MATERNAL AND CHILD HEALTH

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Objectives:-

1. Health behaviors and health systems indicators that affect the health, wellness, and quality of life of women, children, and families.
2. Factors affecting pregnancy and childbirth, including preconception health status, Age, access to appropriate preconception and interconnection health care, and poverty.
3. Health risks that include hypertension and heart disease, diabetes, depression, genetic conditions, sexually transmitted diseases (STDs), inadequate nutrition, unhealthy weight, tobacco use and alcohol abuse.
4. Social and physical determinants of maternal health.
5. Social and physical determinants of infant and child health.
6. How to improve the health and well-being of women, infants, children, and families.

Q1

- **Which one of the following nutrient deficiency in a pregnant woman can lead to neural defect in her child?**

- A) Iron
- B) Folate
- C) Calcium
- D) Omega 3

Q2

- **Which of the following side effects are associated with maternal smoking during pregnancy?**

- A) Cleft lip
- B) cleft palate
- C) Sudden infant death syndrome
- D) All of them

Q3

- **Which one of the following is considered as a long-term complication of prematurity?**

- A) Breathing difficulties
- B) Infections
- C) Jaundice
- D) Retinopathy of prematurity

Q4

- **Which one of the following is considered as the most common congenital defect?**

- A) Hearing loss
- B) Vision loss
- C) Cleft palate
- D) Spina bifida

Q5

- **Which one of the following is the major cause of maternal mortality in Saudi Arabia ?**

A) Infection

B) High blood pressure

C) Hemorrhage

D) Unsafe abortion

What is maternal health?

Maternal health refers to the health of women during pregnancy, childbirth and the postpartum period.

What is a health indicator?

- Health indicators are: variables that reflect the state of health of persons in a community. (Oxford Dictionary of Epidemiology).

- They inform about the quality of healthcare, and access of health care, and they are considered as quantitative measures.

The 11 indicators of maternal, newborn and child health

- Maternal mortality ratio
- Under-five child mortality, with the proportion of newborn deaths
- Children under five who are stunted
- Proportion of demand for family planning satisfied
- Antenatal care coverage (at least four times during pregnancy)
- Skilled attendant at birth
- Postnatal care for mothers and babies within two days of birth

The 11 indicators of maternal, newborn and child health

- Antiretroviral (ARV) prophylaxis among HIV positive pregnant women to prevent HIV transmission and antiretroviral therapy for [pregnant] women who are treatment-eligible
- Exclusive breastfeeding for six months
- Three doses of combined diphtheria-tetanus-pertussis (DTP3) immunization coverage (12–23 months) video
- Antibiotic treatment for suspected pneumonia

Maternal mortality ratio

- **Maternal death** is the death of a woman while pregnant or within 42 days of termination of pregnancy, irrespective of the duration and site of the pregnancy, from any cause related to or aggravated by the pregnancy or its management but NOT from accidental or incidental causes.

- The **maternal mortality ratio** (MMR) is the **ratio** of the number of **maternal deaths** during a given time period per 100,000 live births during the same time-period.

- **All maternal deaths occurring within a reference period (usually 1 year)**
  x100,000
  Total number of live births occurring within the reference period

Maternal mortality in 1990-2015

WHO, UNICEF, UNFPA, World Bank Group, and United Nations Population Division
Maternal Mortality Estimation Inter-Agency Group

SAUDI ARABIA

Year	Maternal mortality ratio (MMR)[a]	Maternal deaths	AIDS-related indirect maternal deaths	Live births[b]	Proportion of maternal deaths among deaths of female reproductive age (PM %)
	Per 100 000 live births (lb)	Numbers	Numbers	Thousands	
1990	46 [32-67]	270	0	579	5.6
1995	33 [23-46]	190	0	581	4.2
2000	23 [16-34]	130	0	566	2.9
2005	18 [12-27]	100	0	578	2.3
2010	14 [8-23]	84	0	613	1.9
2015	12 [7-20]	72	0	619	1.6

