

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SUMMARY

Complications of pregnancy are the problems that are associated with pregnancy. The routine problems are common complications, and pose no significant danger to either the mother or the fetus. Serious problems can cause both maternal death and fetal death if untreated.

Estimates from the World health organization in 2001 suggests that complications during pregnancy and childbirth are responsible for the deaths of 515 000 women each year. Sub-Saharan Africa is the area of greatest mortality. The common causes of maternal mortality worldwide are hemorrhage, infections, eclampsia, unsafe abortions and many more.

Ectopic pregnancy occurs in about 1-2% of pregnancies. The incidence has increased the past decades, likely due to increased incidence of salpingitis, improved detection, increased maternal age, tubal sterilization techniques, assisted reproductive techniques, and the use of tubal surgery.

The miscarriage of an early pregnancy is the commonest complication , with one in two conceptions lost before the end of the first trimester. Risk factors for miscarriage include increased maternal age, uterine abnormalities, infections, and chemical agents like tobacco.

Infections during pregnancy is an important threat to both the mother and the fetus. Some are associated with congenital abnormalities, pregnancy loss or preterm birth, like syphilis, toxoplasmosis, and CMV. Other infections may affect the neonate at birth. Examples of these are HSV encephalitis and GBS neonatal sepsis.

Gestational diabetes mellitus occurs in up to 14% of all pregnancies. An increase in the incidence of GDM has been observed. Risk factors for gestational diabetes include previous gestational diabetes , impaired glucose tolerance, Family history of type 2 diabetes, increased maternal age, overweight and cigarette smoking.

Pregnancy induced hypertension affects 5 - 10% of all pregnancies, and affects more often nulliparous women. Severe pre-eclampsia affects about 5:1000 pregnancies. Risk Factors for pre-eclampsia include first pregnancy with new partner, previous pre-eclampsia, high age, obesity, dia BP >80 or proteinuria, and multiple pregnancy.

Antepartum hemorrhage complicates 2-5 % of pregnancies.

The cause of APH is idiopathic in 40% of cases. Other causes may be placental abruption (20- 30% of all cases of APH), placenta praevia (30% of all cases of APH), vasa praevia (Rare), and uterine rupture (Rare).

Preterm birth is a major cause of neonatal mortality in developed countries. Many factors may increase the risk of early labor and premature birth, including multiple gestation, previous preterm labor, cervical incompetence, short inter-pregnancy interval, cigarette and alcohol use, and chorioamnionitis.

Less serious complications or complaints like hemorrhoids, back pain, carpal tunnel syndrome, gastro esophageal reflux, and varicose veins does not pose any treat to the mother or the fetus.

INTRODUCTION

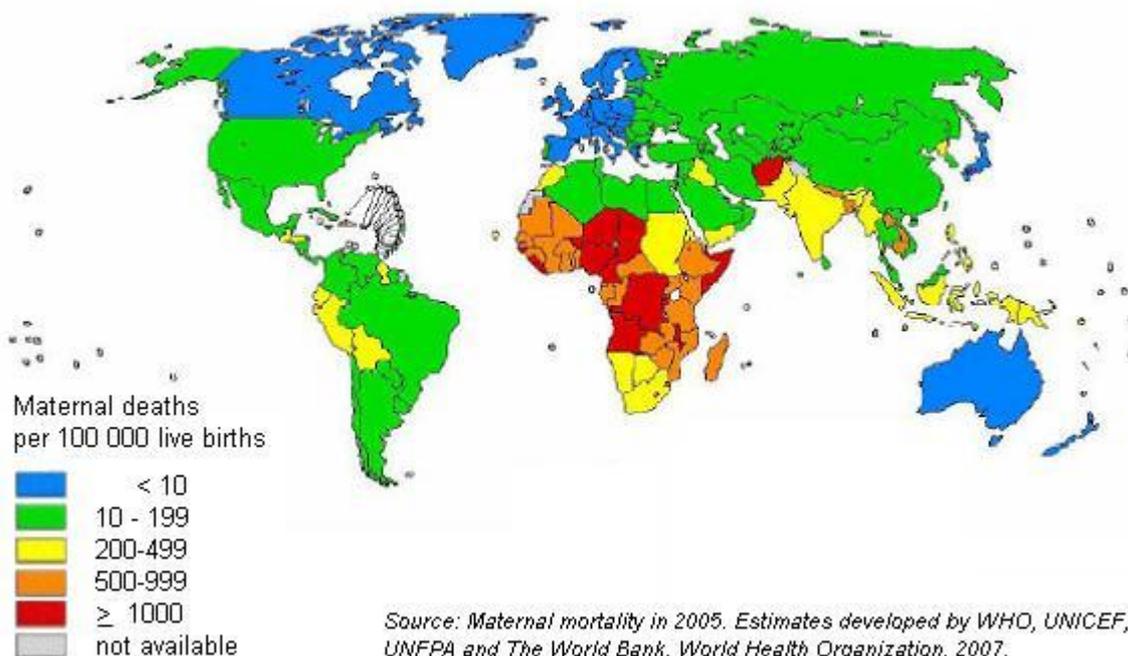
Complications of pregnancy are the symptoms and problems that are associated with pregnancy. They may affect the woman, the fetus, or both and may occur at different times during the pregnancy. There are both minor problems and major, potentially fatal problems. The routine problems are common complications, and pose no significant danger to either the mother or the fetus. Serious problems can cause both maternal death and fetal death if untreated.

