



Maternal mortality

"Tragic situation is that these deaths are not caused by disease but occur during a natural process"

Dr. Bhavna Puwar
Associate Professor

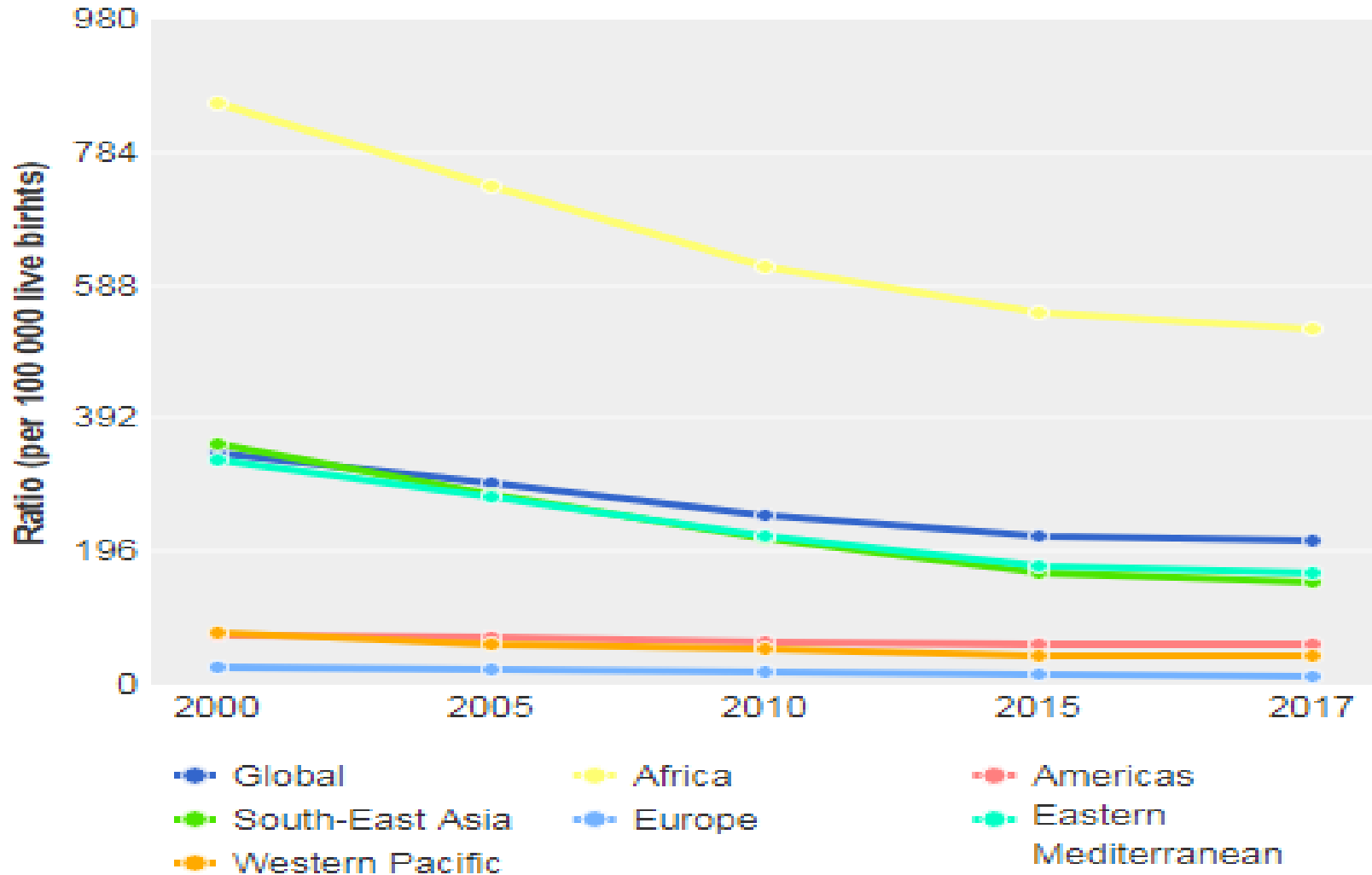
Maternal mortality-Importance

- Mother: Who all?
- Motherhood
- Maternal Health
- Proportion in population(2011 census)- ??
- Vulnerable Group
- Morbidity and Mortality- Due to preventable and treatable causes

