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FROM THE AMERICAN PEOPLE

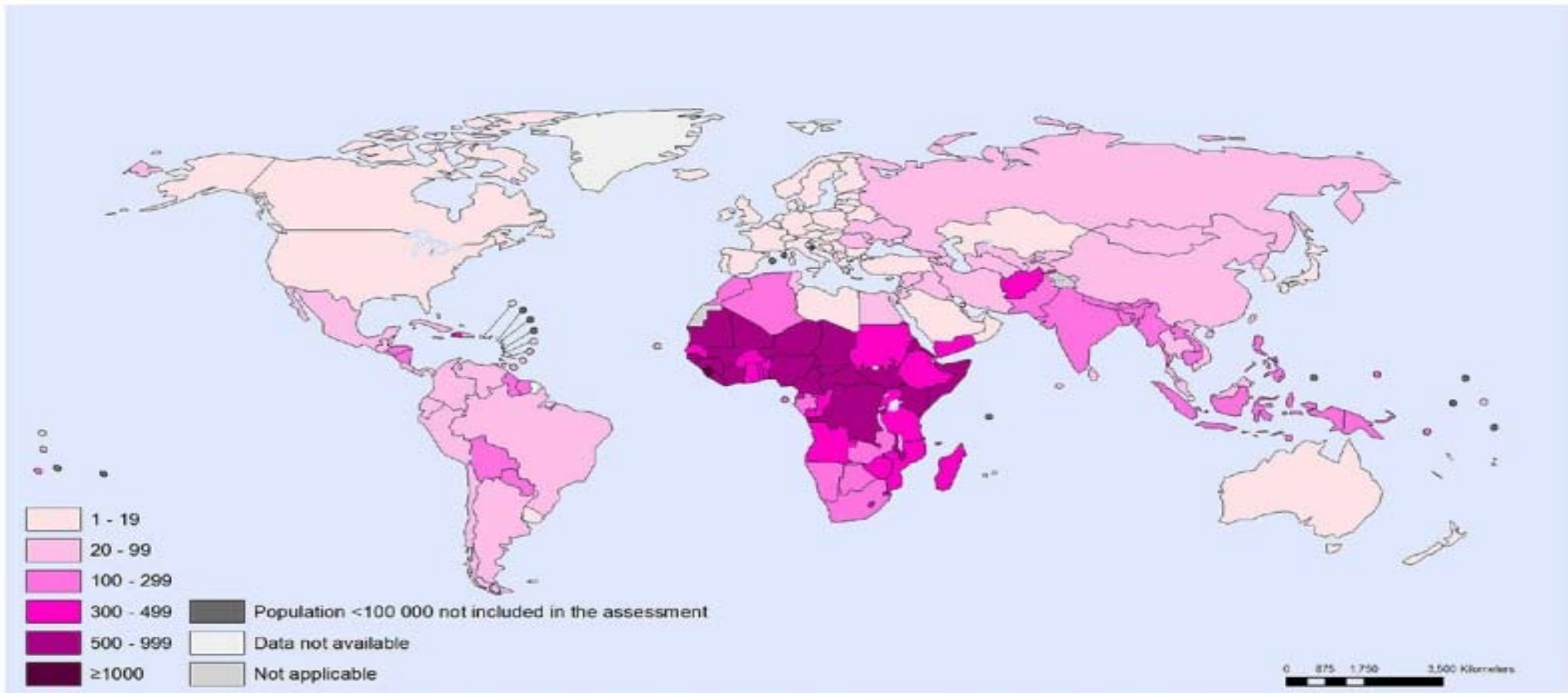
*M*aternal and Child  
Survival Program

**ENDING  
Eclampsia**

# THE CURRENT BURDEN OF HYPERTENSIVE DISORDERS IN PREGNANCY AND PPH

June 13, 2017

## Maternal mortality ratio (per 100 000 live births), 2015



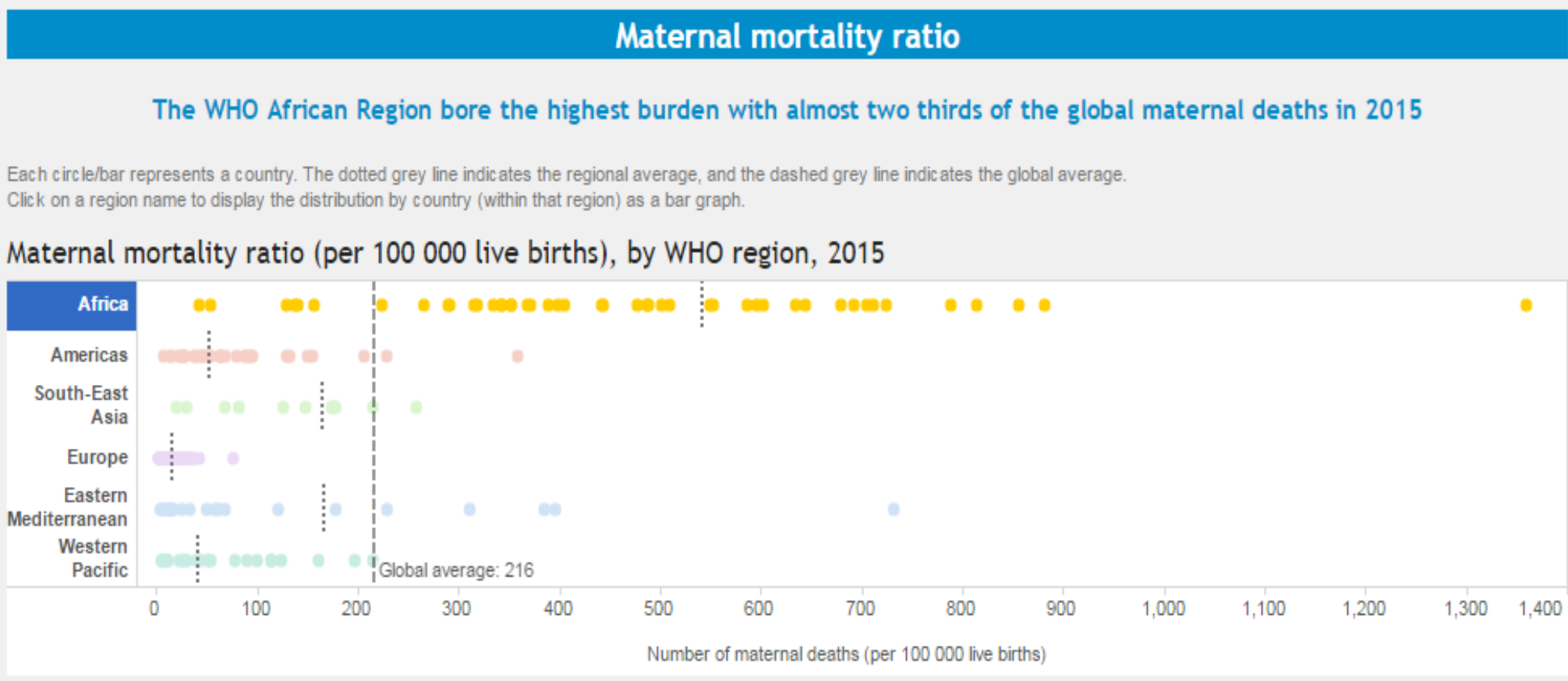
The boundaries and names shown and the designations used on this map do not imply the expression of any opinion whatsoever on the part of the World Health Organization concerning the legal status of any country, territory, city or area or of its authorities, or concerning the delimitation of its frontiers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

Data Source: World Health Organization  
 Map Production: Health Statistics and  
 Information Systems (HSI)  
 World Health Organization  
 Source - WHO Trends in Maternal Mortality 1990 to 2015



