WHO Statement on Caesarean Section Rates
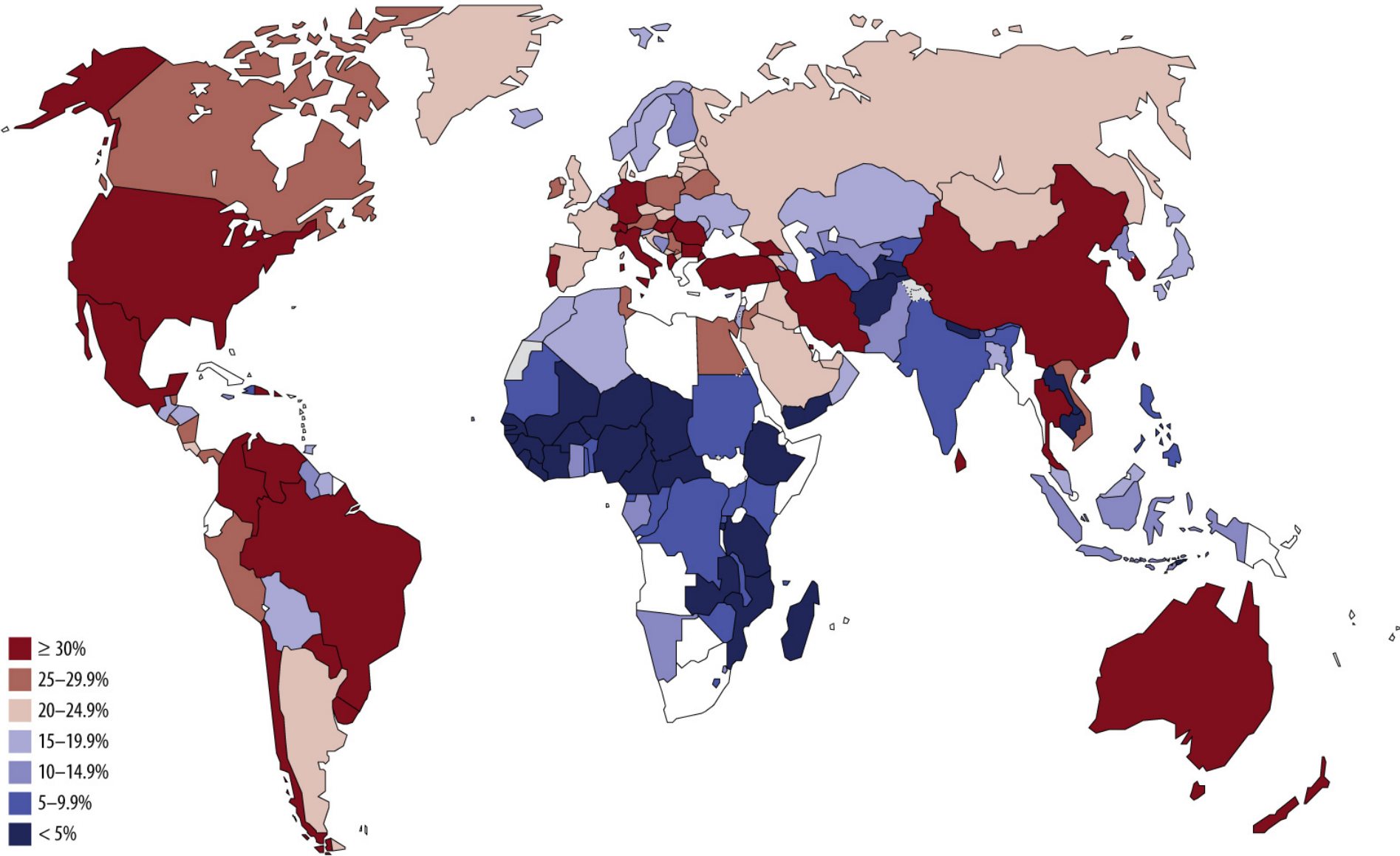
Özge Tunçalp, MD, PhD; Ana Pilar Betran, MD, PhD