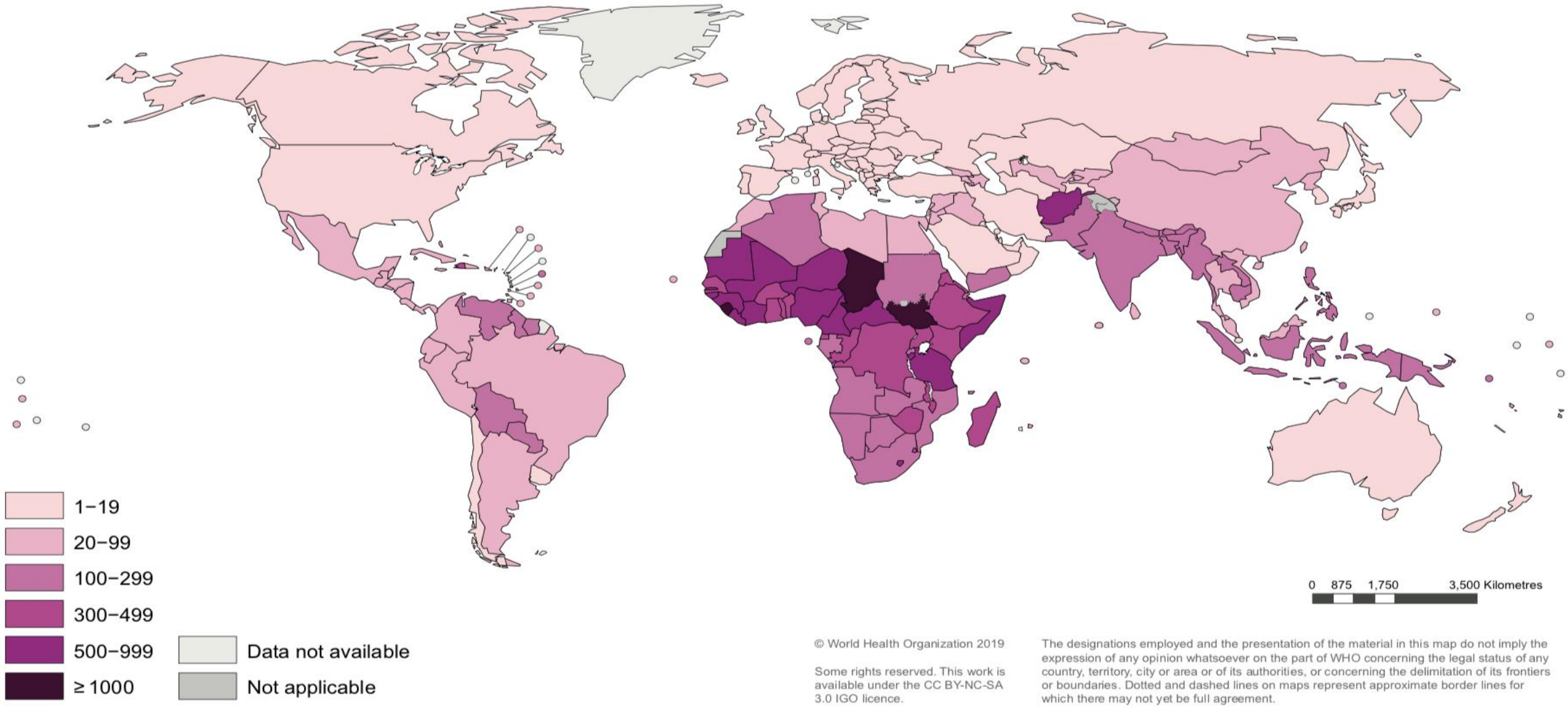
[a] MMR and PM are calculated for women 15-49 years.
[b] Live birth data are from World Population Prospects: the 2015 Revision. New York, Population Division, Department of Economic and Social Affairs, United Nations Secretariat; 2015.