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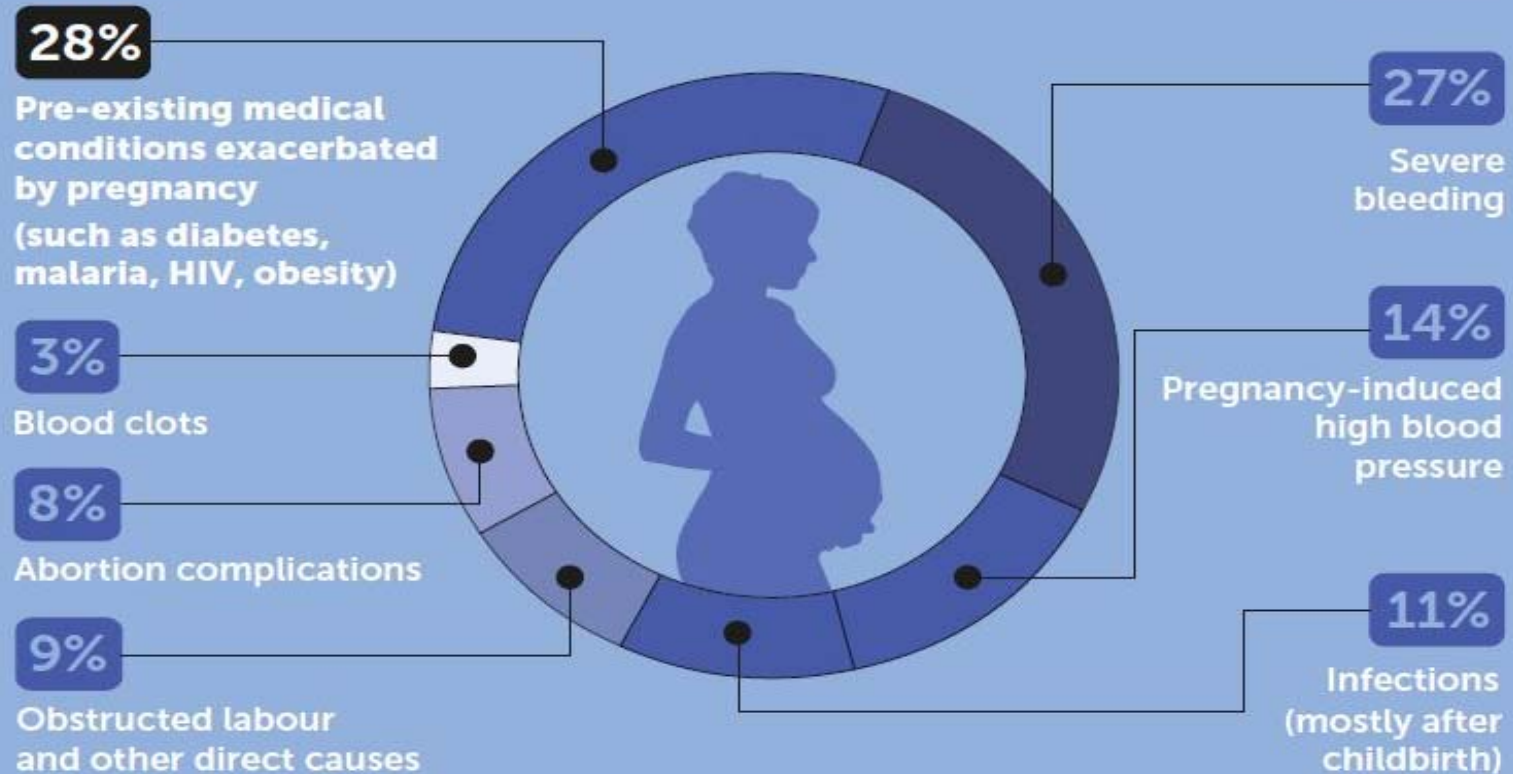
# Maternal Mortality: African Women Bear the Greatest Burden