Department of Reproductive Health and Research

Outline

- Background

- Recent WHO statement – key messages

- Overview of the evidence supporting the statement

Current CS rates worldwide

Legend:
- ≥ 30%
- 25–29.9%
- 20–24.9%
- 15–19.9%
- 10–14.9%
- 5–9.9%
- < 5%

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Caesarean section rates: background

- In 1985, WHO suggested an upper limit of CS rate at 10 – 15%;

- CS rate has increased substantially in the past 30 years;

- Major contributors to the wide variation of CS rate by countries - Clinical practice patterns/styles and other factors

- What should be the appropriate CS rate?
- How do we monitor CS rate?

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10 April 2015

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WHO Statement on Caesarean Section Rates

Every effort should be made to provide caesarean sections to women in need, rather than striving to achieve a specific rate

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Executive summary

Since 1985, the international healthcare community has considered the ideal rate for caesarean sections to be between 10% and 15%. Since then, caesarean sections have become increasingly common in both developed and developing countries. When medically justified, a caesarean section can effectively prevent maternal and perinatal mortality and morbidity. However, there is no evidence showing the benefits of caesarean delivery for women or infants who do not require the procedure. As with any surgery, caesarean sections are associated with short and long term risk which can extend many years beyond the current delivery and affect the health of the woman, her child, and future pregnancies. These risks are higher in women with limited access to comprehensive obstetric care.

In recent years, governments and clinicians have expressed concern about the rise in the numbers of caesarean section births and the potential negative consequences for maternal and infant health. In addition, the international community has increasingly referenced the need to revisit the 1985 recommended rate.

Caesarean section rates at the population level

WHO conducted two studies: a systematic review of available studies that had sought to find the ideal caesarean rate within a given country or population, and a worldwide country-level analysis using the latest available data. Based on this available data, and using internationally accepted methods to assess the evidence with the most appropriate analytical techniques, WHO concludes:

1. Caesarean sections are effective in saving maternal and infant lives, but only when they are required for medically indicated reasons.

2. At population level, caesarean section rates higher than 10% are not associated with reductions in maternal and newborn mortality rates.

3. Caesarean sections can cause significant and sometimes permanent complications, disability or death particularly in settings that lack the facilities and/or capacity to properly conduct safe surgery and treat surgical complications. Caesarean sections should ideally only be undertaken when medically necessary.

4. Every effort should be made to provide caesarean sections to women in need, rather than striving to achieve a specific rate.

5. The effects of caesarean section rates on other outcomes, such as maternal and perinatal morbidity, paediatric outcomes, and psychological or social well-being are still unclear. More research is needed to understand the health effects of caesarean section on immediate and future outcomes.

Caesarean section rates at the hospital level and the need for a universal classification system

There is currently no internationally accepted classification system for caesarean section that would allow meaningful and relevant comparisons of CS rates across different facilities, cities or regions. Among the existing systems used to classify caesarean sections, the 10-group classification (also known as the 'Robson classification') has in recent years become widely used in many countries. In 2014, WHO conducted a systematic review of the experience of users with the Robson classification to assess the pros and cons of its adoption, implementation and interpretation, and to identify barriers, facilitators and potential adaptations or modifications.

WHO proposes the Robson classification system as a global standard for assessing, monitoring and comparing caesarean section rates within healthcare facilities over time, and between facilities. In order to assist healthcare facilities in adopting the Robson classification, WHO will develop guidelines for its use, implementation and interpretation, including standardization of terms and definitions.