Annual Rate of Reduction	(%)
1990-2015	5.5 [3.7 - 7.5]
1990-2000	6.8 [4.2 - 9.6]
2000-2015	4.7 [2.3 - 7.1]
2005-2015	4.2 [1.4 - 7.1]

- Sub-Saharan Africa and Southern Asia accounted for approximately 86% (254 000) of the estimated global maternal deaths in 2017.

- Sub-Saharan Africa alone accounted for roughly two-thirds (196 000) of maternal deaths, while Southern Asia accounted for nearly one-fifth (58 000).

Figure 4.1. Maternal mortality ratio (MMR, maternal deaths per 100 000 live births), 2017



The designations employed and the presentation of the material in this map do not imply the expression of any opinion whatsoever on the part of WHO concerning the legal status of any country, territory, city or area or of its authorities, or concerning the delimitation of its frontiers or boundaries. Dotted and dashed lines on maps represent approximate border lines for which there may not yet be full agreement.

COUNTRY	2000	2017
KUWAIT	10	12
UAE	6	3
Bahrain	27	14
QATAR	14	9
OMAN	20	19
YEMEN	301	164
EGYPT	64	37

Key facts (WHO)

- **Every day in 2017, approximately 810 women died from preventable causes related to pregnancy and childbirth.**
- **Between 2000 and 2017, the maternal mortality ratio (*MMR, number of maternal deaths per 100,000 live births*) dropped by about 38% worldwide.**
- **94% of all maternal deaths occur in low and lower middle-income countries.**
- **Skilled care before, during and after childbirth can save the lives of women and newborns**

PRECONCEPTION

scenario

- A 36 years old with two sons her youngest son has autism and she wants to have another child but she is scared

Preconception

Defined as:

- Giving protection: against **infectious** diseases, and **congenital** anomalies
- Managing conditions: **DM**, **HTN**, and **STDs**
- Avoiding exposures to teratogenic: **Medications**, **Tobacco** and **Alcohol**

To achieve an **optimal outcome** of pregnancy for mother and child

Access to preconception health care

- Preconception health should be provided **to all women** irrespective of pregnancy plans
- Women are **not likely** to come for preconception care
- Part of routine primary care for women of reproductive age
- Identify modifiable and non-modifiable risk factors

Interconception Health care

Chronic disease profile

Nutritional status

Infectious diseases

Substance use

Medications

Reproductive history

Family/**genetic** history

AGE

Under age 20

- Higher risk of :
  - Prematurity
  - Low birth weight
  - Preeclampsia

Over age 35

- Higher risk of
  - Birth defects
  - Miscarriage
- Risk of developing
  - Hypertension
  - Gestational diabetes

Poverty

- Mothers are likely to face multiple stressful life events
  - Including teenage pregnancies, unemployment, crowded or polluted environments
- Increased risks of
  - Preterm birth, intrauterine growth restriction, and neonatal or infant death
- Delayed cognitive development and poor school performance

HEALTH RISKS

Blood pressure

- **Hypertension Lead to:**
  - Decreased blood flow to the placenta
  - Placental abruption
  - Premature delivery
- **Preeclampsia -** new-onset **hypertension** in later pregnancy

  associated with **proteinuria** (usually closer to term)
- Preeclampsia increase risk of CVD
- Safer medications

Heart disease

- Blood volume & heart rate increase
  - **Cardiac Output** increase during pregnancy
- Women with **heart failure** may be advised an early therapeutic abortion
- Heart failure can cause **premature labor**

Pre-existing Diabetes

- Pre-pregnancy assessment
  - Glycemic and Blood pressure control
  - Weight and diet advises
  - Access complications
- Higher risk of:
  - Maternal complications
  - Congenital anomalies
  - Neonatal complications (Metabolic disorders)