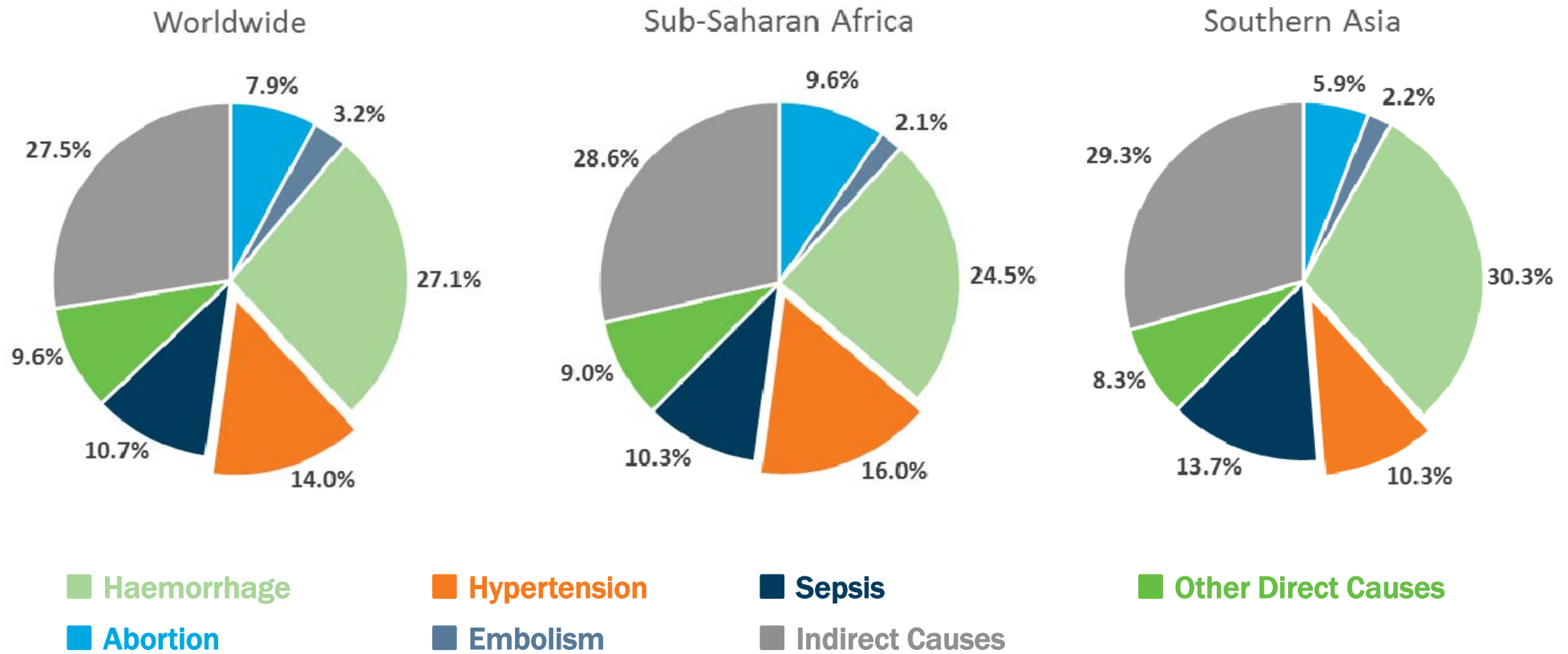
Source: [http://www.who.int/gho/maternal\\_health/mortality/maternal/en/](http://www.who.int/gho/maternal_health/mortality/maternal/en/)