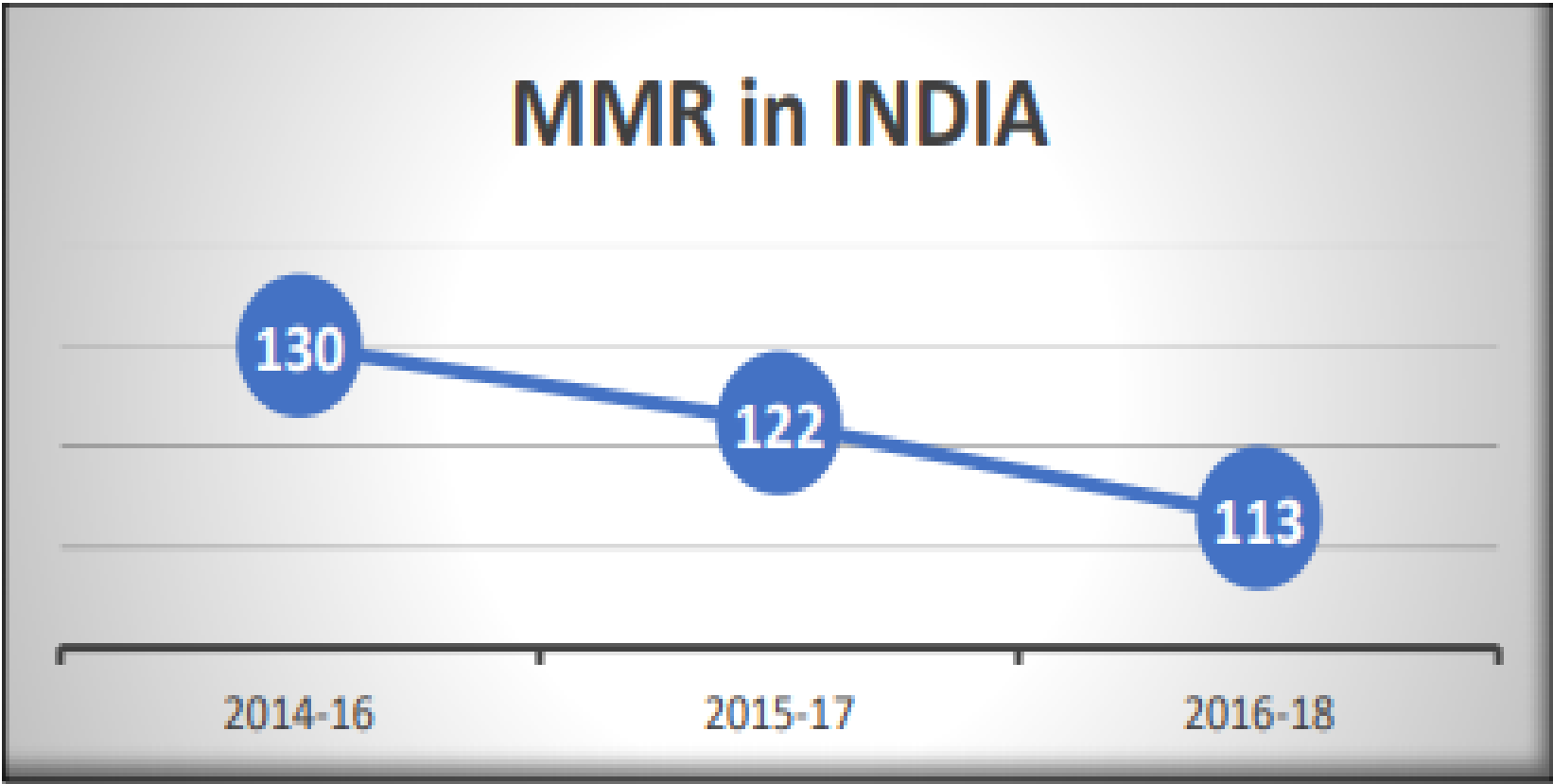
- World:
- Every day in 2017, approximately 810 women died from preventable causes related to pregnancy and childbirth.
- About 295 000 women died during and following pregnancy and childbirth in 2017
- Between 2000 and 2017, the maternal mortality ratio (MMR) dropped by about 38% worldwide.
- 94% of all maternal deaths occur in low and lower middle-income countries.
- 385(1990) to 216(2015)