Oral hypoglycemic should be **discontinued** and **insulin** started

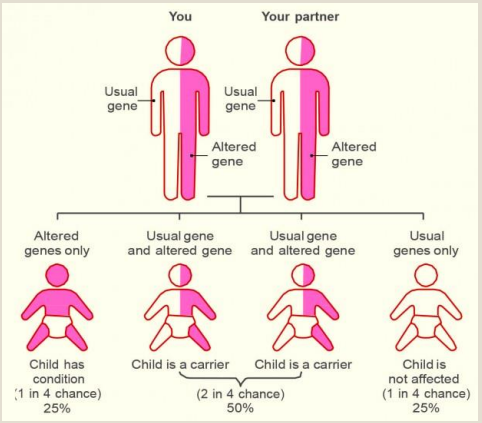
Gestational Diabetes

- **Can cause**
  - Big baby (may need to induced labour or a caesarean section)
  - Premature labour
  - Preeclampsia
  - Stillbirth

Depression

- **14-23%** of women struggle with depression during pregnancy
- **Untreated can lead to**
  - Poor nutrition , drinking, smoking, and suicidal behavior
  - Premature birth, low birth weight, and developmental problems
- Most important step is to **seek help**

Genetic conditions



- **Factors that increase risk of genetic disorder :**
  - Family history
  - Prior child with a genetic disorder
  - Maternal age (35 or older)
  - Multiple miscarriages
- **Teratogenic disorders** exposed to substances during pregnancy
- **Single gene disorders** e.g. cystic fibrosis & sickle cell anemia
- **Chromosomal abnormalities** missing or extra chromosomes e.g. Down syndrome

STDs

Screening for STDs in first prenatal visit for all pregnant women

- **HIV** transmitted during pregnancy, labor and vaginal delivery, or breast-feeding

If **diagnosed before or early** in pregnancy, steps can be taken to **reduce risk** of transmission

- **Hepatitis B.**

Transmission occurs when pregnant women become **infected close to delivery**

  - Infants should be treated shortly after birth

Nutrition

Overweight Mother

- likely to be diagnosed with:
  - gestational diabetes
  - preeclampsia

Underweight Mother

- Deliver
  - Prematurely
  - Underweight child

Nutrition supplements

- **Folic acid -** should take a 400 micrograms every day
  - **deficiency can lead to** neural tube defects
- **vitamin D -** 10 micrograms
- **Iron -** Lean meat, green leafy vegetables, dried fruit, and nuts
  - iron supplements
- **Vitamin C** - variety of fruit and vegetables
- **Calcium -** dairy products and vegetables **(**kale**)**
- All women of reproductive age should be assessed for nutritional adequacy and given a multivitamin supplement

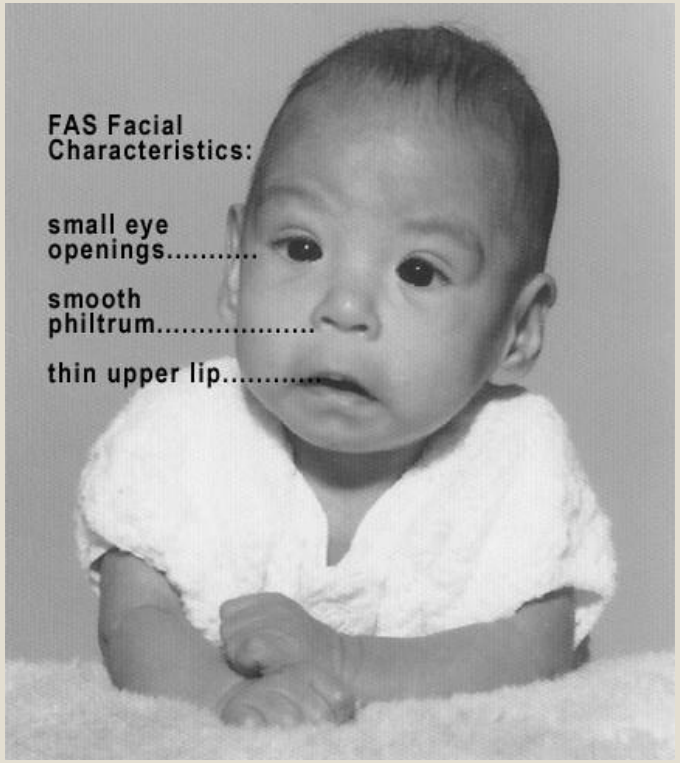
Tobacco

Smoking during pregnancy increases risk of :

- Preterm delivery
- Low birth weight
- Birth defect of the **mouth and lip**
- **Sudden** infant death syndrome

Alcohol abuse

- There is no known safe amount of alcohol
- Fetal alcohol spectrum disorders



SOCIAL AND PHYSICAL DETERMINANTS OF MATERNAL HEALTH

range of biological, social, environmental, and physical factors have been linked to maternal, infant, and child health outcomes.