Some complications occurs mainly in one part of pregnancy, e.g. miscarriage is most common in the first trimester, others can occur throughout the pregnancy.

Worldwide, childbearing poses a major risk to the life of a woman. Whilst in developed countries it is assumed that childbearing and birth is a safe process, for the majority of women in the world this is not the case. Without any healthcare whatsoever, 2 % of women will die during their pregnancy due to complications. Estimates from the World health organization in 2001 suggests that complications during pregnancy and childbirth are responsible for the deaths of 515 000 women each year. For women in sub-Saharan Africa, the area of greatest mortality, the lifetime risk of dying as a result of childbirth is 1 in 13. ⁽¹⁾

The high incidence of maternal death is one of the signs of major inequity spread throughout the world, reflecting the gap between rich and poor.

Maternal mortality ratio, by country, 2005



A total of 99% of all maternal deaths occur in developing countries, where 85% of the population lives. More than half of these deaths occur in sub-Saharan Africa and one third in South Asia. The maternal mortality ratio in developing countries is 450 maternal deaths per 100 000 live births versus 9 in developed countries. ⁽²⁾

In this review paper I have chosen to divide the complications of pregnancy into major and minor (routine) complications, and I have written about each complication separately with focus on epidemiology and risk factors. I have focused mostly on the pregnancy before the delivery in this thesis, but complications of delivery is also a very important aspect of maternal and perinatal mortality.

As one can see from the paper, many of the complications share certain risk factors. This will be discussed in the conclusion at the end of the paper.

REVIEW OF CURRENT KNOWLEDGE OF THE TOPIC BASED ON THE LITERATURE RESEARCH

MAJOR COMPLICATIONS

4.1 ECTOPIC PREGNANCY

An ectopic pregnancy occurs when the conceptus implants either outside the uterus (e.g. fallopian tube, ovary, abdominal cavity) or in an abnormal position within the uterus (e.g. Cornua, cervix).⁽³⁾

It occurs at a rate of about 1-2% of pregnancies and can occur in any sexually active woman of reproductive age.

The incidence of ectopic pregnancy has increased in the past few decades and is thought to be due to certain factors: increased incidence of salpingitis (usually due to sexually transmitted diseases, such as Chlamydia or gonorrhea), improved ability to detect ectopic pregnancies, popularity of contraception that predisposes, the use of tubal sterilization techniques, the use of assisted reproductive techniques, and the use of tubal surgery, including salpingectomy for tubal pregnancy and tuboplasty of infertility.

There is a marked increase in ectopic pregnancy rate with increasing age, from 6.6 per 1000 pregnancies in women aged 15 to 24, to 21.5 per 1000 pregnancies in women aged 35 to 44.

Most ectopic pregnancies occur in women who have had more than one pregnancy. Only 10% to 15% of ectopic pregnancies occur in women who have never been pregnant before.

In the United States, the rates are higher for non-white (about 3 in 100 pregnancies) than for white women.⁽⁴⁾

Risk factors for having an ectopic pregnancy include:

- Increased maternal age
- Many sexual partners
- Use of intrauterine device
- After pelvic inflammatory disease
- After pelvic surgery
- Previous miscarriage
- Endometriosis
- Smoking

Any mechanical or functional factors that interfere with the passage of the fertilized egg to the uterine cavity may be etiological factors for an ectopic pregnancy.