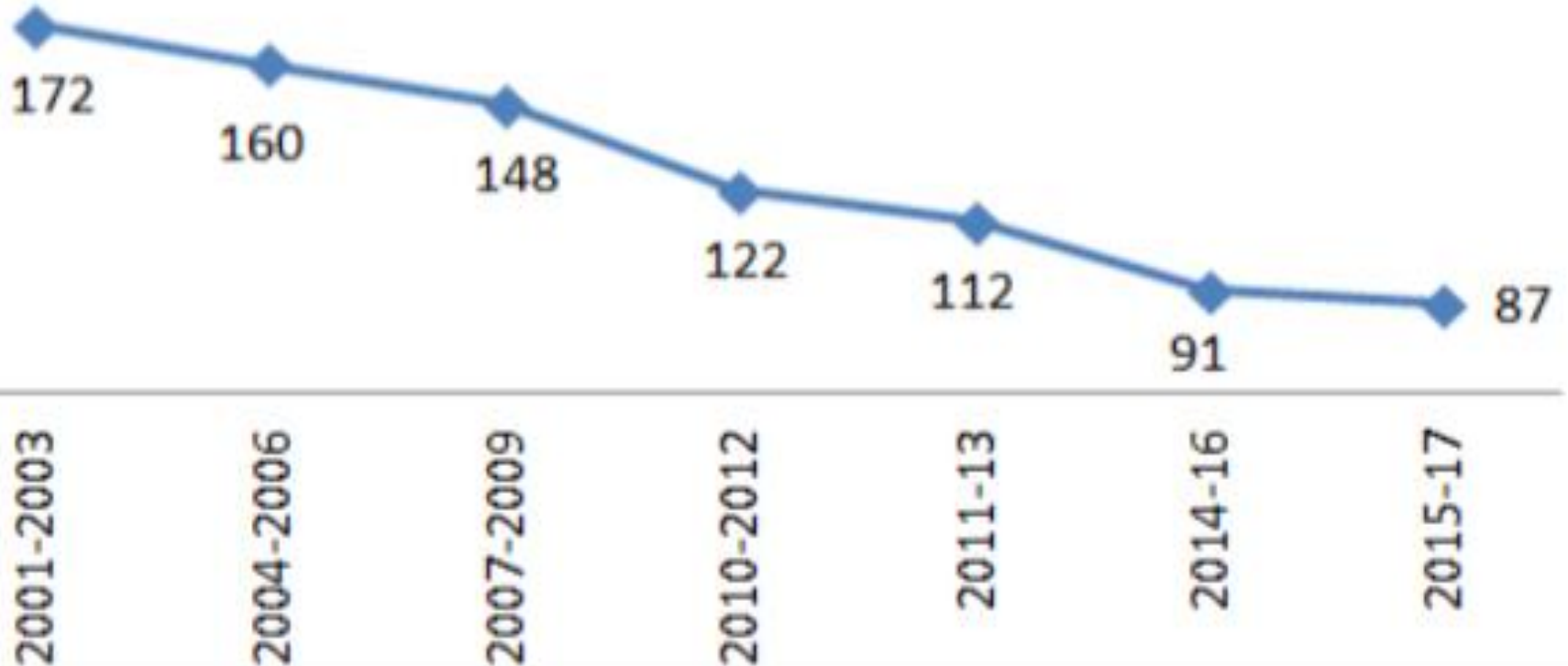
Maternal mortality ratio (maternal deaths per 100 000 live births) Globally and by WHO region, 2000–2017



- **India:** Maternal Mortality ratio
- 437(1990).....167(2011-2013).....
.....130(2014-16)



Maternal Mortality Ratio: Gujarat (SRS)



Source: SRS

2016-18

Gujarat MMR 75,

Kerala 43 and Maharashtra 46 and Assam 215

Maternal Death(WHO)

- Death of a woman while **pregnant** or **within 42 days** of delivery or termination of pregnancy, irrespective of the **duration** and the **site** of the pregnancy from **any cause related to** or **aggravated by** the pregnancy or its management.

