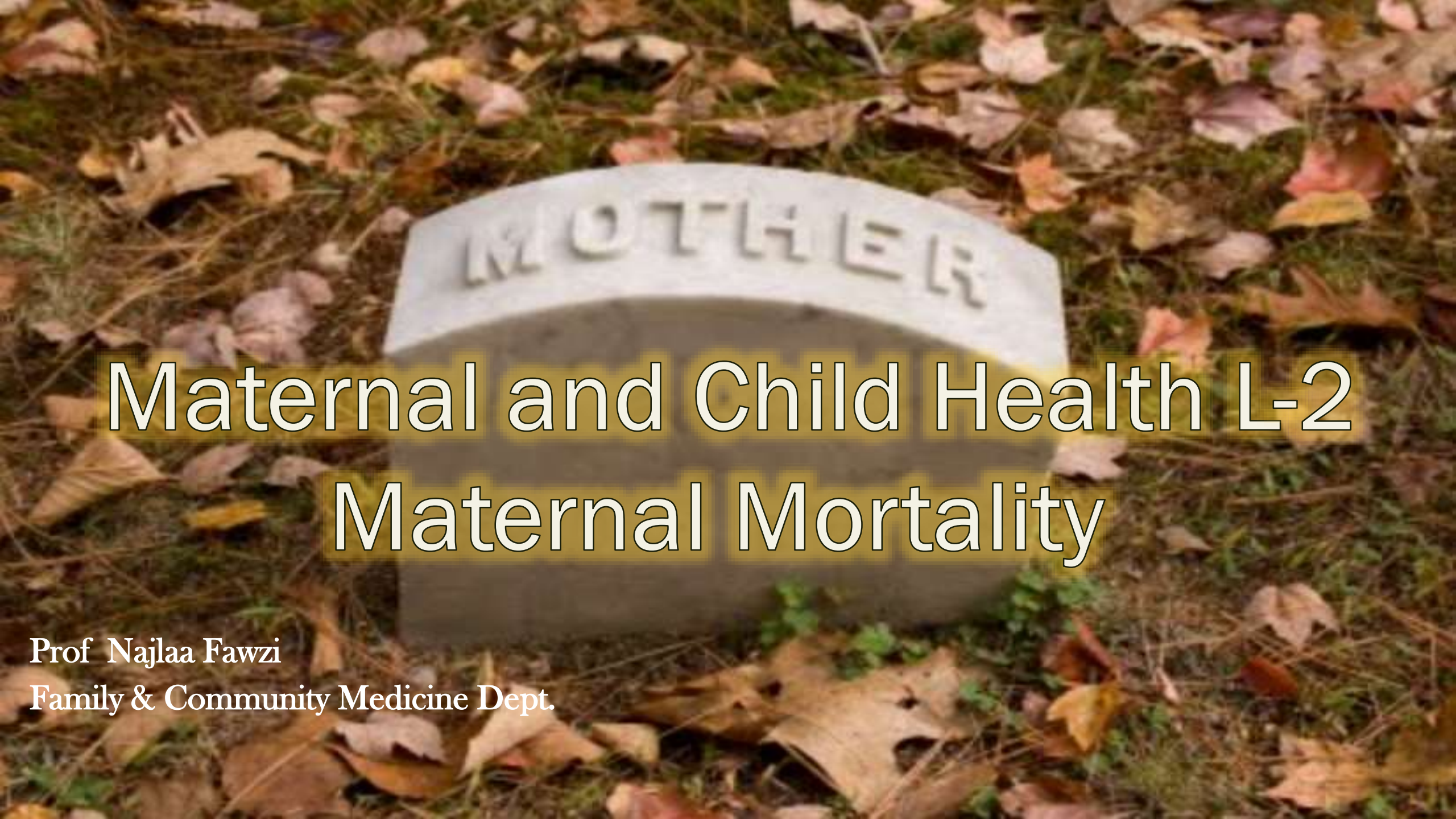

Maternal and Child Health L-2
Maternal Mortality

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MATERNAL MORTALITY

Every day, 830 women around the world die from complications related to pregnancy or childbirth.

