



C-section trend and health needs within China

Haitian Chen

The First Affiliated Hospital, Sun Yat-sen University



中山大學 附属第一医院

The First Affiliated Hospital, Sun Yat-sen University

content

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- 01- ▶ **Changes and causes of C-section rate in China**
- 02- ▶ **Impact of increasing C-section rate in China**
- 03- ▶ **Measures to reduce C-section rate in China**



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-01- Changes and causes of C-section rate in China

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- 03- ▶ Measures to reduce C-section rate in China



The Increasing Trend in Caesarean Section Rates: Global, Regional and National Estimates: 1990–2014



Ana Pilar Betrán¹, Jianfeng Ye², Anne-Beth Moller¹, Jun Zhang³, A Metin Gülmezoglu¹, Maria Regina Torloni⁴

Affiliations + expand

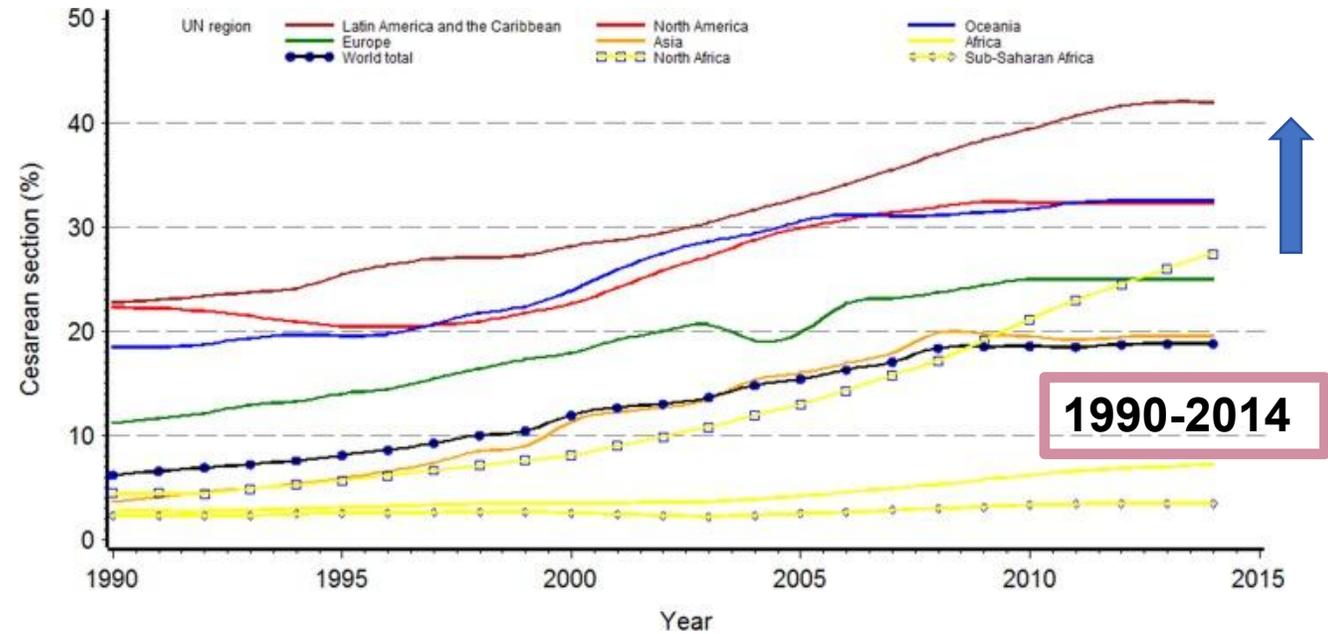
PMID: 26849801^(*) PMID: PMC4743929^(*) DOI: 10.1371/journal.pone.0148343^(*)

Abstract

Background: Caesarean section (CS) rates continue to evoke worldwide concern because of their steady increase, lack of consensus on the appropriate CS rate and the associated additional short- and long-term risks and costs. We present the latest CS rates and trends over the last 24 years.