It is believed that the main cause for a tubal implantation of the gestational sac is a low-grade infection, as approximately 50% of women operated on for an ectopic pregnancy have evidence of a chronic pelvic inflammatory disease.

Mortality rate is 0,1%, mostly because of rupture with internal bleeding, which may lead to shock. The death rate from ectopic pregnancy declined markedly from 1970 to 1990. The decrease is likely to be due to improved diagnosis and management.

Rarely ectopic pregnancy can be successfully carried to term – usually abdominal.

4.2 MISCARRIAGE

Defined as termination of pregnancy before 20w (some say 24w).⁽⁴⁾

The miscarriage of an early pregnancy is the commonest medical complication in humans, with one in two conceptions lost before the end of the first trimester. Most conceptions are lost during the first month after the last menstrual period, and are often undetected.⁽³⁾

The risk of pregnancy loss decreases with gestational age, from 25% at 5-6 weeks, to 2% after 14 weeks.⁽³⁾

The most common cause of spontaneous abortion during the first trimester is chromosomal abnormalities (Trisomy, monosomy, triploidy, tetraploidy etc) of the fetus, accounting for at least 50% of sampled early pregnancy losses.⁽⁴⁾

Risk factors include:

- Increased maternal age (i.e. a 40-year-old woman carries twice the risk of a 20-year-old woman)
- Endocrine disorders (diabetes, hypothyroidism, polycystic ovarian syndrome, SLE)

- Uterine abnormalities (i.e bicornuate uterus, endometrial adhesions)
- Infections (i.e CMV, toxoplasmosis, mycoplasma, chlamydia, ureaplasma, salmonella)
- Chemical agents (i.e tobacco, lead, mercury, anaesthetic gases)
- Immunological disorders (i.e antiphospholipid syndrome)

The past obstetric history also influences the risk. The pregnancy loss among primigravidae is 6-10%, whereas the recurrent rate after three or more losses is 25-30%.

4.3 NAUSEA AND HYPEREMESIS GRAVIDARUM

Nausea and vomiting are often more pronounced in the first trimester, but by no means confined to it. It is worse in a molar or multiple gestation, and is probably related to high circulating levels of human chorionic gonadotrophin.

Lacroix and co-workers (2000) found that nausea and vomiting were reported by 3/4 of pregnant women and lasted an average of 35 days. Half had relief by 14 weeks, and 90% by 22 weeks. In 80% the nausea lasted all day. ⁽⁵⁾

In 0,3- 3,0 % of women the nausea and vomiting is severe and unresponsive to simple dietary modification and antiemetics. Hyperemesis gravidarum is defined variably as vomiting sufficiently severe to produce weight loss, dehydration, acidosis from starvation, alkalosis from loss of hydrochloric acid, and hypokalemia. Hyperemesis appears to be related to high or rapidly rising levels of either human chorionic gonadotropin, estrogens, or both, and may explain why this is much more common with female fetuses.

Risk factors include:

- Trophoblastic disease – molar pregnancy
- Multiple pregnancies
- Previous history, or family history of hyperemesis gravidarum
- Nulliparity
- Female fetus
- Maternal obesity

- Age < 30y
- Non -smokers

4.4 INFECTIONS

Infection presents a major challenge to the obstetrician in both developed and developing countries. The extremely high rates of maternal mortality due to puerperal sepsis during the nineteenth and early twentieth century's were mainly due to nosocomial infection, with group A streptococcus being the commonest pathogen. Semmelweis, working in Vienna in the nineteenth century was the first to demonstrate the value of aseptic techniques and hand washing. With improved infection control and intravenous antibiotics, maternal death from sepsis is now rare.

Altered physiology during pregnancy places the mother at additional risk of certain infections. Decreased smooth muscle tone leads to increased vulnerability to pyelonephritis. Shifts in immunity due to helper T-cells may lead to increased susceptibility to intracellular infections, such as tuberculosis, varicella zoster infection, listeria and Chlamydia psittaci.

Neonatal death still occurs from infections such as group B streptococcal meningitis and septicemia, and viral infections such as herpes encephalitis.

Infections associated with congenital abnormality, pregnancy loss or preterm birth:

Syphilis

Syphilis is a sexually transmitted infection caused by *Treponema pallidum*. It is common in many developing countries, where up to 10% of pregnant women may have positive serologic tests.