In 2020, the global maternal mortality ratio was 152 deaths per 100,000 live births

Objectives :

-Define maternal death

- Describe the three delays model for maternal death

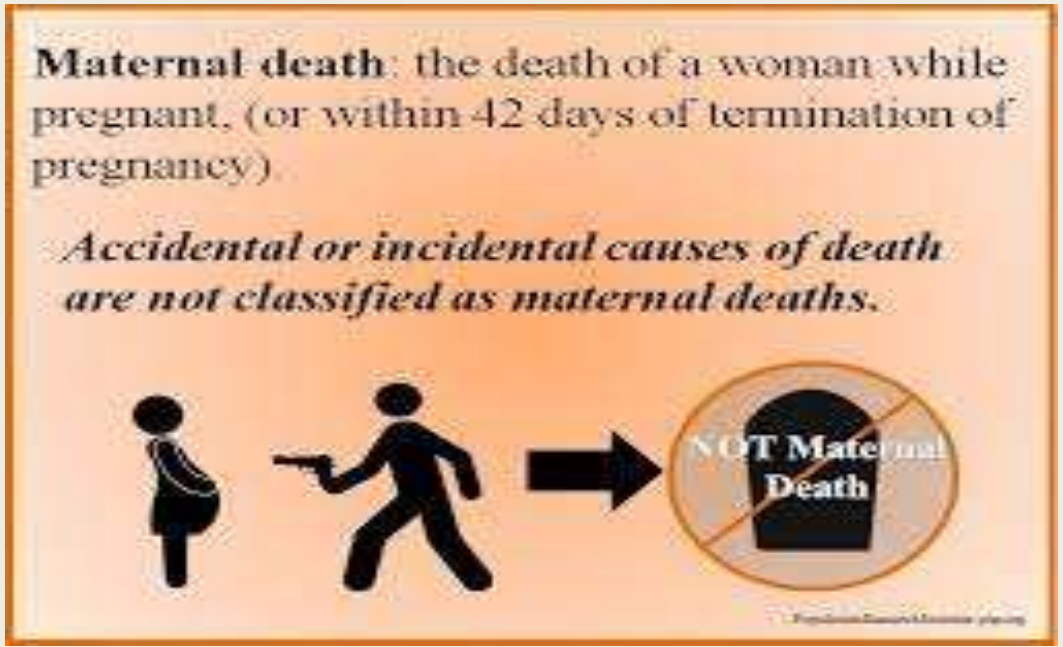
-Identify the causes of maternal death

-Recognize the measures for maternal mortality.

- Recall heads for prevention of maternal death, including Emergency obstetric care (EmOC)

What is a Maternal Mortality?

It is the death of a woman while pregnant or within 42 days of termination of pregnancy, irrespective of duration and site of pregnancy from any cause related or aggravated by the pregnancy or its management and <u>NOT</u> due to any accidental or incidental cause.



WHY DO WOMEN DIE?

Maternal deaths occur when women with life – threatening complications do not have timely access to emergency obstetric care. The delays may occur at one or more stages.