Methods: We collected nationally-representative data on CS rates between 1990 to 2014 and calculated regional and subregional weighted averages. We conducted a longitudinal analysis calculating differences in CS rates as absolute change and as the average annual rate of increase (AARI).

C-section rates in different regions of the world



Global and regional trends in caesarean section, 1990–2014. Sub-Saharan Africa includes Eastern, Middle, Southern and Western Africa subregions. For the purpose of this graph, a linear interpolation between available data from 1990 and 2014 was calculated. When data for 2014 were not available, the CS rate for the latest year available was used also for all subsequent years up to 2014.

The Increasing Trend in Caesarean Section Rates: Global, Regional and National Estimates: 1990–2014



Ana Pilar Betrán ¹, Jianfeng Ye ², Anne-Beth Moller ¹, Jun Zhang ³, A Metin Gülmezoglu ¹, Maria Regina Torloni ⁴

Affiliations + expand

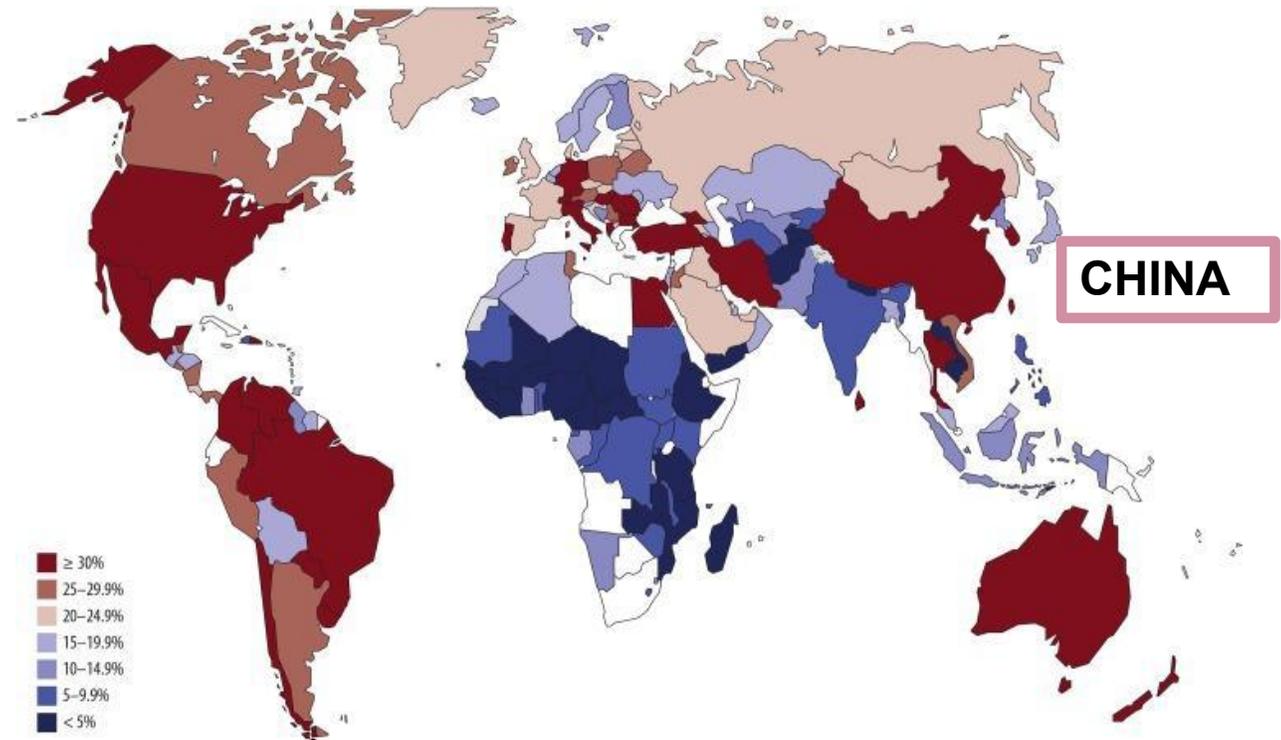
PMID: 26849801 ^(*) PMID: PMC4743929 ^(*) DOI: 10.1371/journal.pone.0148343 ^(*)