- Pregnancy related death
- It is a death of woman while pregnant or within 42 days of termination of pregnancy, **irrespective of cause of death**

- Late maternal death
- Death of woman from direct or indirect obstetric causes more than 42 days but less than one year after termination of pregnancy.

Statistical measures of maternal mortality

1. Maternal Mortality Ratio
2. Maternal Mortality Rate
3. Adult life time risk of maternal death
4. Proportion of maternal death of women of reproductive age
5. ICD Direct and indirect obstetric deaths

Maternal Mortality Ratio:

- Represents the risk associated with each pregnancy
- It is calculated as the number of maternal deaths during the given year per 1000(or100000) live births during the same period.
- **Used for international comparison**

Maternal Mortality Rate:

- Measures both the obstetric risk and the frequency with which women are exposed to this risk.
- Calculated as the number of maternal deaths in a given period per 100,000 **women of reproductive age**

Life time risk of Maternal Death:

- Takes into account both
 - the probability of becoming pregnant and
 - the probability of dying as a result of the pregnancy cumulated across a woman's reproductive years.

1 in 37

1 in 150

1 in 3800

$$\text{Maternal Mortality Ratio (MMR)} = \frac{\text{Number of maternal deaths}}{\text{Number of live births to women}} \times 100000$$

$$\text{Maternal Mortality Rate (MM_rate)} = \frac{\text{Number of maternal deaths}}{\text{Number of living women (15-49 years)}} \times 100000$$

$$\text{Lifetime Risk of Maternal Death} = 1 - (1 - \text{MM_rate}/1,00,000)^{35}$$



One maternal death

About 20 cases of
Acute or chronic
maternal morbidity

Maternal near miss: Near death of a women who survived a complication during

....

Approaches for measuring Maternal mortality

1. Civil Registration system
2. Household survey
3. Sisterhood method: through sample of women, collecting information about their adult sisters
4. Reproductive age mortality studies (RAMOS):
Using various sources of data
5. Verbal Autopsy : Through trained personnel and interpretation by physician
6. Census

Causes

```
graph TD; Causes[Causes] --> Medical[Medical]; Causes --> Social[Social]; Causes --> Behavioural[Behavioural]; Causes --> HealthSystem[Health system factors]; Medical --> Direct[Direct]; Medical --> Indirect[Indirect];
```