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2015 WHO Statement on Caesarean Section
Key messages

✓ WHO does not promote any specific rate to be achieve at population level ➜ the focus is to provide CS to all women in need rather than striving to achieve a specific rate

✓ WHO proposes to adopt the Robson classification system as a global standard for assessing, monitoring and comparing CS

OPTIMAL C-SECTION RATES AT THE POPULATION LEVEL

WHO STATEMENT – PART I

Optimal caesarean section rates: analyses

1. Betran et al. **What is the optimal rate of caesarean section at population level? A systematic review of ecologic studies.** Reprod Health. 2015 Jun 21;12(1):57]

2. Ye et al. **Association between rates of caesarean section and maternal and neonatal mortality in the 21st century: A worldwide population-based ecologic study with longitudinal data.** BJOG 2015 (epub ahead of print)

Ana Pilar Betran[1*], Maria Regina Torloni[2], Jun Zhang[3], Jiangfeng Ye[3], Rafael Mikolajczyk[4], Catherine Deneux-Tharaux[5], Olufemi Taiwo Oladapo[1], João Paulo Souza[6], Özge Tunçalp[1], Joshua Peter Vogel[1] and Ahmet Metin Gülmezoglu[1]

Association between rates of caesarean section and maternal and neonatal mortality in the 21st century: a worldwide population-based ecological study with longitudinal data

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Study 1: A systematic review of ecologic studies

Objective:

Identify, critically appraise and synthesize the analyses of the **ecologic association between CS rates and** maternal, neonatal and infant **outcomes**.

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What is the optimal rate of caesarean section at population level? A systematic review of ecologic studies
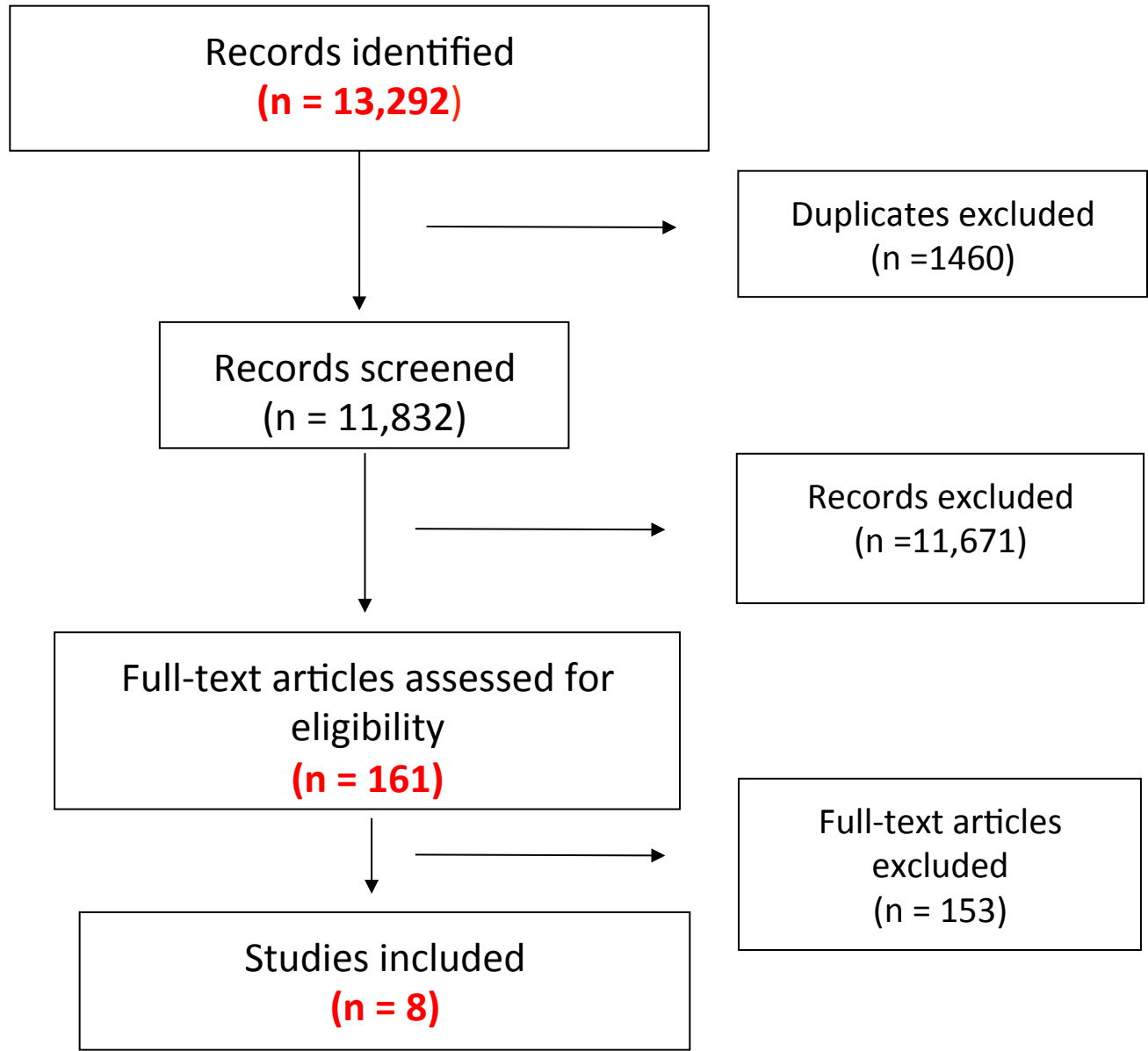
Ana Pilar Betran[1*], Maria Regina Torloni[2], Jun Zhang[3], Jiangfeng Ye[3], Rafael Mikolajczyk[4], Catherine Deneux-Tharaux[5], Olufemi Taiwo Oladapo[1], João Paulo Souza[6], Özge Tunçalp[1], Joshua Peter Vogel[1] and Ahmet Metin Gülmezoglu[1]