Abstract

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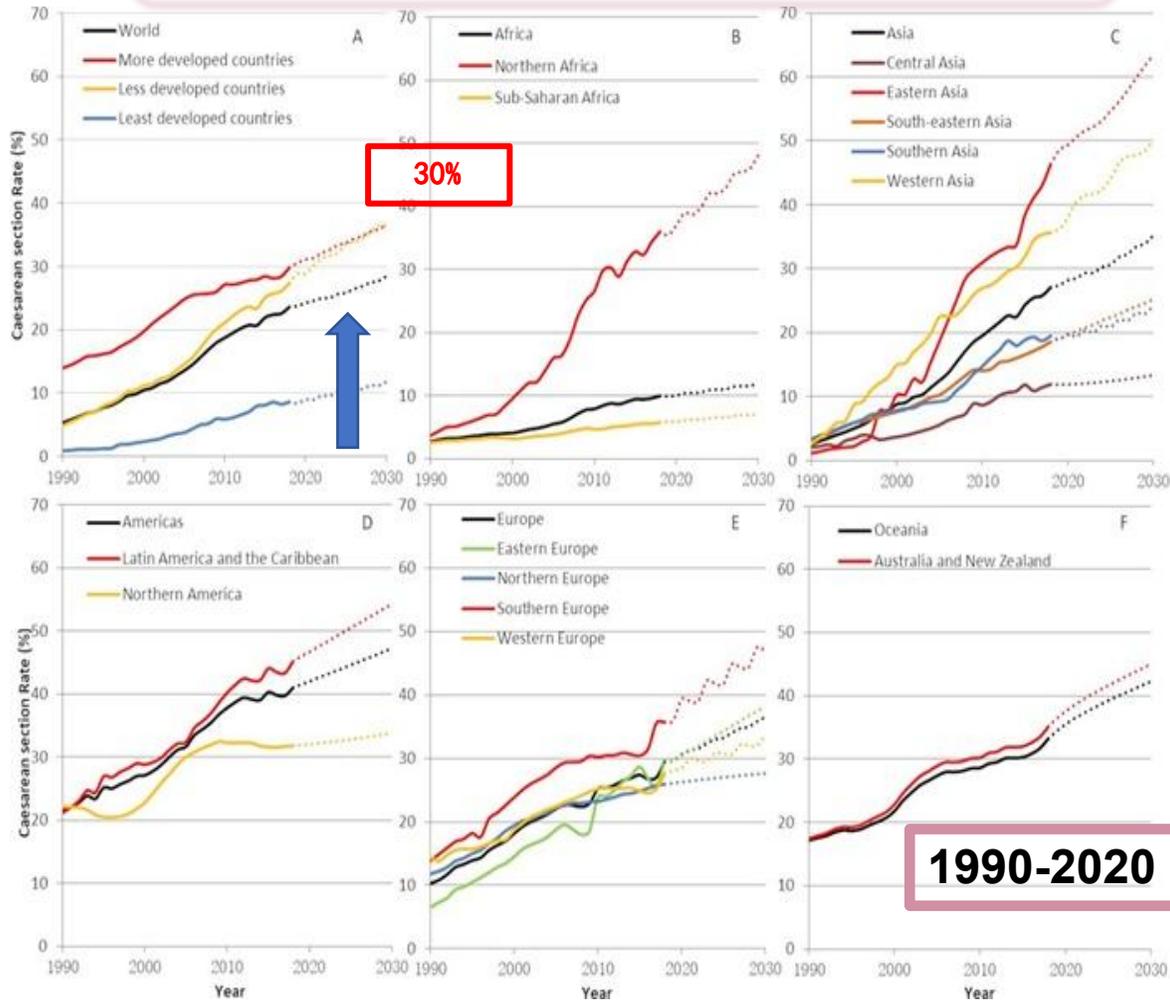
Distribution of C-section rates