# Leading Global Causes of Maternal Mortality (WHO systematic analysis, 2014)

## WHAT ARE PREGNANT WOMEN DYING FROM?

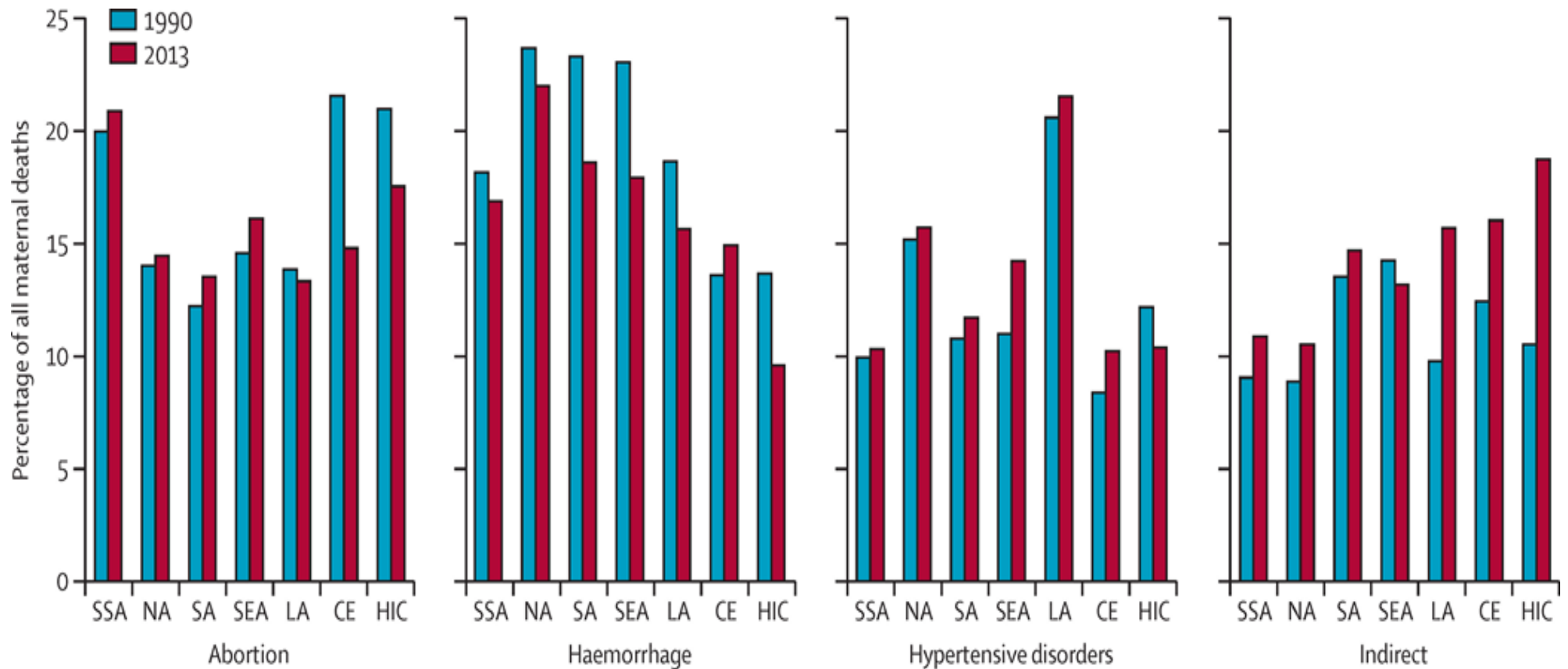


# Maternal Mortality Causes by Region (WHO, 2014)



Source: Say L, Chou D, Gemmill A, et al. Global causes of maternal death: A WHO systematic analysis. Lancet Glob Heal. 2014;2(6):323-333.

## Trends in percentage distribution of four main causes of maternal death (abortion, hemorrhage, HDP, indirect) for world regions, 1990 and 2013 (Lancet, MH, 2016; Data from 2013 GBD)



# Country level maternal morbidity and mortality

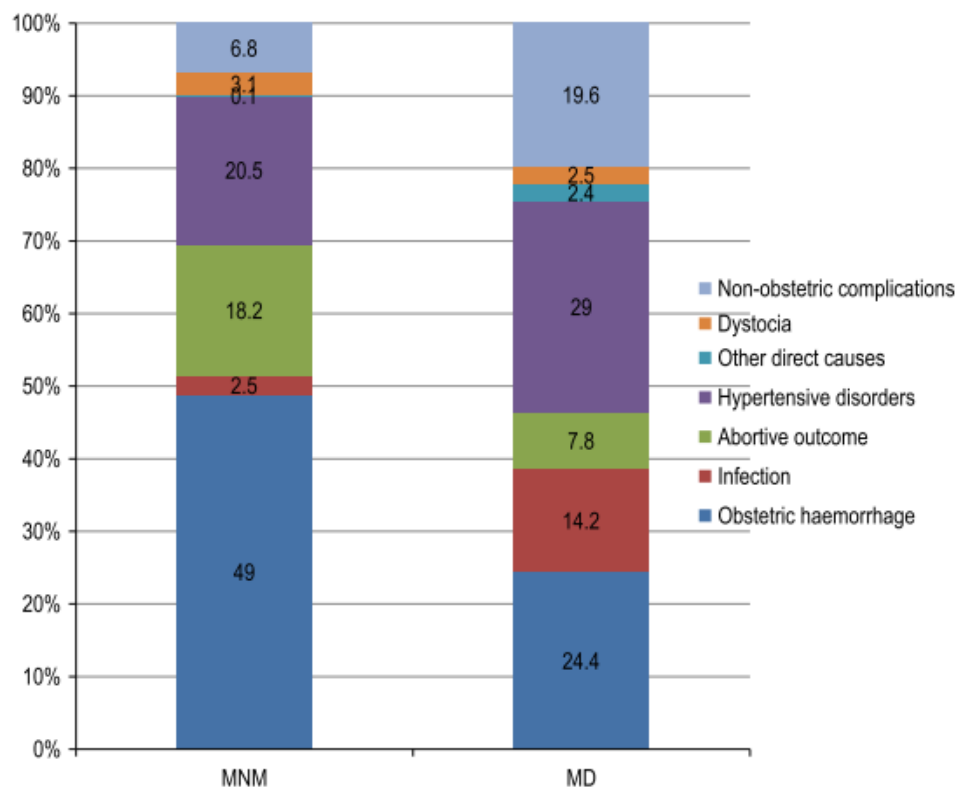
## Institutional maternal morbidity and mortality survey in Nigeria:

- Cross-sectional prospective survey of 998 maternal deaths and 1451 near misses or severe maternal outcomes (SMOs) in public tertiary hospitals
- **Leading causes of institutional severe maternal mortality and morbidity:**
  - Pre-eclampsia/eclampsia 23%
  - PPH 14%

## Community based maternal mortality survey in Pakistan

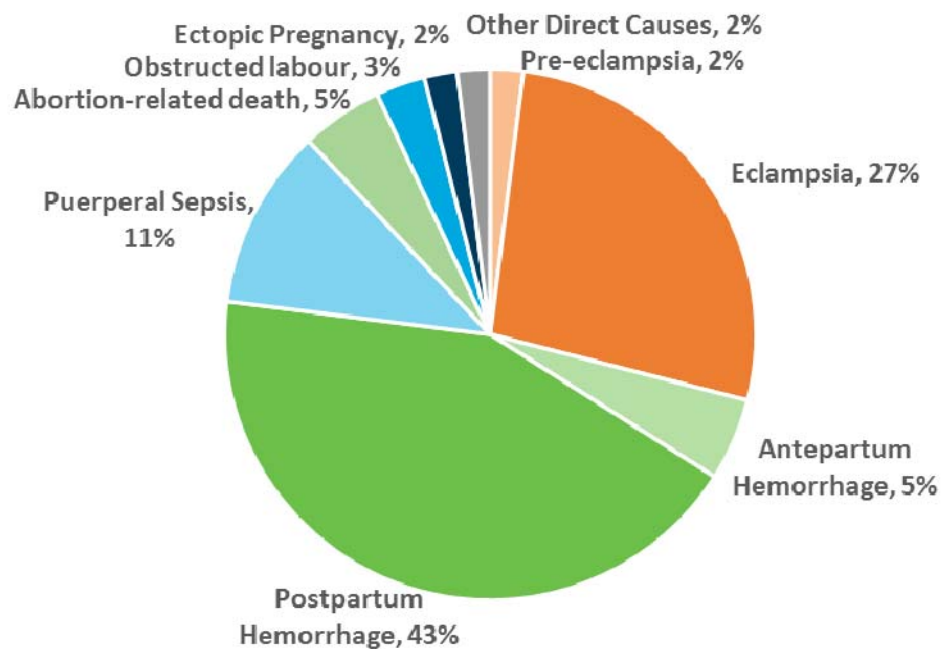
- National vs. Provincial (Punjab)
- **PE/E 15% vs. 27%**
- **PPH 43%**

## Nigeria



Source: Oladapo OT, Adetoro OO, Ekele BA, et al. When getting there is not enough: A nationwide cross-sectional study of 998 maternal deaths and 1451 near-misses in public tertiary hospitals in a low-income country. *BJOG An Int J Obstet Gynaecol.* 2016;123(6):928-938.