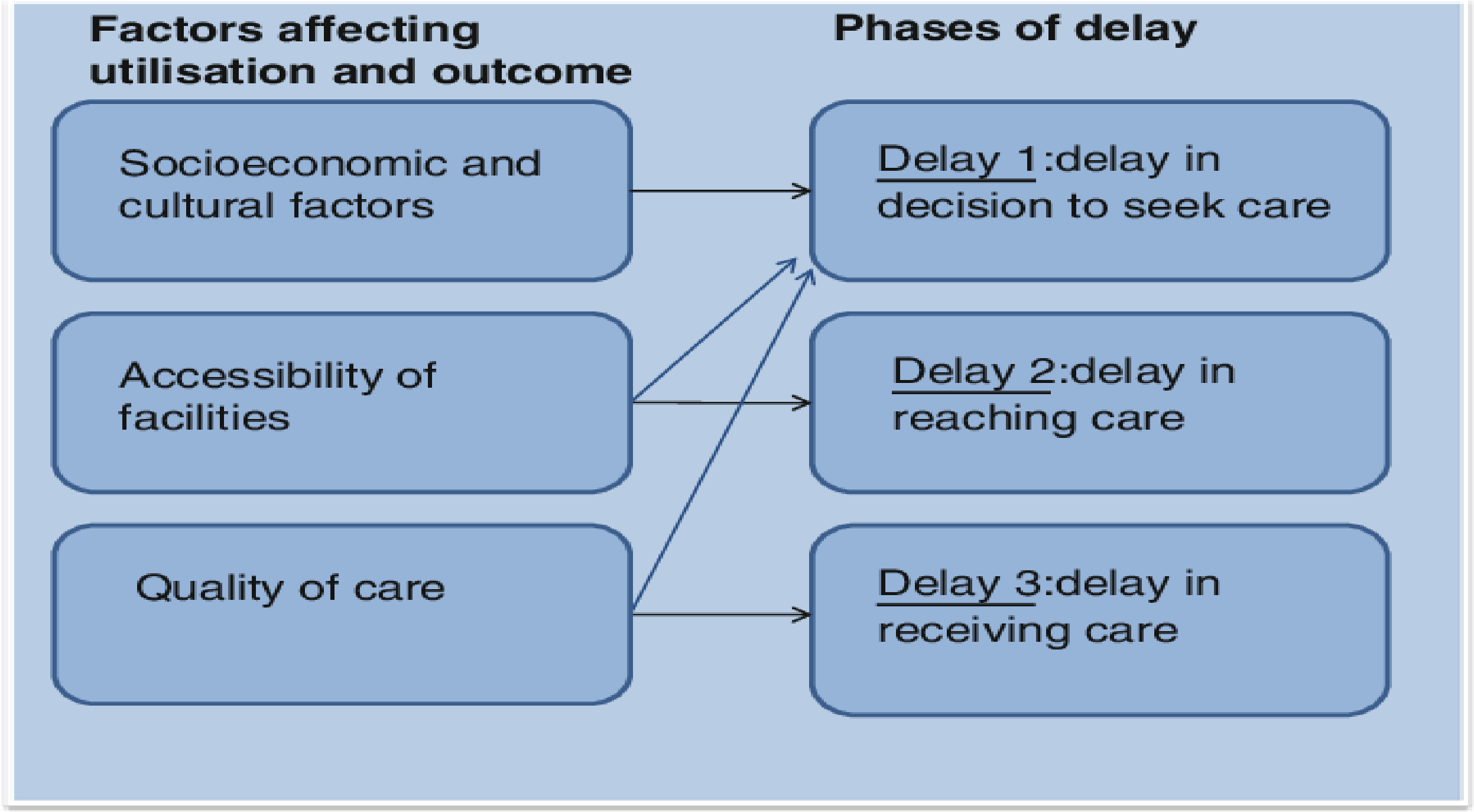
Three Delays Model

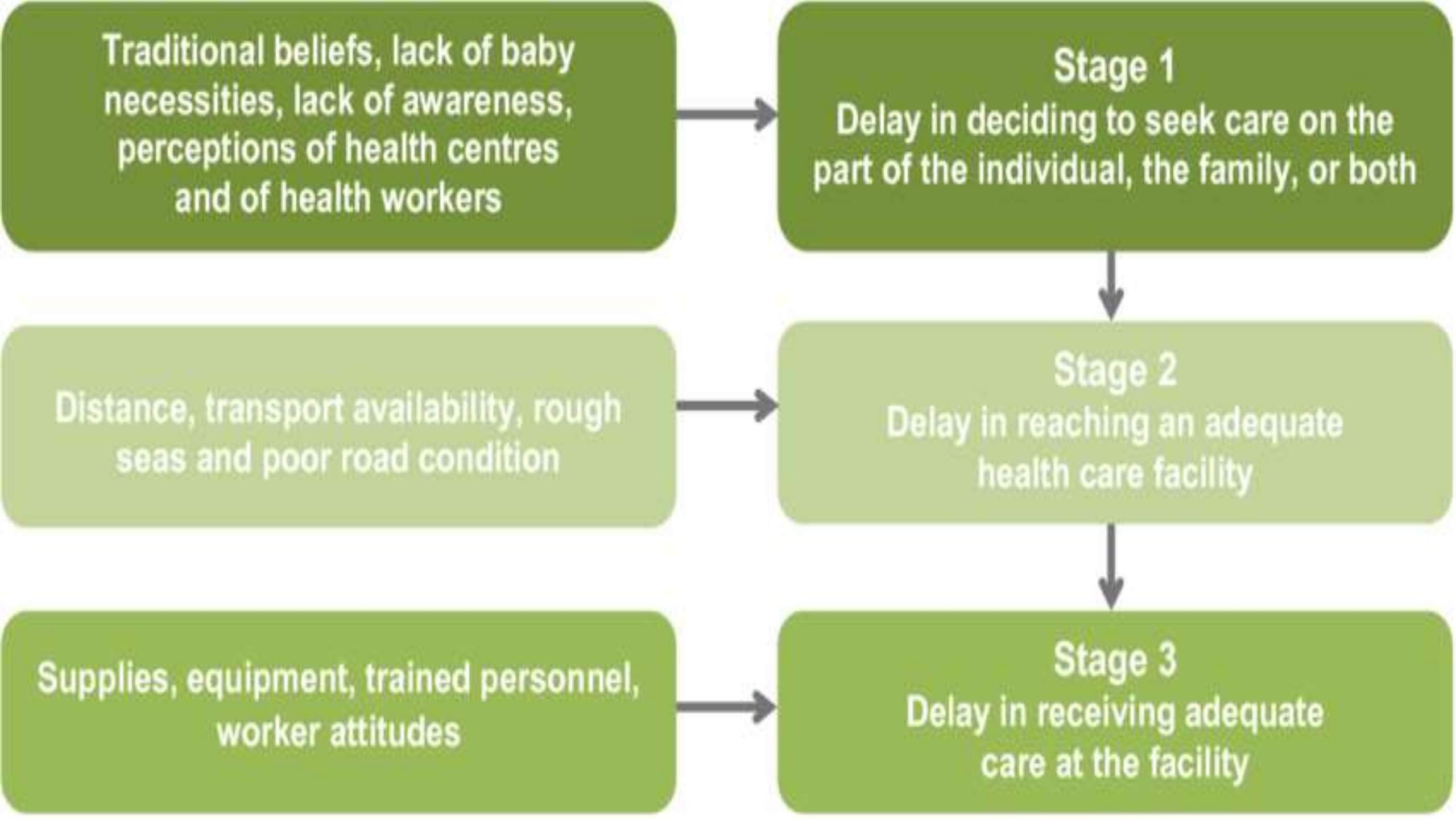
- which identifies three groups of factors which may stop women and girls accessing the maternal health care they need:

Three Delays Model

Source: Operational Guidelines on Maternal and Newborn Health, NRHM, MoH & FW

- **The first delay relates to the decision to seek help during an obstetrical emergency**
- **The second- a delay to receive help**
- **The third- a delay to receive adequate help;**
- **Fourth- a delay to take responsibility/to be accountable for maternal death**


Factors affecting utilisation and outcome
Phases of delay
Socioeconomic and cultural factors
Accessibility of facilities
Quality of care
Delay 1:delay in decision to seek care
Delay 2:delay in reaching care
Delay 3:delay in receiving care


Traditional beliefs, lack of baby necessities, lack of awareness, perceptions of health centres and of health workers
Stage 1
Delay in deciding to seek care on the part of the individual, the family, or both
Distance, transport availability, rough seas and poor road condition
Stage 2
Delay in reaching an adequate health care facility
Supplies, equipment, trained personnel, worker attitudes
Stage 3
Delay in receiving adequate care at the facility

- D1Delay in decision to seek care due to:

1- Lack of understanding of complications

2-Acceptance of maternal death

3-Low status of women

4-Socio-cultural barriers to seeking care

5-Previous poor experience of health care

6-Financial implications

D2

- Delay in reaching an institution that can provide emergency obstetric care [EmOC].Due to

1-Distance to health centers and hospitals

2-Availability of and cost of transportation

3-Poor roads and infrastructure

4-Geography e.g. mountainous land, rivers.

D3 - Delay in receiving adequate health care due to

1-Poor facilities and lack of medical supplies

2-Inadequately trained and poorly motivated medical staff

3-Inadequate referral systems

Solution for D1

- Training community health workers and birth attendants

Solution for D2

- Providing reliable transportation and referral system .