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Identification	Records identified **(n = 13,292**)	→	Duplicates excluded (n =1460)
Screening	Records screened (n = 11,832)	→	Records excluded (n =11,671)
Eligibility	Full-text articles assessed for eligibility **(n = 161)**	→	Full-text articles excluded (n = 153)
Included	Studies included **(n = 8)**		

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Results

❑ There is a **strong inverse association between CS rates and mortality outcomes**:

- as CS rates increase, **up to a certain threshold**, maternal, neonatal and infant mortality decrease
- above this threshold, the association no longer exists and further increases in CS rates are not associated with improved mortality outcomes

❑ Point of inflection for the association between CS rates and mortality outcomes: **CS rates between 9-16%**

❑ No morbidity outcomes were available at the population level

Study 2: Population-based, longitudinal data

Objective:

Assess the association between **mode of delivery** and **maternal and neonatal mortality** using a **longitudinal** approach and adjusting for socioeconomic development.

Association between rates of caesarean section and maternal and neonatal mortality in the 21st century: a worldwide population-based ecological study with longitudinal data

J Ye,[a,b] J Zhang,[a] R Mikolajczyk,[c,d] MR Torloni,[e,f] AM Gülmezoglu,[b] AP Betran[b]

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Data coverage

- Compiled available nationally-representative CS rates
- Time period between 2000 and 2012
- A total of 159 countries reporting at least one CS rate during the study period, representing 98% of global live births in 2005

HDI	N	Coverage
Least developed	41	91.8%
Less developed	75	99.7%
More developed	43	99.2%