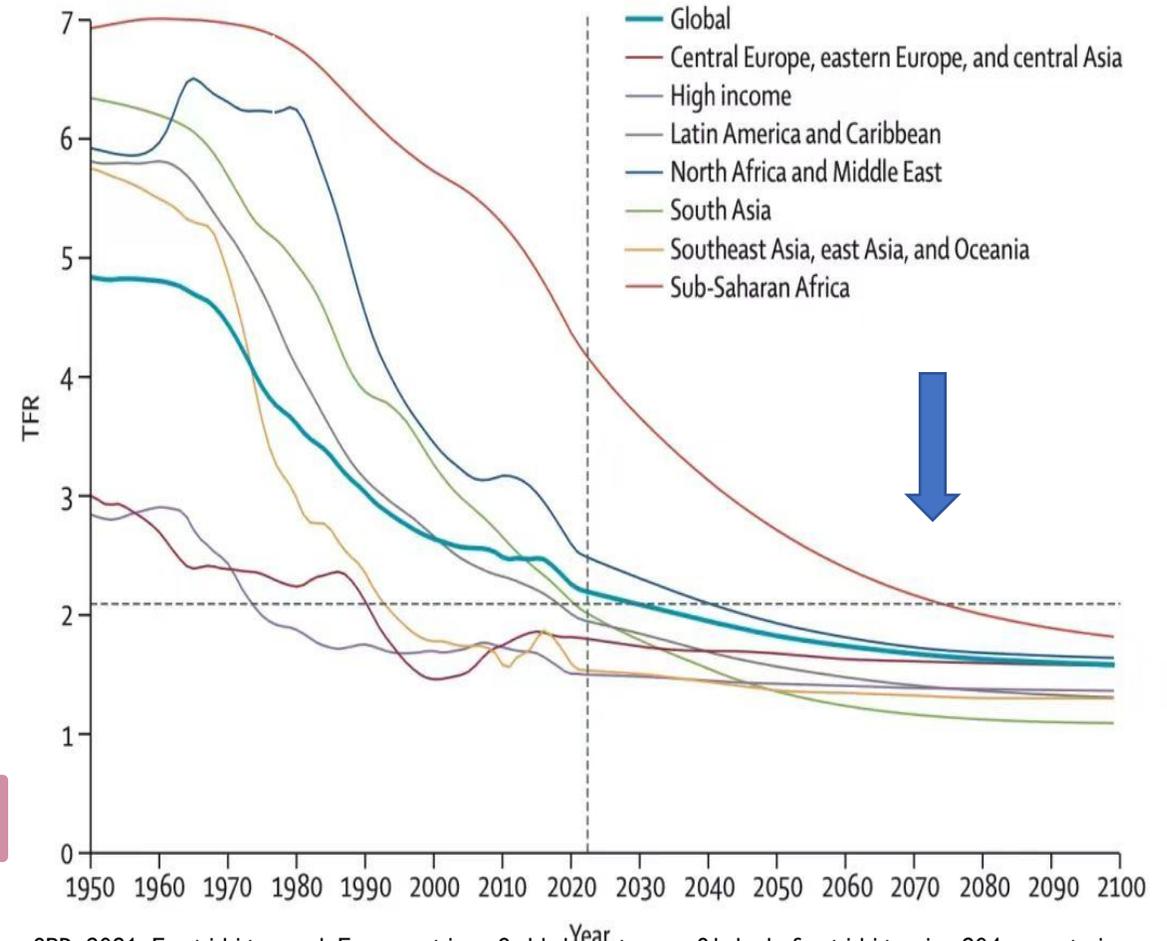
Latest available data on caesarean section rates by country (not earlier than 2005).