Race , Ethnicity,, such as income level, educational attainment, medical insurance coverage, access to medical care are considered socioeconomic factors.

where as age, parity knowledge of services, previous obstetric history **and general health status** are considered as physical determinants

Social and Physical Determinants of Maternal Health

Why it is important?

1-To appreciate factors affecting **the well-being** of mothers, infants, and children and to address them accordingly .

2- **educating patients in a culturally sensitive manner about steps they can take to prevent diseases.**

SOCIAL AND PHYSICAL DETERMINANTS OF CHILD HEALTH

Biological

- **Birth Weight: low birth weight (< 2.5 kg) & high birth weight (> 4 kg)**
- **Age of The Mother : <19 years) or >over 30 years**
- **Repeated pregnancies : risk of miscarriage**
- **Birth Spacing: < 1 year = 2-4 times risk of mortality**
- **Multiple Births: more risk due to low birth weight**
- **Family Size: 3 or more children, more frequent/prolonged illness**

Socio-economic Factors

LOW INCOME COUNTRIES RURAL AREAS

LOW EDUCATION AND NUTRITION

BREAST & FORMULA MILK USE

HEALTH CARE QUALITY

VIOLENCE (WIFE BEATING, INFANTICIDE, CHILD ABUSE)

ENVIRONMENTAL CONDITIONS

Cultural Factors

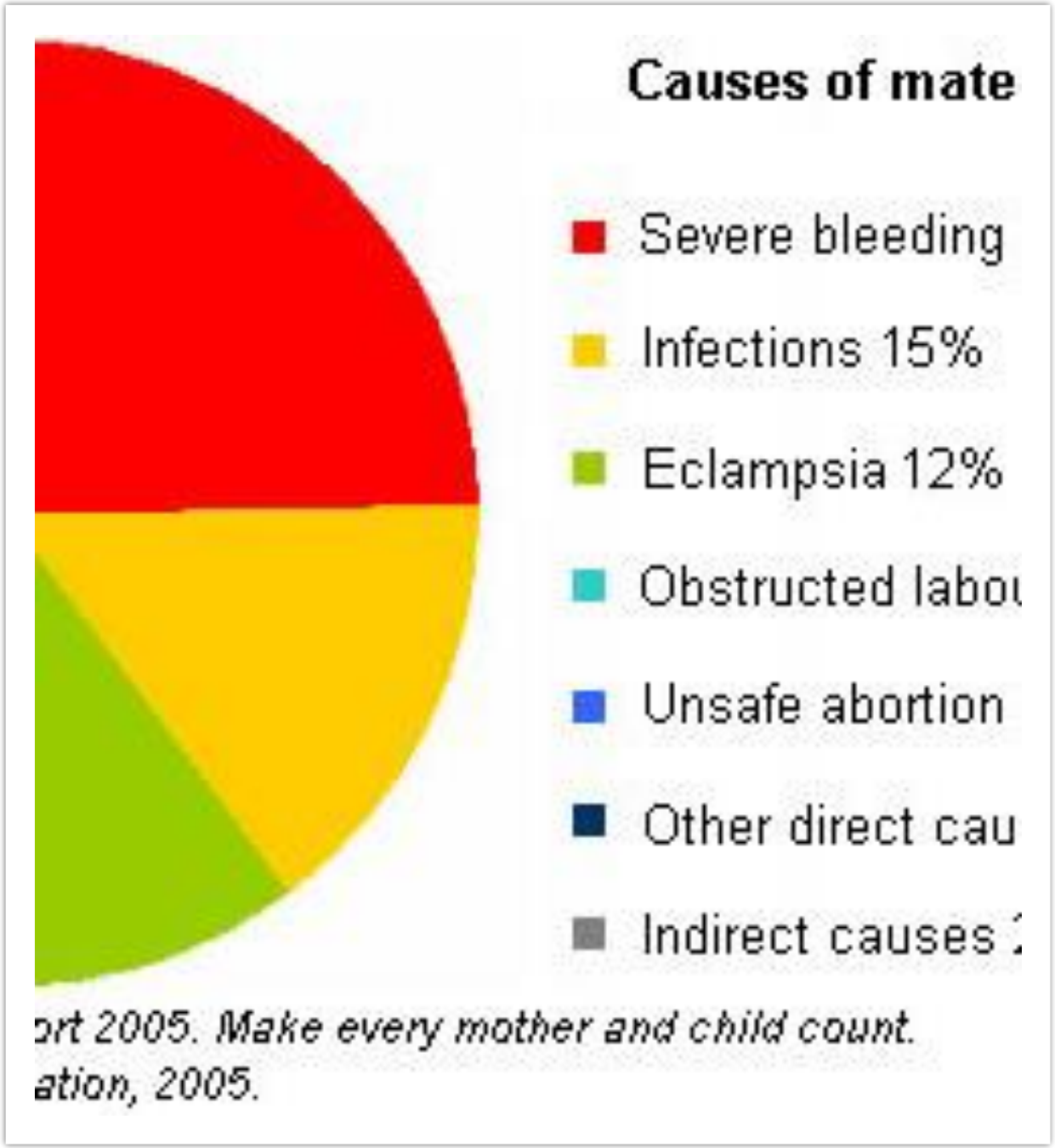
- Religion
- Customs
- Early marriages
- Sex of child
- Quality of mothering Traditions affecting
- cleanliness,
- eating, clothing,
- child care