Medical

Social

Behavioural

Health
system
factors

Direct

Indirect

Causes of maternal mortality in World

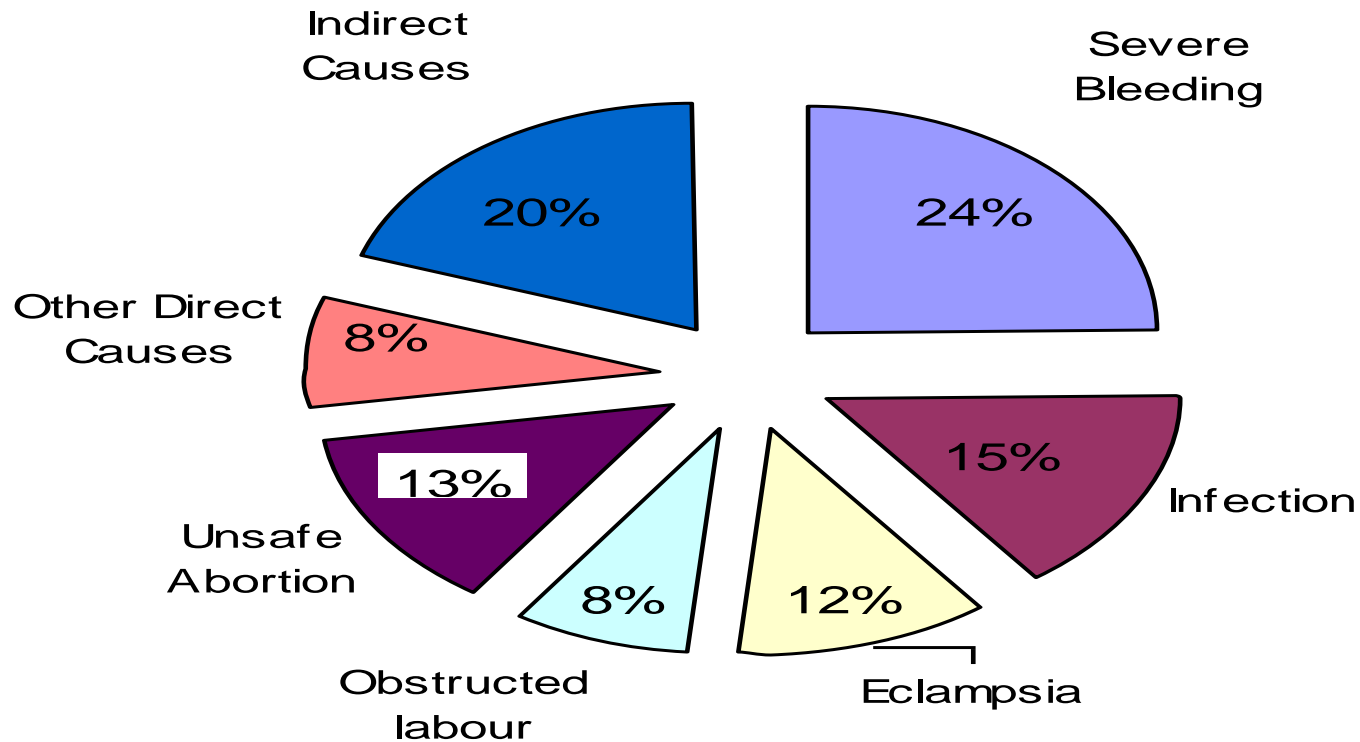
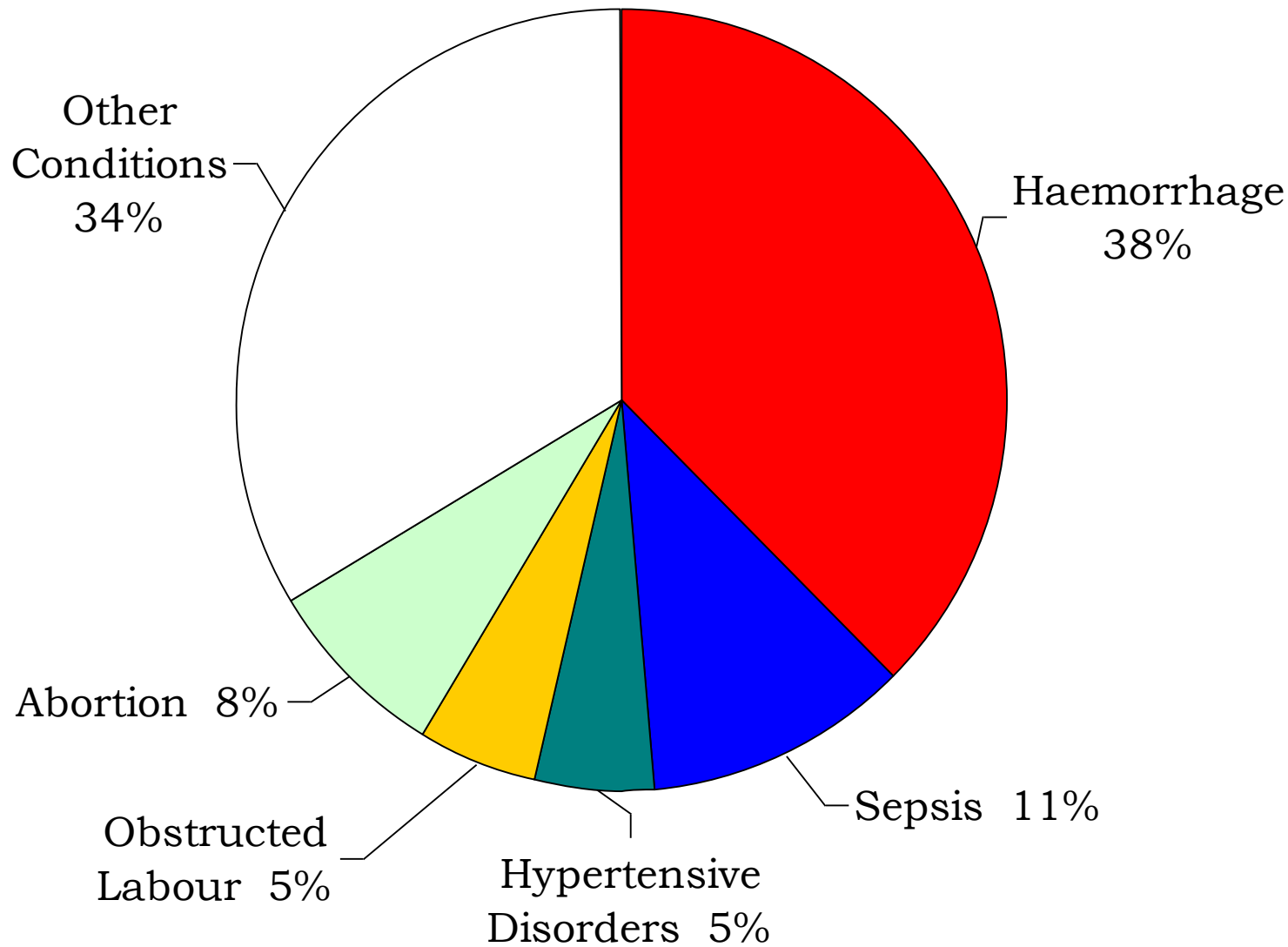