Trends of C-section rate Globally



Total fertility rate Globally

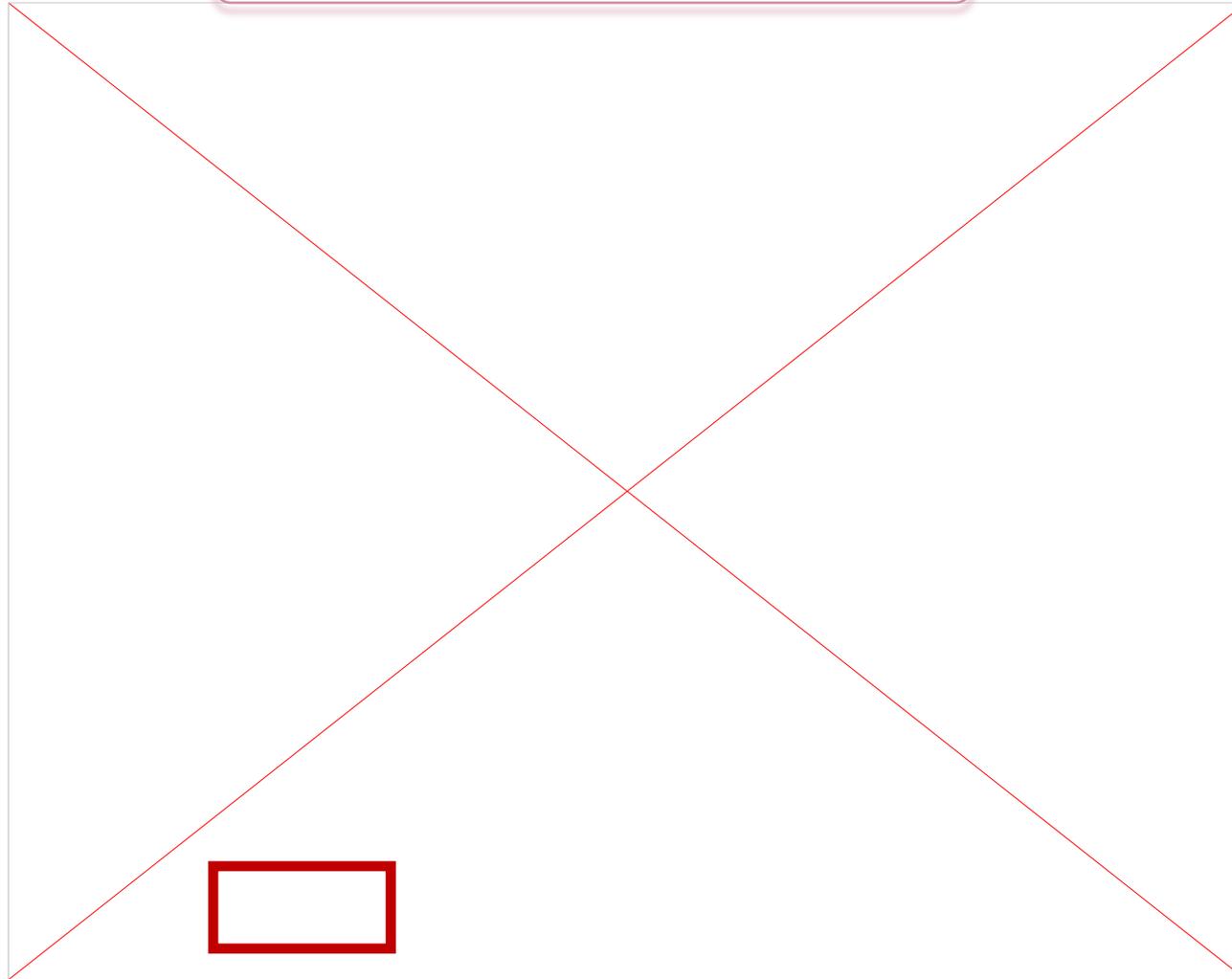


Betran AP, Ye J, Moller A, et al. Trends and projections of caesarean section rates: global and regional estimates. *BMJ Global Health* 2021;6:e005671.

GBD 2021 Fertility and Forecasting Collaborators. Global fertility in 204 countries and territories, 1950–2021, with forecasts to 2100: a comprehensive demographic analysis for the Global Burden of Disease Study 2021. *Lancet*. 2024 Mar 19;S0140-6736(24)00550-6.