## Pakistan - Punjab



Source: [http://www.popcouncil.org/uploads/pdfs/2015RH\\_MMR-ReportPunjab.pdf](http://www.popcouncil.org/uploads/pdfs/2015RH_MMR-ReportPunjab.pdf)



# Community Perceptions: Top 3 complications during pregnancy and childbirth perceived by communities

	Bangladesh	Nigeria
Men	<ul style="list-style-type: none"><li>• Physical weakness</li><li>• Retained placenta</li><li>• Vaginal bleeding</li></ul>	<ul style="list-style-type: none"><li>• Malaria</li><li>• High blood pressure</li><li>• Bleeding</li></ul>
Women	<ul style="list-style-type: none"><li>• Physical weakness</li><li>• Breech position</li><li>• Postpartum hemorrhage</li></ul>	<ul style="list-style-type: none"><li>• Malaria</li><li>• Eclampsia</li><li>• High blood pressure</li></ul>

*“These are **WOMEN’S** problems during pregnancy and after delivery. ..I don’t want to interfere... My mother and grandmother might be the right persons to decide.” Male, FGD*

*“...Husbands take their pregnant wife to traditional healers 100% of the time. Only 25% take their wives to hospital for ANC, others visit traditional healers and chemists.” - Male, FGD*

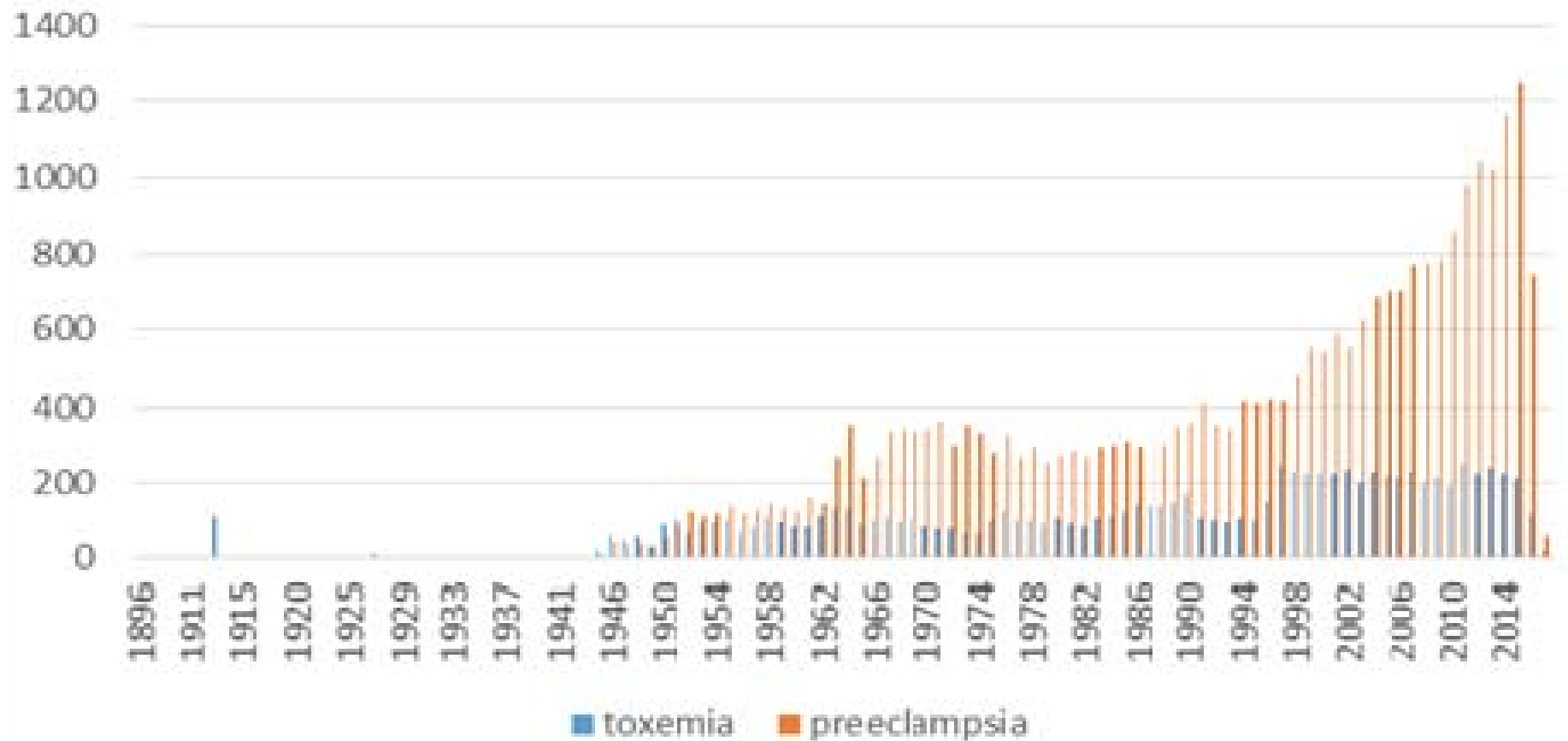
## Factors associated with PE/E maternal deaths in Low- and Middle-Income Countries (WHO, Bilano, Ota et al., 2014)