AMONG LEAST DEVELOPED COUNTRIES (n=41)
Relationship between CS rates and maternal mortality, neonatal mortality without adjusting and with adjusting for HDI
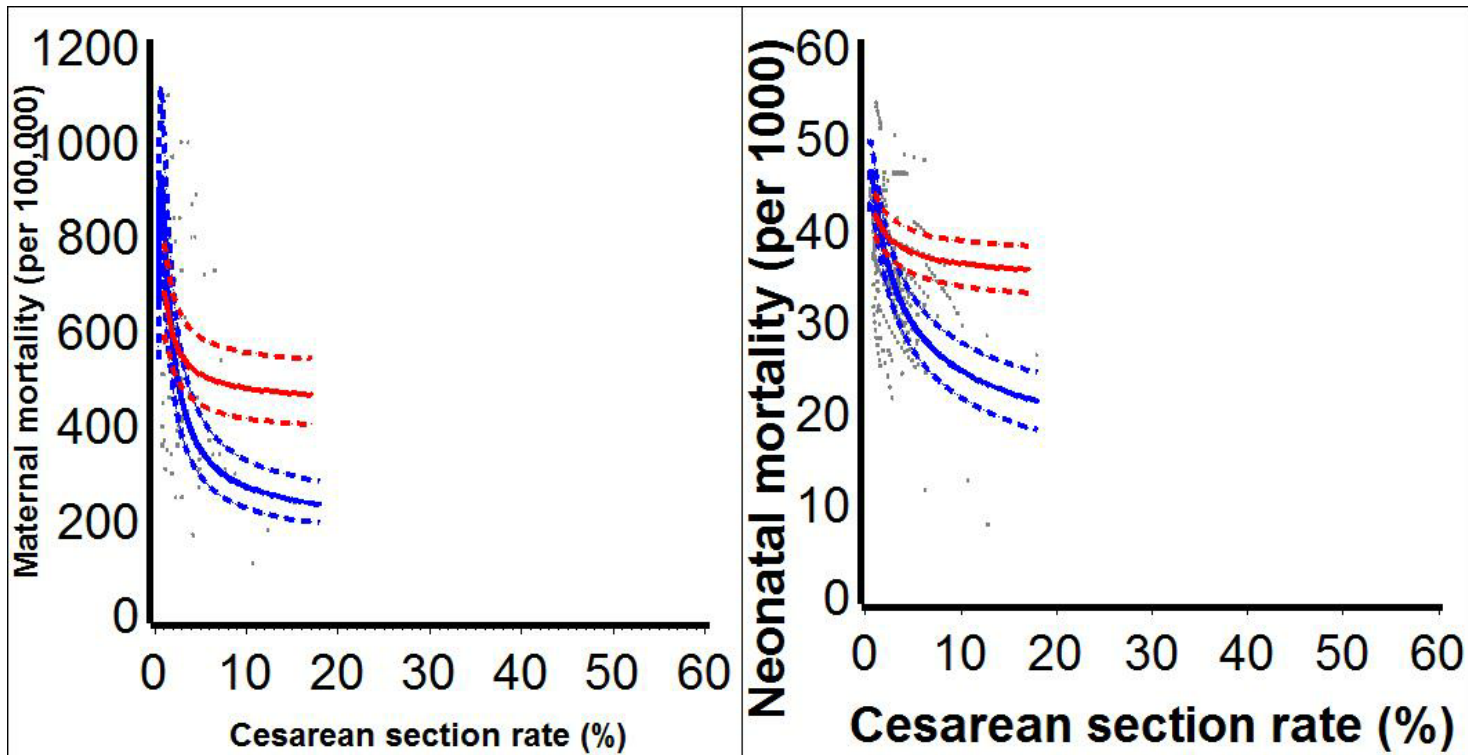
Conclusion (WHO Statement)

- ✓ CS are effective in saving maternal and infant lives, but only when they are required for medically indicated reasons.

- ✓ At population level, CS rates higher than 10% are not associated with reductions in maternal and newborn mortality rates

- ✓ Every effort should be made to provide CS to women in need, rather than striving to achieve a specific rate

- ✓ More research is needed to understand the health effects of CS on immediate and future outcomes

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GLOBAL STANDARD FOR MONITORING C-SECTION RATES

WHO STATEMENT – PART II

Main types of classifications

BY WHOM?

WHY?
Indications

HOW?

WHEN?
Degree of
urgency

WHERE?

WHO?
Women-based

A systematic review of Classifications concluded that ROBSON system was best

Classifications for Cesarean Section: A Systematic Review

Maria Regina Torloni[1]*, Ana Pilar Betran[2], Joao Paulo Souza[2], Mariana Widmer[2], Tomas Allen[3], Metin Gulmezoglu[2], Mario Merialdi[2]

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Abstract

Background: Rising cesarean section (CS) rates are a major public health concern and cause worldwide debates. To propose and implement effective measures to reduce or increase CS rates where necessary requires an appropriate classification. Despite several existing CS classifications, there has not yet been a systematic review of these. This study aimed to 1) identify the main CS classifications used worldwide, 2) analyze advantages and deficiencies of each system.