Different c-section rate in China



(1996-2012)



C-section rate between urban and rural China

Factors influencing rising caesarean section rates in China between 1988 and 2008

Xing Lin Feng¹, Ling Xu, Yan Guo, Carine Ronsmans

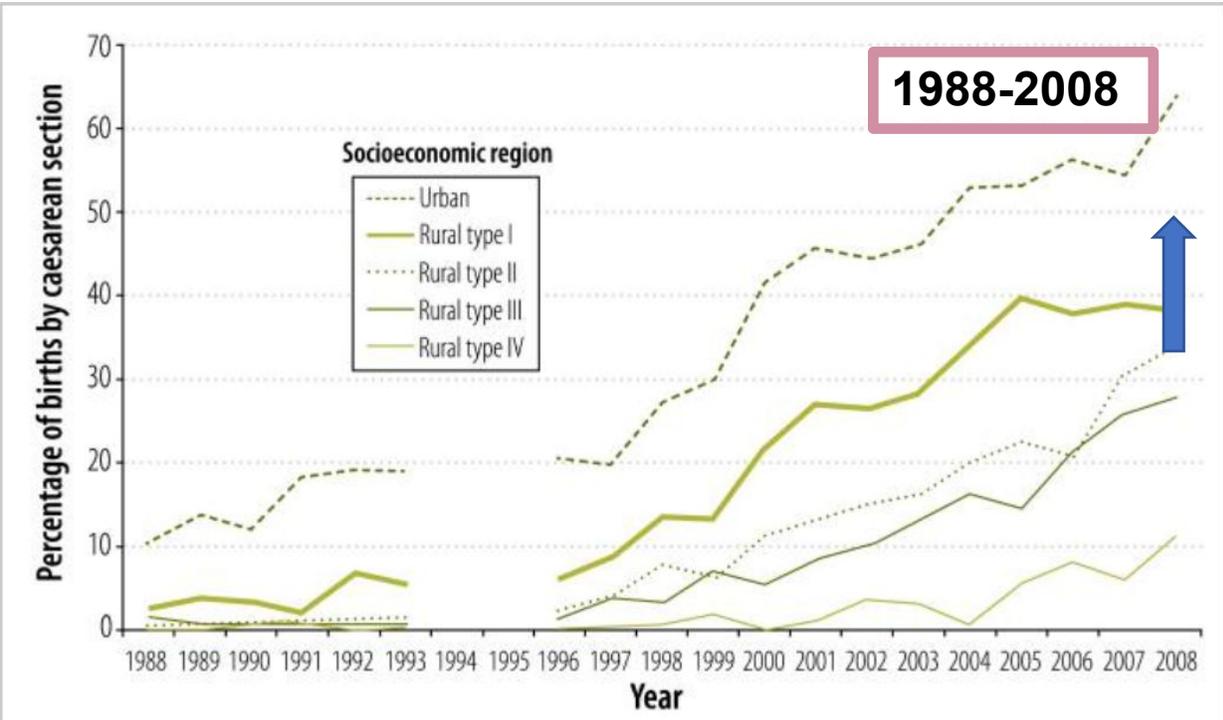
Affiliations + expand

PMID: 22271962^(*) PMCID: PMC3260572^(*) DOI: 10.2471/BLT.11.090399^(*)

Abstract in English, Arabic, Spanish, French, Russian, Chinese

Objective: To identify factors driving the rapid increase in caesarean section in China between 1988 and 2008.

Methods: Data from four national cross-sectional surveys (1993, 1998, 2003 and 2008) and modified Poisson regression were used to determine whether changes in household income, access to health insurance or women's education accounted for the rise in caesarean sections in urban and rural areas.