In the developed world, syphilis infections declined throughout the 1980s and 1990s due to widespread use of antibiotics.

Toxoplasmosis

Toxoplasmosis is caused by *Toxoplasma gondii*, and may be acquired from exposure to cat feces, or from eating undercooked meat.

The prevalence varies according to eating habits in different areas. In France, more than 70 % of pregnant women have been infected and have acquired immunity before pregnancy, whereas in the UK only 10-20 % of women are immune. This is probably due to a high consumption of raw and lightly cooked meat. Germany, the Netherlands and Brazil also have a high prevalence.

Infections during the first trimester of pregnancy are most likely to cause fetal damage, but only 10-25 % of infections are transmitted to the fetus. In the third trimester, 75-90 % of infections are transmitted, but the risk of fetal damage decreases from 65 % in the first trimester to almost zero for those infected near to the time of delivery.

Cytomegalovirus

CMV is a herpes virus and therefore has the ability to establish latency. In the UK, approximately 40 % of women are susceptible when they become pregnant. The incidence of infection in pregnancy is estimated to be as high as 1 in 200 pregnancies, of which around 40 % will result in fetal infection. Infection later in pregnancy is probably more likely to result in fetal morbidity. About 90 % of infected infants are asymptomatic.

Due to the lower seroprevalence of CMV in industrialized countries and higher socioeconomic groups, congenital infections are actually more common in poorer communities, where more women of child-bearing age are already seropositive.

Rubella

In most countries between 70 and 90 % of young adults are immune to rubella, but in some parts of Asia only 50 % are immune. In temperate climates, acquired disease is most common in the spring and early summer. Before the vaccine to rubella was introduced in 1969, widespread outbreaks usually occurred every 6–9 years in the United States and 3–5 years in Europe, mostly affecting children in the 5-9 year old age group.⁽⁶⁾ Since the introduction of vaccine, occurrences have become rare in those countries with high uptake rates.

The congenital syndrome of gregg`s triad occurs most commonly in early pregnancy, the incidence is 50 % following infection in the first month, dropping to 10 % if infection occurs in the fourth month of pregnancy.

Varicella zoster

VZV is another herpes virus. It is transmitted easily from adults with chickenpox or shingles, and 90 % of adults in the UK are immune to chickenpox. Reactivation and shingles can occur during pregnancy but does not pose any threat to the fetus. Pregnant women are more vulnerable and may develop pneumonitis, to which smokers are more prone, and which may be fatal.

VZV can affect the fetus in two ways. If infection occurs prior to 20 weeks gestation there is a small risk of congenital varicella syndrome.

Neonatal chickenpox can occur if the mother is infected from 2 days before to 5 days after delivery. Neonatal varicella may be severe.

Parvovirus B19

In approximately 15 % of parvovirus infections occurring during pregnancy, the fetus becomes chronically infected. This leads to persistent anemia in utero, which may develop into non-immune hydrops fetalis.

Listeria monocytogenes

Listeria is found in sewage, water and mud and can grow in meat, eggs, cheeses etc. Asymptomatic carriage is common, with up to 30 % of healthy people having detectable organisms in the feces. Such carriage is transient. Cooking destroys the bacterium and therefore the risk of infection is greatest with uncooked food.

In the UK, the incidence of listeria infection is approximately 1 in 37000 births.

Listeria infection in the newborn occurs in two forms. The early onset type from in utero infection presents as septicemia within 2 days of birth. The late form presents as meningoencephalitis after the 5th day. Approximately 30 % of babies with early onset disease are stillborn.

Malaria

Malaria is prevalent throughout the tropics, and is a major cause of mortality in both children and adults. Malaria causes about 250 million cases of fever, and approximately one million deaths annually.⁽⁷⁾

Malaria is presently endemic in a broad band around the equator, in areas of America, many parts of Asia, and much of Africa; however, it is in sub-Saharan Africa where 85– 90% of malaria fatalities occur.⁽⁸⁾

Pregnant women are at increased risk of severe manifestations of malaria, infection may trigger a miscarriage or premature labor.

Bacterial vaginosis

This is the commonest cause of vaginal discharge in women of reproductive age. In some populations its prevalence is greater than 50 % , although in the UK it is found in 10-15 % of women.

It is thought to represent a disturbance of the vaginal flora, in which the dominant lactobacilli are overwhelmed by an overgrowth of pre-dominantly anaerobic organisms, including gardnerella vaginalis, bacteroides spp, mycoplasma hominis, and mobiluncus spp.