Solution for D3

- Setting up health facilities with trained personnel and equipments.

Women die as a result of complications during and following pregnancy and childbirth.

Most of these complications develop during pregnancy.

Other complications may exist before pregnancy but are worsened during pregnancy.

Factors Identified in maternal mortality are categorized into four groups :

1. Reproductive Factors

2. Obstetric Complications

3. Health Service Factors
4. Socioeconomic Factors

1.Reproductive Factors include

- **Maternal age**

Young adolescents (ages 10-14) face a higher risk of complications and death as a result of pregnancy than other women.

- **Parity**
- **Unwanted Pregnancy**

2-Obstetric Complications

1-Hemmorrhage : APH,PPH, Spontaneous abortion
2- Ectopic pregnancy
3- Multiple pregnancy
4- Puerperal infection
5- Toxemia
6- Obstructed labour
7- Induced abortion

3-Health Service Factors

- **Lack of access to maternity services**
- **Poor medical care**
- **Inadequate trained personnel**
- **Lack of essential supplies :drugs , Instruments .**

4-Socioeconomic Factors

A. Status of women

- Low status
- Gender discrimination
- Unequal opportunity for nutrition , health , education

B. Cultural practice

- Cultural acceptance of large family
- Social status and NO. of children
- Traditional preference for boys

C-Requirement of permission to go to health care facility from husband or mother in law.

CAUSES OF MATERNAL DEATH

Maternal death: the death of a woman while pregnant, (or within 42 days of termination of pregnancy).

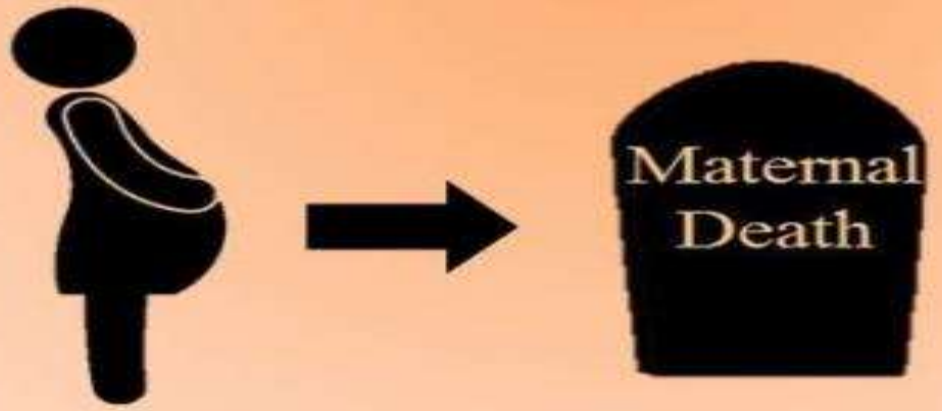
- All maternal deaths are either direct obstetric deaths or indirect obstetric deaths

Population Research Institute: pop.org

Direct Causes of MM

Direct Obstetric Death: those deaths resulting from:

- obstetric complications of the pregnant state (pregnancy, labor and post-partum)
- interventions, omissions, or incorrect treatment
- or from a chain of events resulting from any of the above.



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Deaths due to, for example, hemorrhage, pre-eclampsia/ eclampsia or those due to complications of anaesthesia or Caesarean section are classified as direct obstetric deaths, they are usually due to:

one of five major causes- hemorrhage(usually occurring post partum), sepsis, eclampsia, obstructed labour, or complications of unsafe abortion.

PPH is responsible for approximately 27 percent of all maternal deaths.

Hypertensive disorders are responsible for 14 percent of pregnancy-related deaths.

About 11 percent of maternal deaths are the result of an infection.

Termination of pregnancy accounts for 8 percent of the maternal deaths.

About 3 percent of maternal deaths are due to a pulmonary embolism.

Other Direct Complications

Approximately 10 percent of women die from other direct pregnancy-related issues. Conditions such as placenta previa, uterine rupture, and ectopic pregnancy can lead to complications and death without the proper care and treatment.

In developing countries [¾] of maternal deaths are due to direct causes.