Do you know that:

- approximately 830 women die every day from causes related to pregnancy and childbirth.

- 5.9 million children under age five died in 2015, 16000 every day.

- With quality health care, many of these deaths could be prevented.



the major reasons of maternal mortality?

Women die from a wide range of complications in pregnancy, childbirth or the postpartum period. The four major killers are:

1. severe bleeding (mostly bleeding postpartum)
2. infections (also mostly soon after delivery)
3. hypertensive disorders in pregnancy (eclampsia)
4. obstructed labor

How to improve the health and well-being of women, infants, children, and families.

First 24 hours : assessment of **vaginal bleeding**, **uterine contraction**, **temperature** and **heart rate** should be done routinely during the **first 24 hours**

Breastfeeding should be assessed

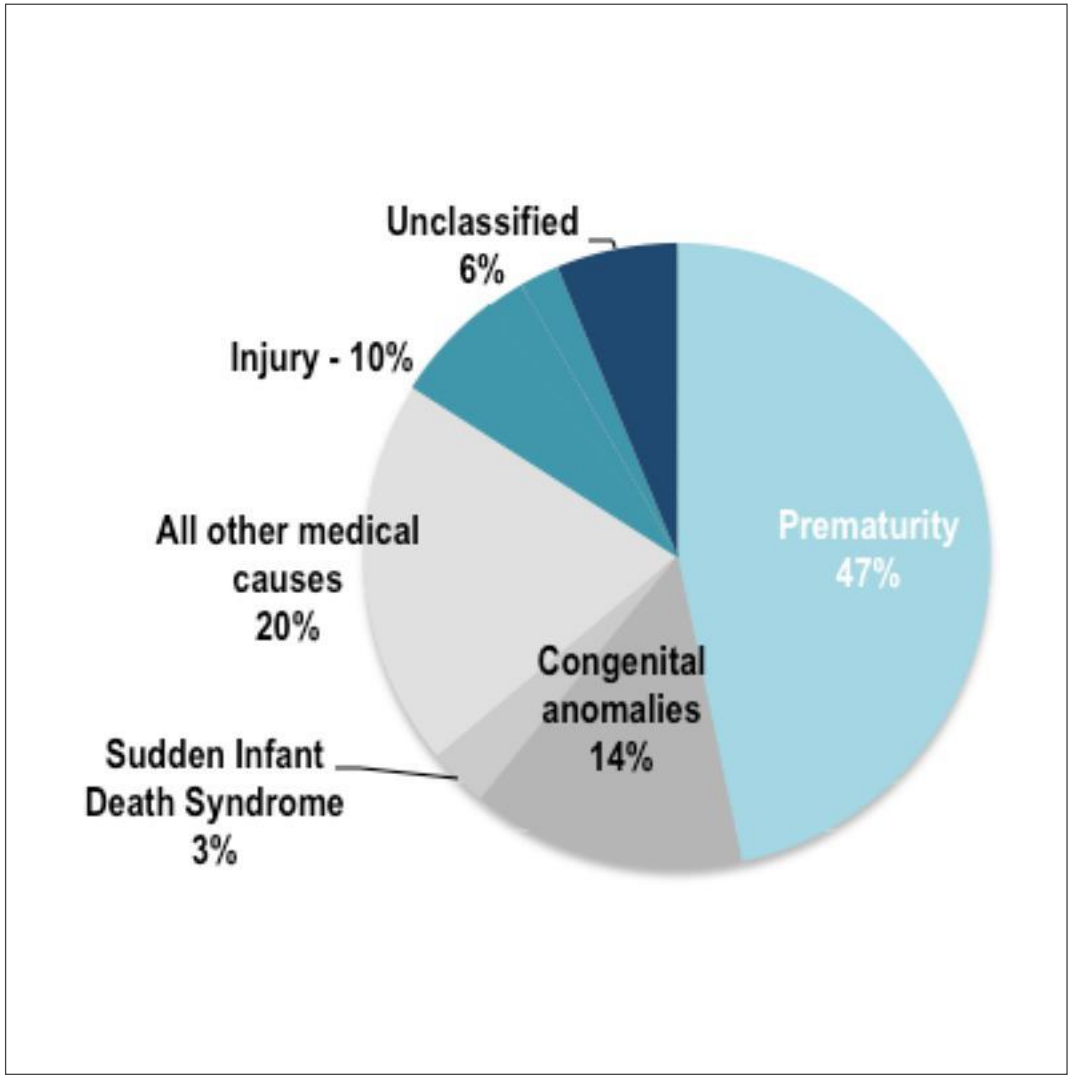
women should be asked about their emotional wellbeing, what family and social support they have

Iron and folic acid supplementation should be provided for at least 3 months after delivery.

Post partum depression

- After **10–14 days**, all women should be asked about postpartum depression

- approximately 10 to 15% of women suffer from postpartum mood disorders (PPMDs), including postpartum depression (PPD), postpartum anxiety/OCD and postpartum psychosis



- for every 1,000 babies that are born, almost 6 die during their first year, 45% of child deaths under the age of 5 years take place during the neonatal period.

- Infant mortality:

Causes:

- Birth defects
- Preterm birth and low birth weight
- Congenital anomalies
- Maternal complications of pregnancy.
- Sudden Infant Death Syndrome (SIDS).
- Injuries (e.g., suffocation).

How to improve infancy health

promote early and exclusive breastfeeding (EBF):