Many observational studies have confirmed that this infection increases the risk of second trimester loss and preterm birth. It may be the most important cause of idiopathic preterm birth ⁽¹⁾

4.5 GESTATIONAL DIABETES MELLITUS(GDM)

Gestational diabetes is defined as carbohydrate intolerance of variable severity, with onset or first recognition during pregnancy. ⁽⁵⁾

GDM is the most common metabolic complication associated with pregnancy. It occurs in up to 14% of all pregnancies, resulting in approximately 200,000 cases annually in the United States. As the occurrence of T2DM has increased over the past few decades, an increase in the incidence of GDM has also been observed. Between 1994 and 2002, the incidence of GDM doubled. The rise in GDM can likely be attributed to improved screening and diagnostic tools, as well as to the climbing rate of obesity in the U.S. ⁽⁹⁾

No specific cause has been identified, but it is believed that the hormones produced during pregnancy increase a woman's resistance to insulin, resulting in impaired glucose tolerance.

Risk factors for developing gestational diabetes include:

- Previous gestational diabetes , impaired glucose tolerance or impaired fasting glucose
- Family history of type 2 diabetes (1st degree relative)

- Increased maternal age (especially for women over 35 years of age)
- Ethnic background like African-Americans, Afro-Caribbeans, Native Americans, Hispanics, Pacific Islanders, and people originating from the Indian subcontinent
- Overweight, obese or severely obese increases the risk by a factor 2.1, 3.6 and 8.6, respectively
- Previous pregnancy which resulted in a child with a high birth weight (>90th centile, or >4000 g)
- Previous poor obstetric history
- Cigarette smoking
- Polycystic ovarian syndrome

About 40-60% of women with GDM have no demonstrable risk factor.

4.6 HYPERTENSIVE DISORDERS OF PREGNANCY

There exist several hypertensive states of pregnancy:

Gestational hypertension is usually defined as a BP over 140/90, and the development of new arterial hypertension in a pregnant woman after 20 weeks gestation. The BP returns to normal before 12 weeks postpartum.

Preeclampsia: Gestational hypertension, proteinuria (>300 mg/24h) and edema. Severe preeclampsia involves a BP over 160/110 (with additional signs)

Eclampsia: Seizures in a preeclamptic patient.

HELLP syndrome: Hemolytic anemia, elevated liver enzymes and low platelet count .

Chronic hypertension affects 1- 5% of pregnancies.

Pregnancy induced hypertension affects 5 - 10% of all pregnancies. Up to 25% of cases involve primigravidae.

Severe preeclampsia affects about 5:1000 pregnancies.

Eclampsia may affect 5:10000 pregnancies. Almost 50% seizures occur post-partum.

Incidence of HELLP syndrome is reported as 0.2-0.6% of all pregnancies, and 10-20% of women with comorbid preeclampsia. HELLP usually begins during the third trimester, and is more common in Caucasian women over the age of 25. (Padden, 1999). The outcome for mothers with HELLP syndrome is generally good. With treatment, maternal mortality is about 1 percent. However, complications have been observed, including placental abruption, acute renal failure, subcapsular liver hematoma, and retinal detachment. ⁽¹¹⁾

Risk factors for Preeclampsia:

- First pregnancy, first pregnancy with new partner, or >10y since last baby
- Preeclampsia in any previous pregnancy
- Family history of preeclampsia (in mother or sister)
- Age > 40y
- BMI > 35
- Booking BP diastolic >80mmHg or proteinuria >1+ or > 0.3g/24h
- Multiple pregnancy
- Hydatiform mole
- Medical conditions: Pre-existing HT, renal disease, Diabetes Mellitus, Systemic Lupus Erythmatosus, antiphospholipid antibodies, various inherited thrombophilias like Factor V Leiden
- African-american ethnicity

Gestational hypertension more often affects nulliparous women. Because of the increasing incidence of chronic hypertension with increasing age, older women are at greater risk of superimposed preeclampsia. Thus, women at either end of their reproductive age are considered to be more susceptible. ⁽⁵⁾

The incidence of preeclampsia are commonly cited to about 5-10%. ⁽⁵⁾ It usually occurs in the second or third trimester, and after the 32nd week. Some women will experience preeclampsia as early as of 20 weeks, though this is rare.

The single most significant risk for developing preeclampsia is having had preeclampsia in a previous pregnancy.