- Secondary analysis of WHO Global Survey on Maternal and Perinatal Health
- Multi-country, facility-based, cross-sectional, study (276,388 mothers)

Risk Factor	Odds Ratio
Age > 30 years	1.40 (1.31-1.51)
Age > 35 years	1.95 (1.80-2.12)
No Education	1.22 (1.07-1.39)
BMI 20 to <26	1.71 (1.61-1.81)
BMI $\geq$ 35	3.91 (3.52-4.33)
Nulliparous	2.04 (1.92-2.16)
<b>History of chronic hypertension</b>	<b>7.75 (6.77-8.87)</b>
Gestational Diabetes	2.00 (1.63-2.45)
Cardiac/renal disease	2.38 (1.86-3.05)
Severe anemia	2.98 (2.47-3.61)



## Frequency of PubMed Results, By Year



**Not all bleeding is PPH: subgroup analysis of obstetric hemorrhage deaths by region and timing as proportion of total maternal deaths (WHO 2014)**

	Antenatal		Intrapartum		Postpartum (PPH)		% total mat deaths due to hemorrhage
<b>GLOBAL</b>	<b>7%</b>	<b>23 000</b>	<b>0.9%</b>	<b>480 000</b>	<b>20%</b>	<b>661 000</b>	<b>27%</b>
<b>SSA</b>	<b>8%</b>	<b>12 000</b>	<b>0.9%</b>	<b>200 000</b>	<b>15%</b>	<b>321 000</b>	<b>25%</b>
<b>SE Asia</b>	<b>5%</b>	<b>3100</b>	<b>2%</b>	<b>34 000</b>	<b>23%</b>	<b>44 000</b>	<b>30%</b>

## Factors associated with PPH maternal deaths in 46 referral hospitals in Senegal and Mali (Tort et al., 2015)

- Cross-sectional survey
- PPH case fatality rate: 5.4% of 3,278 women who experienced PPH (subjectively assessed)
- Factors significantly associated with PPH death:

Risk Factor	Odds Ratio
Age > 35 years	2.16
Residing outside hospital region location	2.46
<b>Pre-existing chronic disease</b>	<b>7.54</b>
<b>Pre-partum severe anemia (Hgb &lt; 7 g/dL)</b>	<b>6.65</b>
Forceps or vacuum delivery	2.63
Birth weight > 4,000 gms	2.54
<b>Transfer to another hospital</b>	<b>13.35</b>
Hospital with Ob vs. generalist	0.55

## Critical Gaps in Maternal Health Information

- **Misclassification and under-counting of maternal deaths**
  - 2/3 of births and greater proportion of maternal deaths are unregistered or misclassified (*Lancet MH, 2016*)
- **Poor availability and quality of MH information and vital statistics - due to weak HMIS and vital registration systems**
  - Only 50% of 24 low-resource countries track *cause of maternal* death in routine HMIS (MCSP HMIS review, 2017)
  - Limited data about indirect causes of maternal mortality in LMICs although contributes 1/3 of maternal mortality in SSA and SE Asia (WHO, 2014)
  - Community-based maternal morbidity data rare in LMICs
- **Changing classification of causes of maternal mortality and morbidity**
  - Confusing for health workers
  - Makes it difficult to track changes

## **Opportunities to strengthen MH information availability, quality and use**

- **Maternal Death Surveillance and Response** – promising but requires long term investment and commitment
- **Strengthening HMIS:**
  - Improving regular capture and use of MH indicators at facility level to inform improvement of services (standardized registers)
  - Tracking aggregated maternal mortality data at subnational and national level to understand trends and inform programming (e.g. DHIS-2)
- **Strengthening community surveillance** of maternal death and morbidity in low SBA settings - methods challenging