Methods and Findings: Three electronic databases were searched for classifications published 1968–2008. Two reviewers independently assessed classifications using a form created based on items rated as important by international experts. Seven domains (ease, clarity, mutually exclusive categories, totally inclusive classification, prospective identification of categories, reproducibility, implementability) were assessed and graded. Classifications were tested in 12 hypothetical clinical case-scenarios. From a total of 2948 citations, 60 were selected for full-text evaluation and 27 classifications identified. Indications classifications present important limitations and their overall score ranged from 2–9 (maximum grade = 14). Degree of urgency classifications also had several drawbacks (overall scores 6–9). Woman-based classifications performed best (scores 5–14). Other types of classifications require data not routinely collected and may not be relevant in all settings (scores 3–8).

Conclusions: This review and critical appraisal of CS classifications is a methodologically sound contribution to establish the basis for the appropriate monitoring and rational use of CS. Results suggest that women-based classifications in general, and Robson's classification, in particular, would be in the best position to fulfill current international and local needs and that efforts to develop an internationally applicable CS classification would be most appropriately placed in building upon this classification. The use of a single CS classification will facilitate auditing, analyzing and comparing CS rates across different settings and help to create and implement effective strategies specifically targeted to optimize CS rates where necessary.

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What is the experience of the users worldwide?

A Systematic Review of the Robson Classification for Caesarean Section: What Works, Doesn't Work and How to Improve It

Ana Pilar Betrán[1]*, Nadia Vindevoghel[2], Joao Paulo Souza[3], A. Metin Gülmezoglu[1], Maria Regina Torloni[4]

1 UNDP/UNFPA/UNICEF/WHO/World Bank Special Programme of Research, Development and Research Training in Human Reproduction, Department of Reproductive Health and Research, World Health Organization, Geneva, Switzerland, 2 Maternal Child Clinic, Calgary, Canada, 3 Department of Social Medicine, Ribeirao Preto Medical School, University of São Paulo, Ribeirao Preto, SP, Brazil, 4 Brazilian Cochrane Centre, São Paulo, Brazil, and Department of Internal Medicine, São Paulo Federal University, São Paulo, Brazil