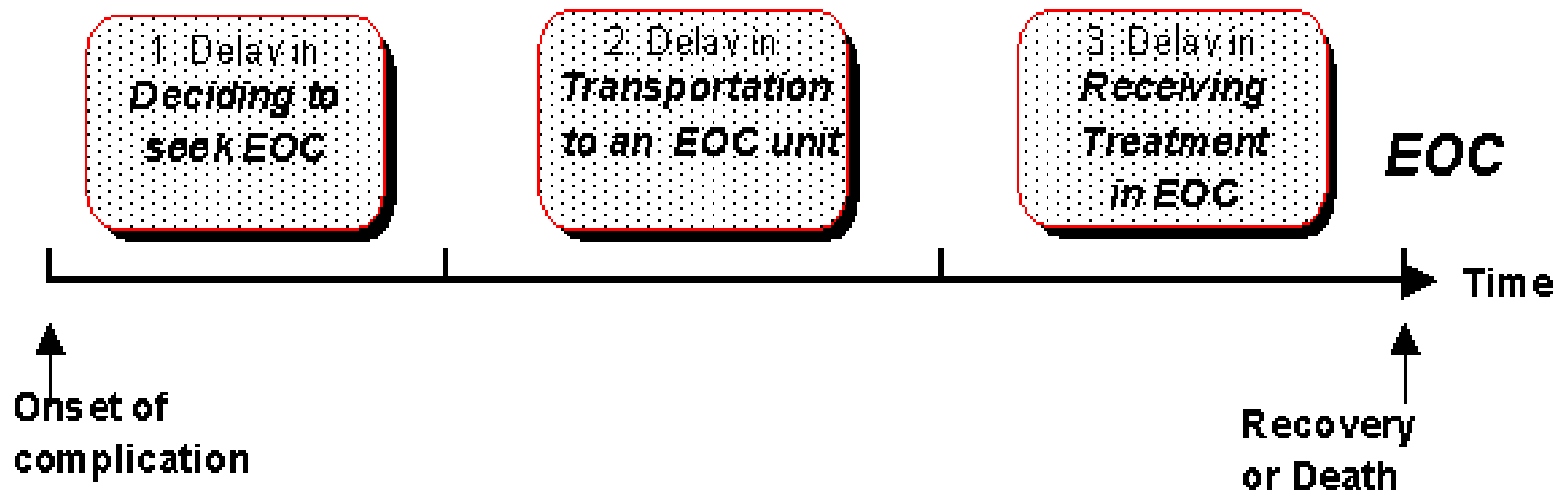
Chart 3: Causes of Maternal Death in India (2003)