Indirect Causes of MM

Indirect Obstetric Death: those deaths resulting from previous existing disease (or from a disease that developed during pregnancy) and which was *not* due to **direct obstetric causes**, but which was ***aggravated by*** physiologic effects of pregnancy.

Population Research Institute: pop.org

Deaths due to aggravation of an existing cardiac or renal disease, malaria and anemia are indirect obstetric deaths.

On average, [¼] of maternal deaths in developing countries are classified as indirect causes.

According to WHO, In Iraq the main reasons for maternal death are:

- **Poor birth practices**
- **Inadequate referral and emergency obstetric care**
- **High level of anaemia among pregnant women**

The main findings of the survey map of poverty in Iraq, 2012 , about maternal mortality were

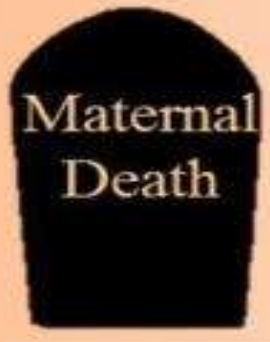
- **Highest percent in age group 31-40**
- **12.4% were prime women , 47.1% had 4+Children**
- **77.6% dead in hospital**
- **53.6% dead during purperium**
- **Cause of death: 24.9% hemorrhage, 18.9% heart disease .**

Measures of Maternal Mortality: the number of maternal deaths in a population is essentially the product of two factors: the risk of mortality associated with a single pregnancy or a single live birth, and the number of pregnancies or births that are experienced by woman of reproductive age.

Maternal mortality ratio: the number of maternal deaths per ***live births***

Numerator: Maternal deaths

Denominator: Live births



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The Maternal Mortality Ratio (MMR)

is defined as the number of maternal deaths in a population divided by the number of live births [per 100000]

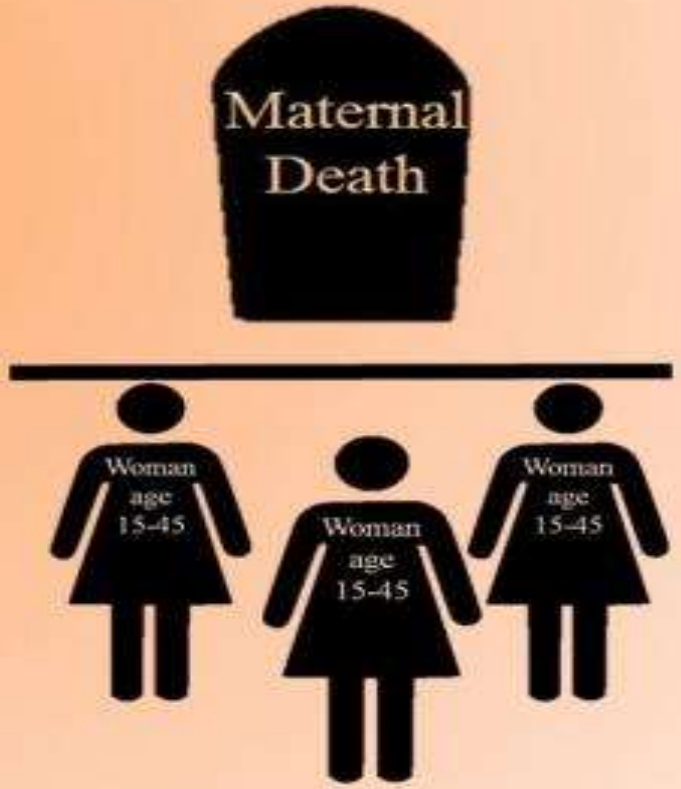
It is representing the risk associated with each pregnancy, it is the obstetric risk.

Maternal mortality rate:

the number of maternal deaths in a given period per population of ***women who are of reproductive age***

Numerator: Maternal deaths

Denominator: Women of reproductive age



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The Maternal Mortality Rate

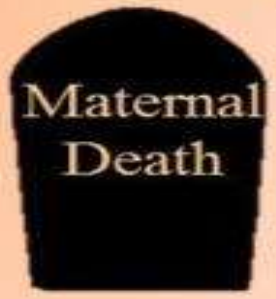
Is defined as the number of maternal deaths in a population divided by the number of women of reproductive age(usually 15-49years)[per 100000]

Measured both the obstetric risk and the frequency with which women are exposed to this risk as well as the level of fertility in the population.