The relationship between maternal weight and the risk of preeclampsia is progressive. It increases from 4,3 % for women with a BMI less than 19,8 kg/m² to 13,3 % in those with a body mass index greater than 35 kg/m².

In women with twin gestations compared with those with singletons, the incidence of gestational hypertension (13 versus 6%) and the incidence of preeclampsia (13 versus 5%) are both significantly increased.

Although smoking during pregnancy causes a variety of adverse outcomes, ironically, smoking has consistently been associated with a reduced risk of hypertension during pregnancy.

Hypertensive disorders of pregnancy are very much more likely to develop in women who: are exposed to chorionic villi for the first time, are exposed to a superabundance of chorionic villi (as with twins or hydatiform mole), have preexisting vascular disease, or are genetically predisposed to hypertension developing during pregnancy.

4.7 ANTEPARTUM HEMORRHAGE (APH)

Antepartum hemorrhage is defined as bleeding from the birth canal after the 20th week (some use 24th week) of pregnancy, and complicates 2-5 % of pregnancies. Most cases involve relatively small quantities of blood loss, but may still have sequelae relating to poor placental function, intrauterine growth restriction and premature delivery. Some cases are life-threatening. ⁽¹⁾⁽¹²⁾

Antepartum hemorrhage is 3 times more common in multiparous than primiparous women.

Causes may be:

- Idiopathic: 40%
- Placental abruption (abruptio placentae): 20-30%
- Placenta praevia: 30%
- Vasa praevia: Rare
- Uterine rupture: Rare
- Others: Very rare

Placental abruption (20- 30% of all cases of APH)

Normal placenta separates from uterus prematurely and blood collects in between. The incidence is <1%.

Risk factors/causes include:

- High blood pressure (140/90 or greater)
- Trauma (usually a car accident or maternal battering)
- Increasing maternal age and parity
- Smoking, EtOH, cocaine abuse
- Premature or prolonged rupture of membranes
- Short umbilical cord or retroplacental fibroid
- Abruptio in previous pregnancies (10% recurrence risk)
- Amniocentesis

Placenta praevia (30% of all cases of APH)

Insertion of part/all of placenta in the lower segment of the uterus.

Grade I: placenta encroaches lower segment but does not reach the os.

Grade II: reaches cervical os but does not cover it.

Grade III: covers part of the cervical os.

Grade IV: completely covers the os, even when the cervix is dilated.

Risk factors/causes include:

- Prior placenta praevia, LSCS (lower segment caesarian section)
- Multiparous
- Multiple gestations
- Advanced maternal age
- Smoking

Vasa praevia

Bleeding from fetal vessels in the fetal membranes.

The incidence is < 0.3%

The cause may be that the umbilical cord vessels may attach laterally to membranes instead of placenta.

Uterine rupture

Rare but very dangerous for both mother and baby.

Risk factors include:

- Prior uterine surgery including LSCS
- Grand multiparity (A mother who has given birth to more than five babies)
- Trauma
- Excessive oxytocin

- Shoulder dystocia
- Certain types of forceps deliveries

Other causes of antepartum hemorrhage

- Idiopathic in ~40%
- Local causes, e.g. vulval or cervical infection, trauma or tumors
- Inherited bleeding problems are very rare, occurring in 1 in 10,000 women⁽¹²⁾⁽¹³⁾

4.8 PRETERM BIRTH

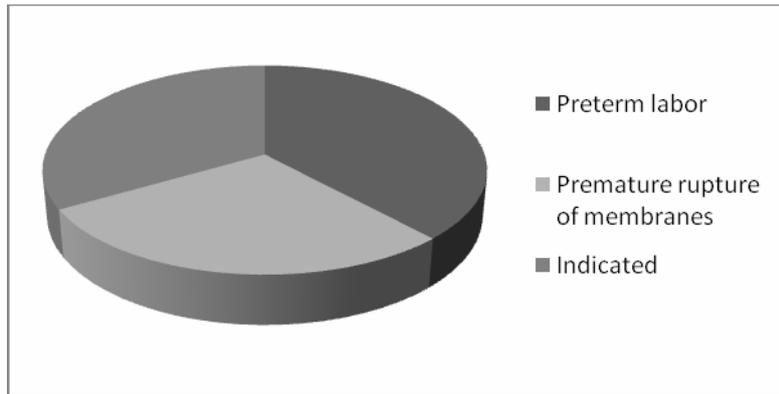
Preterm birth refers to the birth of a baby of less than 37 weeks gestational age. Because it is by far the most common cause of prematurity, preterm birth is the major cause of neonatal mortality in developed countries. The shorter the term of pregnancy, the greater the risks of mortality and morbidity for the baby.