Users of the Robson Classification:
46 countries – 16 low- and middle-income

1-3 Studies

4-6 Studies

> 6 Studies

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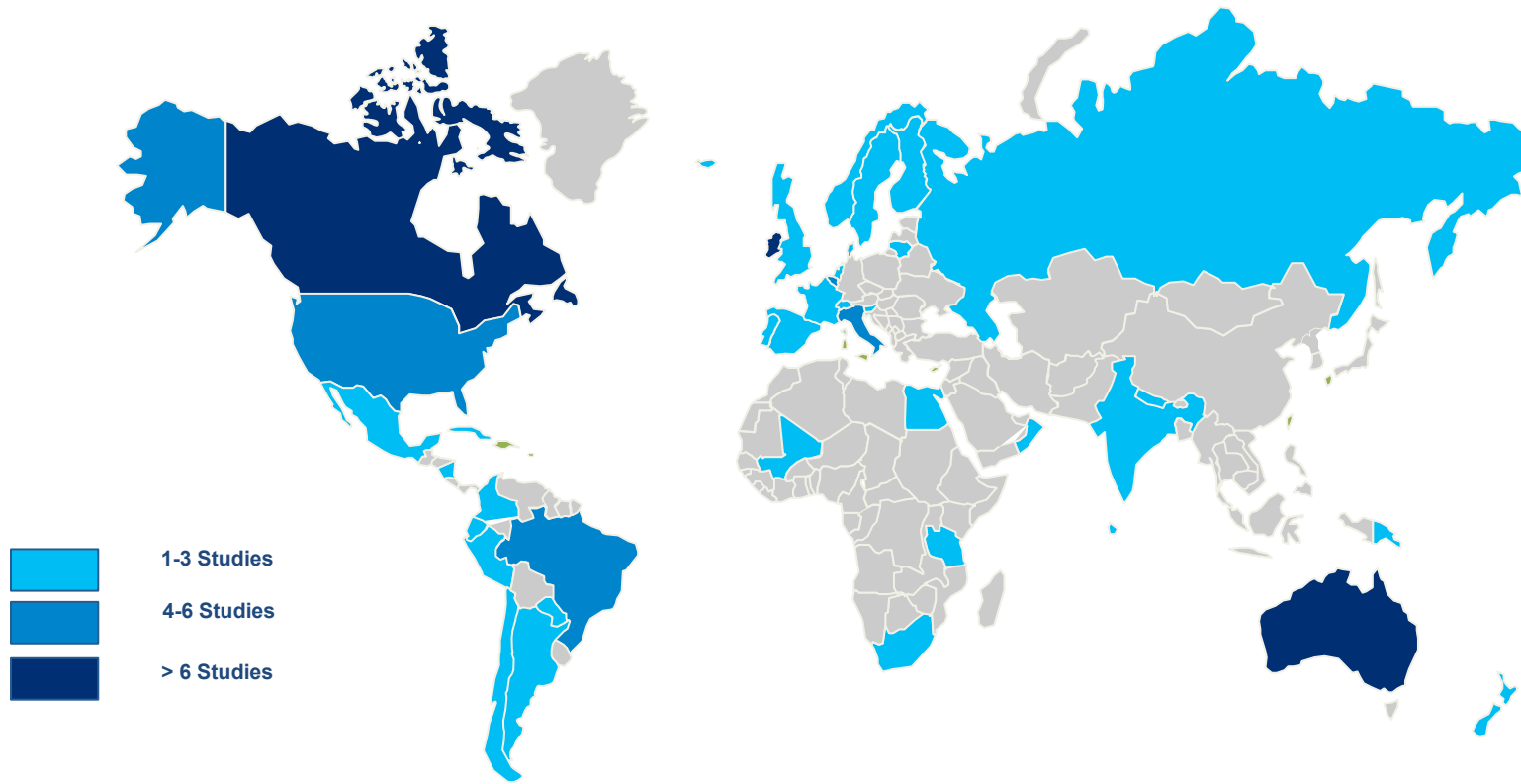
The Robson classification
(10-group classification)

Parity
Onset of labour
Gestational age
Fetal presentation
Number of fetuses

Group 1
Nulliparous with single cephalic pregnancy, ≥37 weeks gestation in spontaneous labour

Group 2
Nulliparous with single cephalic pregnancy, ≥37 weeks gestation who either had labour induced or were delivered by caesarean section before labour

Group 3
Multiparous without a previous uterine scar, with single cephalic pregnancy, ≥37 weeks gestation in spontaneous labour

Group 4
Multiparous without a previous uterine scar, with single cephalic pregnancy, ≥37 weeks gestation who either had labour induced or were delivered by caesarean section before labour

Group 5
All multiparous with at least one previous uterine scar, with single cephalic pregnancy, ≥37 weeks gestation

Group 6
All nulliparous women with a single breech pregnancy

Group 7
All multiparous women with a single breech pregnancy, including women with previous uterine scars

Group 8
All women with multiple pregnancies, including women with previous uterine scars

Group 9
All women with a single pregnancy with a transverse or oblique lie, including women with previous uterine scars

Group 10
All women with a single cephalic pregnancy <37 weeks gestation, including women with previous scars

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✓ WHO proposes to adopt the Robson classification system as a global standard for assessing, monitoring and comparing CS

Thank you!

For more information,

Follow us on Twitter **@HRPresearch**

Website **who.int/reproductivehealth**

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Results

	7	5	4	2	1
Author	**MM**	**NMR**	**IMR**	**LBW**	**Stillbirth**
Althabe 2006	X	X			
Betran 2007	X	X	X		
McClure 2007	X				X
Zizza 2011	X	X			
Volpe 2012	X*	X	X*	X	
Silva 2010				X	
Jurdi 2004	X		X		
Ye 2014	X	X	X		

MM: Maternal Mortality, IMR: Infant mortality rate,
NMR: Neonatal Mortality rate, LBW: Low birth weight