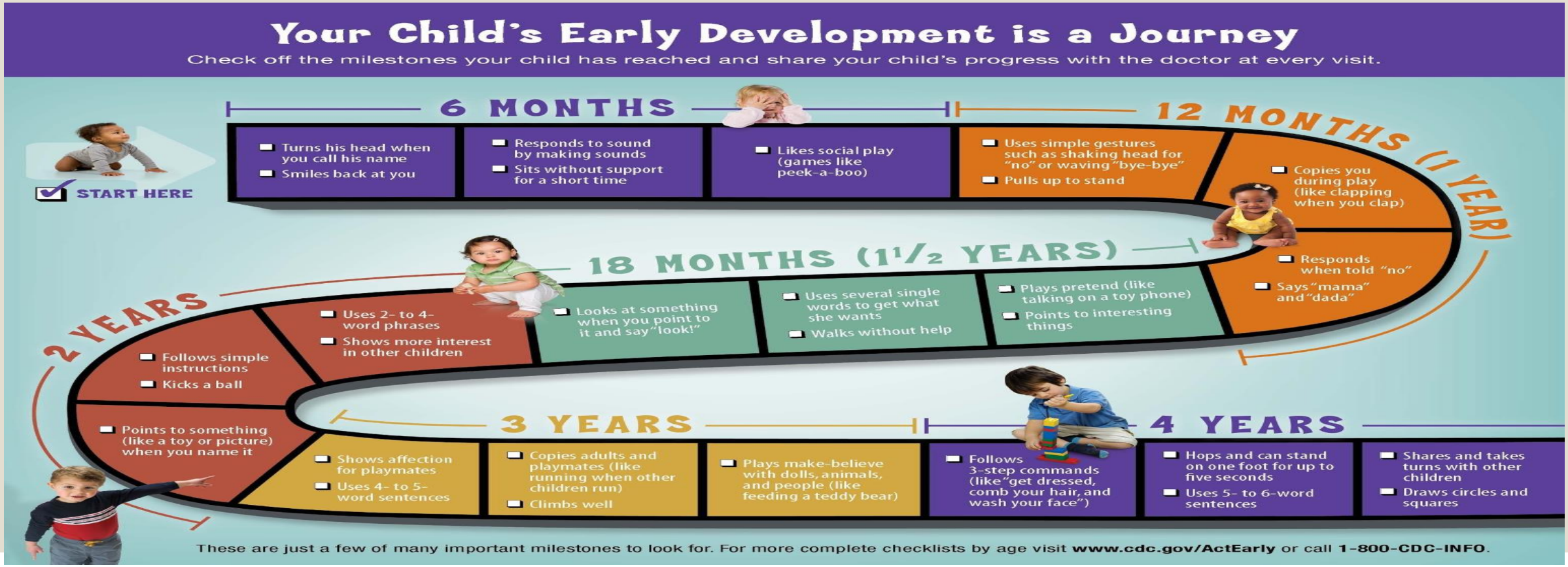
Evidence shows EBF reduces the risks of mortality and morbidity and improves post-neonatal outcomes

Preterm and low-birth-weight babies should be identified as soon as possible and should be provided special care.

A full clinical examination should be done 1 hour after birth. This includes giving **vitamin K prophylaxis** and **hepatitis B vaccination** (within 24 hours).

Milestones

A growth chart is used by pediatricians and other health care providers to follow a child's growth over time.



Childhood Immunization Schedule in KSA

Age:	Vaccines:
At birth	BCG / Hepatitis B
2 Months	IPV /DTaP / Hepatitis B/ Hib/Pneumococcal Conjugate (PCV)/Rota
4 Months	IPV /DTaP / Hepatitis B/ Hib/Pneumococcal Conjugate (PCV)/Rota
6 Months	OPV/IPV /DTaP/ Hepatitis B/ Hib/Pneumococcal Conjugate (PCV)
9 Months	Measles / Meningococcal Conjugate quadrivalent (MCV4)
12 Months	OPV/ MMR/ Pneumococcal Conjugate (PCV)/Meningococcal Conjugate quadrivalent (MCV4)
18 Months	OPV/DTaP/Hib/ MMR/ Varicella/ Hepatitis A
24 Months	Hepatitis A
First class Primary School age	OPV/ DTaP(Td) / MMR/Varicella

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- https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3081498/
- https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4458502/
- https://www.ncbi.nlm.nih.gov/pmc/articles/PMC2528810/
- https://heart.bmj.com/content/85/6/710
- https://www.who.int/health-topics/maternal-health - tab=tab_1
- http://mmr2017.srhr.org/

Thank you for listening