Worldwide, prematurity accounts for 10% of neonatal mortality, or around 500,000 deaths per year.⁽¹⁴⁾ In the U.S. where many infections and other causes of neonatal death have been markedly reduced, prematurity is the leading cause of neonatal mortality at 25%.

Premature infants are at greater risk for short and long term complications, including disabilities and restrictions in growth and mental development.

In Europe and many developed countries the preterm birth rate is generally 5–9%, and in the USA it has even risen to 12–13% during the last decades.⁽¹⁵⁾

Three obstetric events can precede preterm birth. Spontaneous preterm labor make up 40–45% of preterm births, premature rupture of membranes 25–30%, and the remainder, 30–35 %, are preterm births that are induced for obstetrical reasons; obstetricians may have to deliver the baby preterm because of a deteriorating intrauterine environment (i.e. infection, intrauterine growth retardation) or significant endangerment of the maternal health (i.e. preeclampsia, cancer).



By gestational age, 5% of preterm births occur at less than 28 weeks (extreme prematurity), 15% at 28–31 weeks (severe prematurity), 20% at 32–33 weeks (moderate prematurity), and 60–70% at 34–36 weeks (late preterm).⁽¹⁵⁾

Often, the specific cause of preterm labor or premature birth is not clear. Many factors may increase the risk of early labor and premature birth, including:

- Multiple gestation
- Previous preterm labor strongly correlates with subsequent preterm labor. The risk of recurrent preterm delivery for women whose first delivery was preterm was increased threefold compared with that of women whose first neonate was born at term.⁽⁵⁾
- An interval of less than six months between pregnancies
- In vitro fertilization
- Cervical incompetence, asymptomatic cervical dilatation
- Smoking cigarettes, drinking alcohol, using illicit drugs
- Young or advanced maternal age
- Short stature
- Occupational factors such as prolonged walking or standing
- Poor nutrition, poverty
- Bacterial vaginosis, other lower genital tract infections like Trichomonas or Candida.
- Chorioamnionitis. Bacteria are recovered by transabdominal amniocentesis from as many as 20 % of women in preterm labor without clinical signs of infection and intact fetal membranes.⁽⁵⁾
- Some chronic conditions, such as hypertension and diabetes

- Being underweight or overweight before pregnancy
- Stressful life events
- Multiple miscarriages or abortions
- Physical injury or trauma

For unknown reasons, black women are more likely to experience preterm labor and premature birth than women of other races. But preterm labor and premature birth can happen to anyone. In fact, many women who have experienced a premature birth have no known risk factors. ⁽¹⁰⁾

MINOR COMPLICATIONS

4.9 HEMORROIDS

Pregnancy and vaginal delivery predisposes women to develop hemorrhoids because of hormonal changes and increased intra-abdominal pressure.

It has been estimated that 25% to 35% of pregnant women are affected by this condition

4.10 BACK PAIN

Back pain is common, particularly in the third trimester when the patient's center of gravity has shifted. It is experienced by about half of pregnant women.

Certain risk factors can make a woman more prone to back pain during pregnancy: multiple pregnancy, previous back pains, stress, cough because of a cold or smoking, heavy physical work, and psychological factors like depression or anxiety.

4.11 CARPAL TUNNEL SYNDROME (CTS)

Carpal tunnel syndrome occurs in between an estimated 21% to 62% of cases, possibly due to edema.

In pregnant women, CTS may occur in both wrists. CTS that begins during pregnancy is not usually severe and persistent enough to require treatment. Although cases eventually go away on their own after delivery, symptoms may persist for 6 months or more. ⁽¹⁶⁾

4.12 GASTROESOPHAGEAL REFLUX (GERS)

Caused by relaxation of the lower esophageal sphincter and increased transit time in the stomach (normal in pregnancy).