Social and Health system factors

- Age
- Parity
- Socio economic status
- Education
- Age at marriage
- Inadequate spacing
- Poor environmental sanitation
- Availability of services
- **Three Delays**

The 3 Delays Model of Maternal Mortality



EOC = Emergency Obstetric Care Unit

Interventions-Antenatal care

1. Early Registration
2. Minimum 4 health check ups
3. On first visit: History, General examination, Systemic examination, Perabdomen examination ,Inv.
4. Dietary Advice
5. Other Advices
6. Services Provided:
 1. Calcium supplementation
 2. Immunization against tetanus
 3. IFA supplementation

Intranatal care

1. Normal Labour
2. Cervical dilatation
3. Uterine contraction
4. Maternal condition
5. Fetal condition
6. Skill birth attendant
7. Traditional birth attendant
8. Quality ANC

Postnatal care

- Most neglected
- 48 hrs stay in hospital after delivery.
- Home delivery- First visit within 24 hrs
- -General examination, Per abdomen, episio site, breast examination, Advice, Diet, personal and perineal hygiene, breast feeding, contraception
- Other visits on 3,7,14,21,and 28 days- ANM/ASHA

High Risk Pregnancy

- Pregnancy that is complicated by factors that adversely affect the maternal or perinatal outcome of pregnancy.
- **Factors** :like Age, Ht, parity, BOH, systemic disease, infections, multiple preg., Pre eclampsia and eclampsia, Anemia and Gestational Hypertension and few others
- Now is **replaced** by the principle that all women are at risk to develop a complication

Essential Obstetric Care

- Must be available to all.
- Operationalizing the primary health care- PHCs for 24X7 services and training the SNs/ LHV/ ANMs in skilled attendance at birth
- **Includes:**
 - 1.Early registration
 - 2.Min. 4 antenatal check ups
 - 3.Anemia prophylaxis and treatment
 - 4.Mebendazole for Deworming
 - 5.Tetanus toxoid vaccine
 - 6.Skilled care at birth
 - 7.Post natal care
 - 8.Birth spacing

Emergency Obstetric care

- Providing basic obstetric care to all women and comprehensive obstetric care to those with complications
- Five per 5 lakh population-Basic Obst. Care
- One per 5 lakh population-Comp. Obst. Care

National maternal care indicators

- As per NFHS IV(2015-16)
- ANC (atleast 4 visits)-51.2%
- InstitutionalDelivery-78.9%
- IFA tablet consumption(100days)-30.3%
- Postnatal check ups within 2 days-62.4%

Maternal Death Review

- Process to identify factors at various levels (community, facility, district, regional and national level that may have contributed to the maternal mortality)
- MDSR
 1. Community based MDSR
 2. Facility based MDSR
 3. Confidential Review

Current Approaches in Health care services

1. **MDG**: MDG 5: To reduce MMR by three quarter.

Target value -India 108(not achieved)

2. **SDG**: SDG 3 includes an ambitious target: "reducing the global MMR to less than 70 per 100 000 births,

(with no country having a maternal mortality rate of more than twice the global average". (by2030)

3. **Health Program and Schemes**: JSY, JSSK and RCH and RMNCH+A initiative

Global strategy to prevent maternal mortality

- Reducing **inequalities in access** to reproductive, maternal, newborn health care services and quality improved.
- **Universal health coverage** for all such services
- **All causes** of maternal mortality and morbidity **addressed**
- High quality **data** from health system
- **Accountability** to improve quality of care and equity is ensured

Preventive and social measures

- Early registration of pregnancy
- Atleast 4 Antenatal check ups
- Dietary supplementation
- Prevent infection and hemorrhage
- Prevent complication
- Treat medical condition
- Prophylaxis for malaria and tetanus
- Clean delivery practice
- Institutional deliveries
- Promote FP
- Identify and search every maternal death
- Safe abortion services

- Questions

1. Name the Country with highest MMR?
2. What is MMR of Gujarat as per latest data?
3. What is the SDG for MMR?
4. What is the Most common cause of MM in India?
5. What is the denominator for maternal mortality ratio?



References

- IAPSM's TB of Community Medicine
- Park's TB of Preventive and social medicine
- WHO site
- MoHFW site
- SRS bulletin on maternal mortality
- NFHS IV