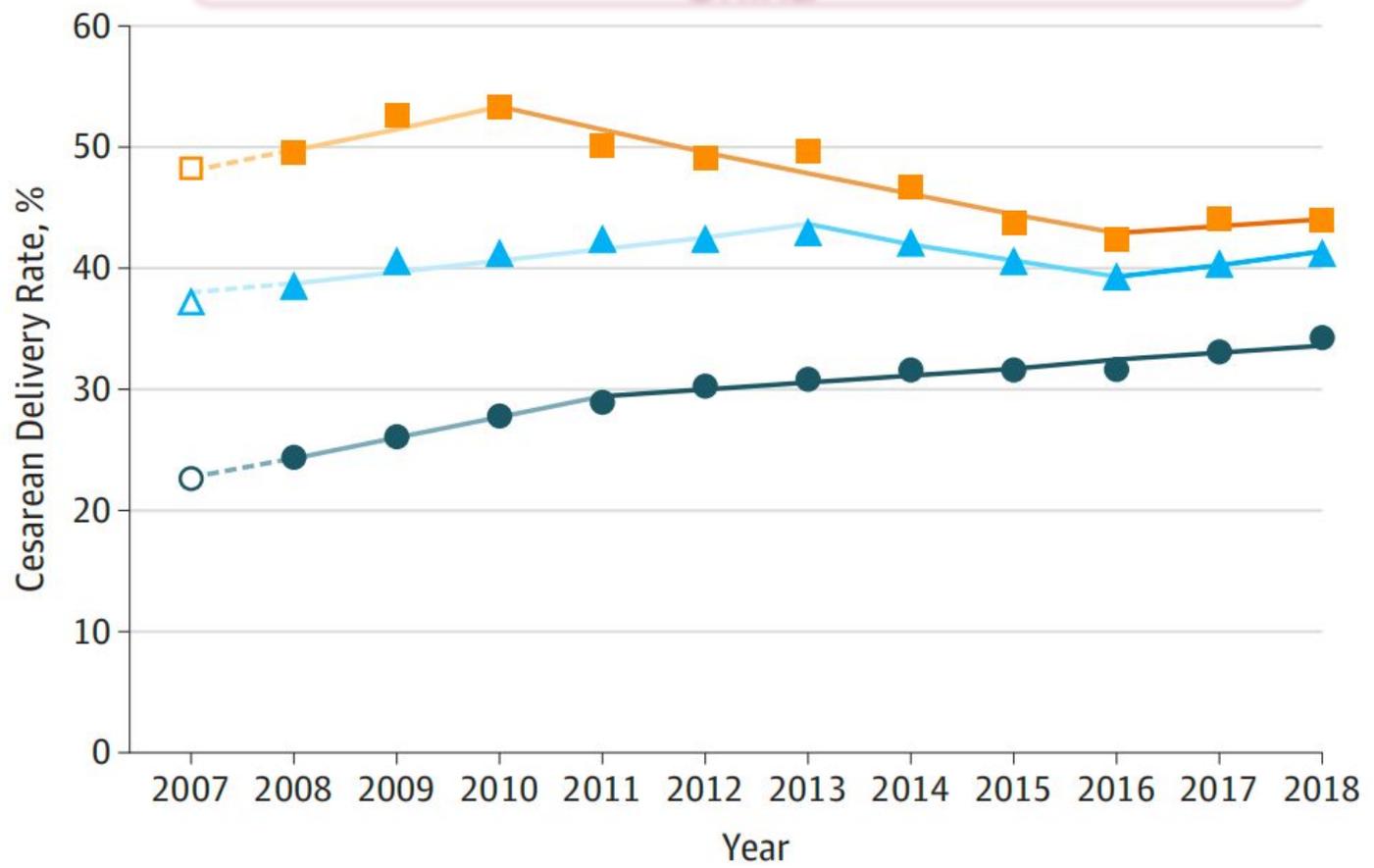
Caesarean section rate in China, 1988 – 2008, ^a by socioeconomic region ^b

^a The data for 1994 and 1995 were missing.

^b The Chinese Ministry of Health divided the country into five socioeconomic regions according to social and economic indicators in the 1982 census: urban and rural types I, II, III and IV, with type IV being the poorest.