Data on 263 pregnant women were analyzed in a longitudinal study. Incidence of GERS was 25.8% in the first trimester, 24.3 % in the second, and 25.5% in the third. One factor associated with developing GERS in the first trimester was South American origin. A risk factor of GERS in the third trimester was cumulative weight gain during pregnancy. The conclusion of this study was that the incidence of GERS is similar across the three trimesters of pregnancy. ⁽¹⁷⁾

4.13 VARICOSE VEINS

Varicose veins are common during pregnancy. It has been estimated that as many as 40 % of all pregnant women suffer from varicose veins.

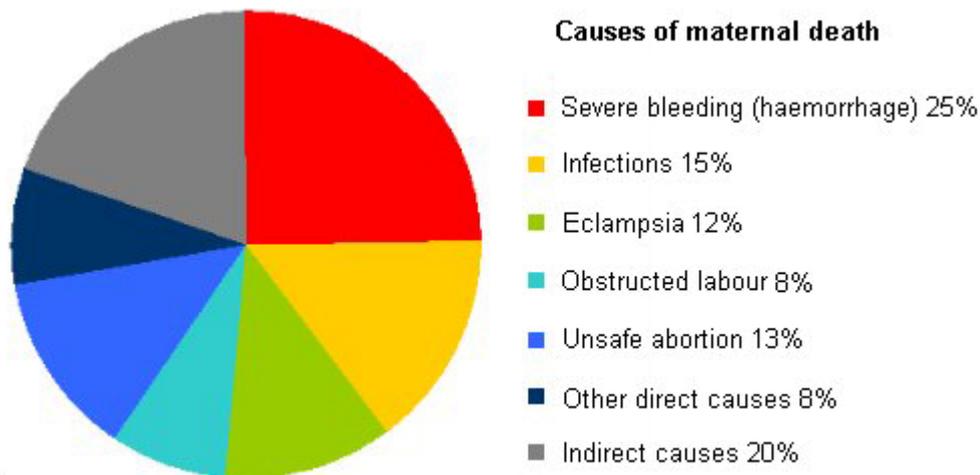
Many women who develop varicose veins during pregnancy had them before getting pregnant. Pregnancy tends to worsen this condition as the uterus places extra pressure on the inferior vena cava, which in turn increases the amount of pressure in the blood vessels of the legs and other extremities.

Risk factors for developing varicose veins during pregnancy are: multiple pregnancy, family history of varicose veins, being overweight, and sitting or standing for longer periods.

CONCLUSION:

Worldwide, childbearing poses a major risk to the life of a woman.

Women die from a wide range of complications during pregnancy, labor or the postpartum period. Most of these complications develop because of their pregnant status and some because the pregnancy aggravated an existing disease.



Source: *The World Health Report 2005. Make every mother and child count.* Geneva, World Health Organization, 2005.

Certain situations, both medical and obstetrical, pose an extra danger to the mother or/and the fetus during a pregnancy. Multiple pregnancy, increased maternal age, smoking, obesity, hypertension, diabetes mellitus and infections are often linked to complications in pregnancy. Good prenatal care can help detect and treat many of these complications.

Multiple pregnancy, where twins make up the vast majority (97-98%), is a major cause of maternal and perinatal mortality. Since the mid-1980`s the incidence of multiple pregnancy has been increasing. Based upon the number of births in the UK in 2001, 7361 twins could have been predicted from the Hellin`s rule. In fact, 8484 were delivered, a 15% increase. The figures for triplets are even more dramatic: 92 sets have been expected, but 211 were delivered. This represents an increase in 130%. Similar but more exaggerated figures are reported from the USA. ⁽¹⁾

Risk factors for multiple gestation include assisted reproduction techniques, both ovulation induction and in vitro fertilization, increasing maternal age, high parity, black race and maternal family history.

Twins account for about 1,5 % of pregnancies, and for more than 10 % of special care baby unit admissions. Perinatal mortality rate in twins is about 6 times higher than in singeltons.

Maternal age at pregnancy has been increasing enormously the last decades for many reasons. For example, higher education is more common among women now than before, and therefore they postpone their pregnancy. The technique of assisted fertility also allows women at a higher age to get pregnant. Increased maternal age

is a major risk factor for many obstetric complications, e.g. ectopic pregnancy, miscarriage, gestational diabetes and preeclampsia.

Obesity is also an increasing problem of women many places in the world, and as it is a risk factor for many other medical problems, it is a risk factor in pregnancy. Incidences of many complications during pregnancy are increased with obesity, e.g. miscarriage, preeclampsia and preterm birth.

More than 90% of the maternal deaths in the world connected to pregnancy could have been prevented if proper care was available.

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