AMONG LESS DEVELOPED COUNTRIES (n=75)
Relationship between CS rates and maternal mortality, neonatal mortality without adjusting and with adjusting for HDI
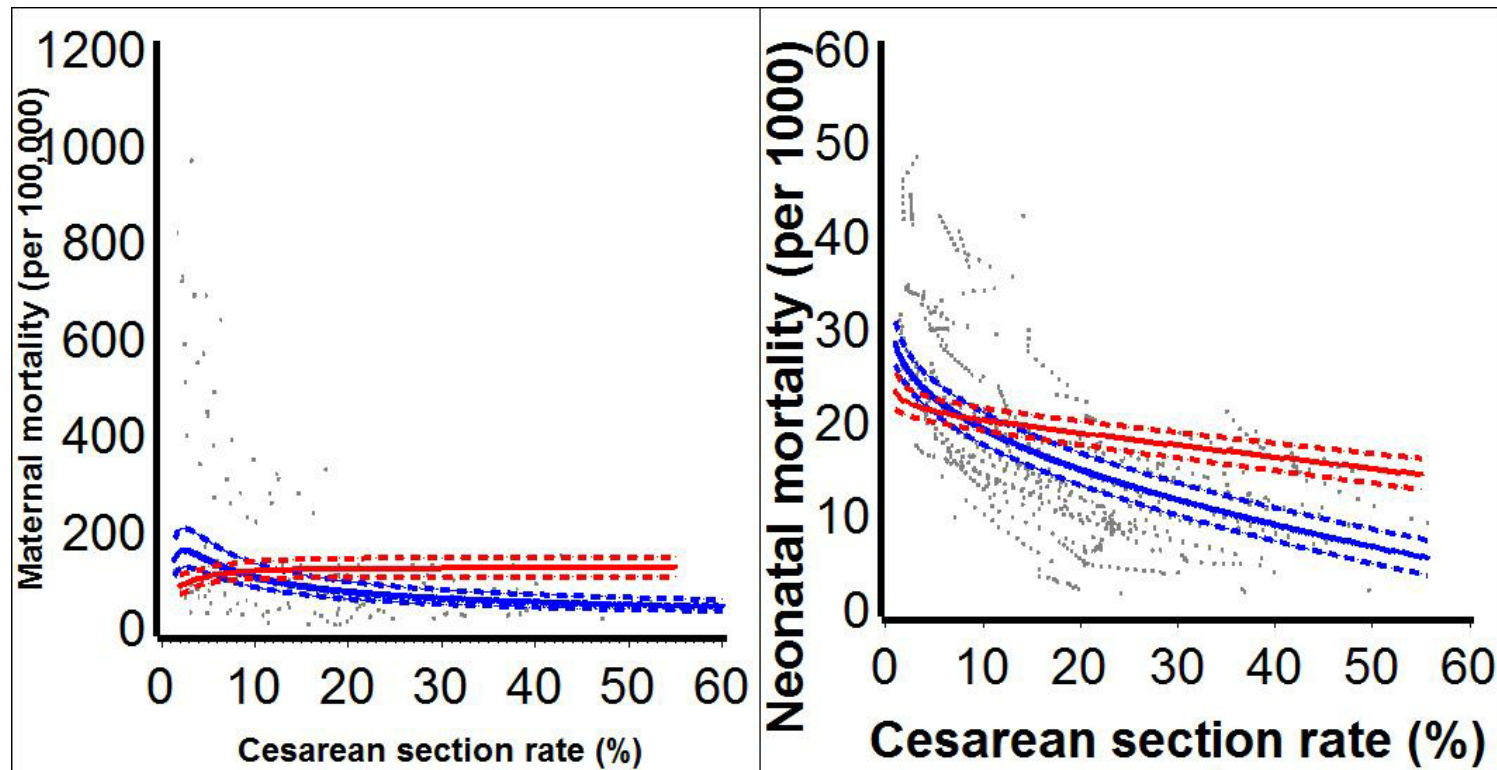
AMONG MORE DEVELOPED COUNTRIES (n=43)
Relationship between CS rates and maternal mortality, neonatal mortality without adjusting and with adjusting for HDI