Lifetime risk of maternal death:

The cumulative probability over your whole life of becoming pregnant *and* of dying from the pregnancy.

$$= \text{Summation over all ages of } \left(\text{Age-specific chance of :} \; \times \; \text{Age-specific chance of :} \right)$$



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Adult lifetime risk of maternal death

probability of dying from a maternal cause during reproductive life span, take into account both the probability of becoming pregnant and the probability of dying as a result of pregnancy cumulated across a woman's reproductive years

- **Women in developing countries have on average many more pregnancies than women in developed countries, and their lifetime risk of death due to pregnancy is higher.**

A woman's lifetime risk of maternal death is the probability that a 15-year-old woman will eventually die from a maternal cause. In high income countries, this is 1 in 5400, versus 1 in 45 in low income countries.

Between 2000 and 2017, the maternal mortality ratio dropped by about 38% worldwide.
94% of all maternal deaths occur in low and lower middle-income countries.

Between 2016 and 2030, as part of the Sustainable Development Goals, the target is to reduce the global maternal mortality ratio to less than 70 per 100 000 live births.

Almost half of all postpartum deaths take place within one day of delivery and 70% within 1st week .

Maternal Mortality
Reduction: Targets

- Primary prevention
  - Reduce unwanted pregnancies
- Secondary prevention
  - Reduce obstetric complications
- Tertiary prevention
  - Reduce death after complications occur
  - "3 delays" – decide to seek care, access to care, quality / timeliness of care

Maternal mortality can greatly be reduced by ensuring prompt and quality obstetric care services supported with an equally effective family planning services.

How obstetric care services and family planning services can reduce maternal mortality?

- Family planning services reduces mortality through reduction in proportion in high risk , unwanted , untimed , too early and to many pregnancies.

- Good obsteteric care : reduces mortility and morbidity arising from complications during pregnancy and child birth.

- As many of these complications are unpredectible , may occur at any time during pregnancy , child birth and post partum period

- Therefore every woman , irrespective of her risk status , may require emergancy obstetric care (EmOC)

- **Emergency obstetric care (EmOC) refers to the care of women and newborns during pregnancy, delivery and the time after delivery.**

Women in emergency situations must have access to EmOC, as it is essential to saving lives everywhere in the world.

Components of basic EmOC include:

- **Treatment for sepsis**
- **Treatment for eclampsia**
- **Treatment for prolonged or obstructed labour**
- **Post-abortion care (PAC)**
- **Treatment for incomplete miscarriage**
- **Removal of the placenta**
- **Assisted delivery using forceps or suction**

Comprehensive EmOC services include the services listed above, in addition to:

- ❖ **Surgery (specifically, Caesarean section)**
- ❖ **Anesthesia**
- ❖ **Safe blood transfusion observing universal HIV precautions**

Emergency Obstetric and Neonatal Care

UNFPA

BASIC

- Antibiotics IV
- Oxytocics IV
- Anticonvulsivant
- Manual removal of placenta
- Post abortion care (MVA)
- Assisted vaginal delivery (vacuum extraction)
- Newborn care

COMPREHENSIVE

all Basics plus:

- Surgery (caesarean - section)
- Blood transfusion
- Care to the sick and LBW newborns

Preventing Maternal Deaths

The 5 steps that a physician can take to prevent many maternal deaths are :

1. **Provide good antenatal care.**
2. **Conduct/supervise delivery in clean safe environment by a trained birth attendant.**
3. **Prevent prolonged labor; refer early any delay in labor (in primi gravida beyond 12 hours, and in multi parae delay beyond 8 hours) for appropriate management.**
4. **Provide emergency care on time to women with postpartum bleeding and refer them early to hospital, (good referral system)**
5. **Counsel couples on adopting contraception to avoid unnecessary pregnancies through contraception rather than taking route to unsafe abortion.**

ANY QUESTION ?

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1-Trends in maternal mortality: 2000 to 2017: estimates by WHO, UNICEF, UNFPA, World Bank Group and the United Nations Population Division. Geneva: World Health Organization; 2019.

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