C-section rate between cities and rural in China

(2008-2018)



- Supercity ↓
 — APC, 3.5 (95% CI, -1.8 to 9.1) for 2007-2010
 — APC, -3.6 (95% CI, -5.7 to -1.4) for 2010-2016^a
 — APC, 1.4 (95% CI, -7.9 to 11.7) for 2016-2018
- ▲ General city ×
 — APC, 2.4 (95% CI, 1.3 to 3.4) for 2007-2013^a
 — APC, -3.5 (95% CI, -8.9 to 2.3) for 2013-2016
 — APC, 2.7 (95% CI, -2.8 to 8.5) for 2016-2018
- Rural ↑
 — APC, 6.6 (95% CI, 4.7 to 8.6) for 2007-2011^a
 — APC, 1.9 (95% CI, 1.3 to 2.6) for 2011-2018^a

Trends in Cesarean Delivery Rates in China, 2008-2018. Li HT, Hellerstein S, Zhou YB, Liu JM, Blustein J.
 JAMA. 2020 Jan 7;323(1):89-91

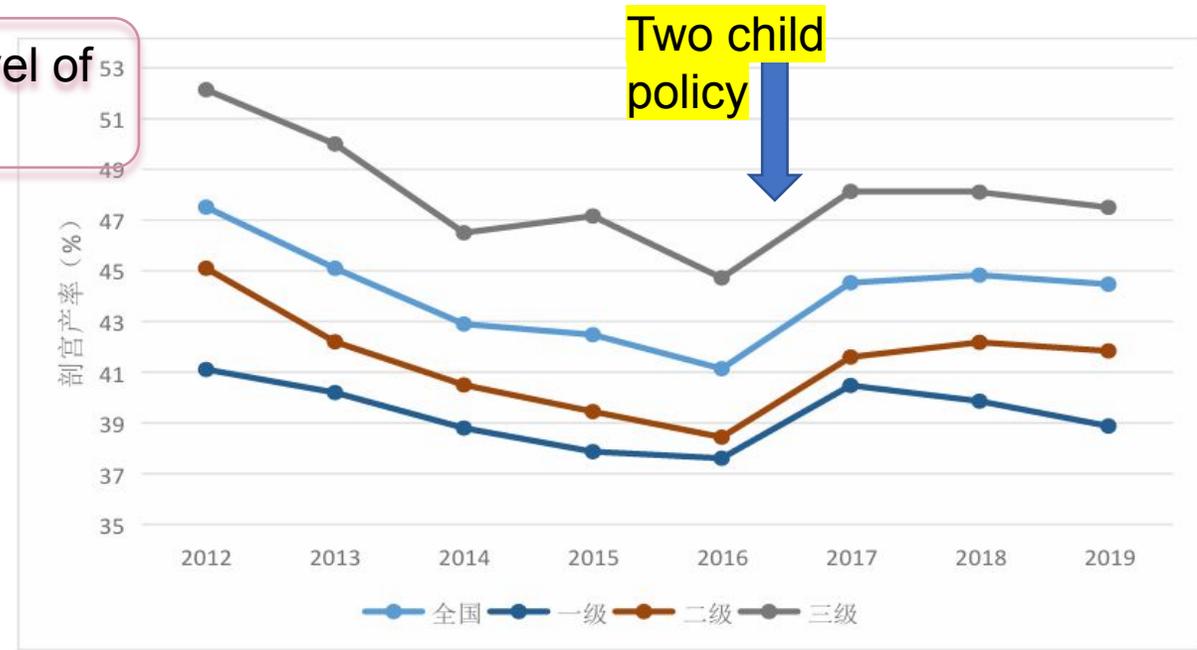
全国妇幼健康监测及年报通讯

2021年第5期 总第103期

国家卫生健康委妇幼司 指导
 全国妇幼卫生监测办公室 承办
 全国妇幼卫生年报办公室

National Health Commission Annual Report(2021)

C-section rate in different level of hospitals in China

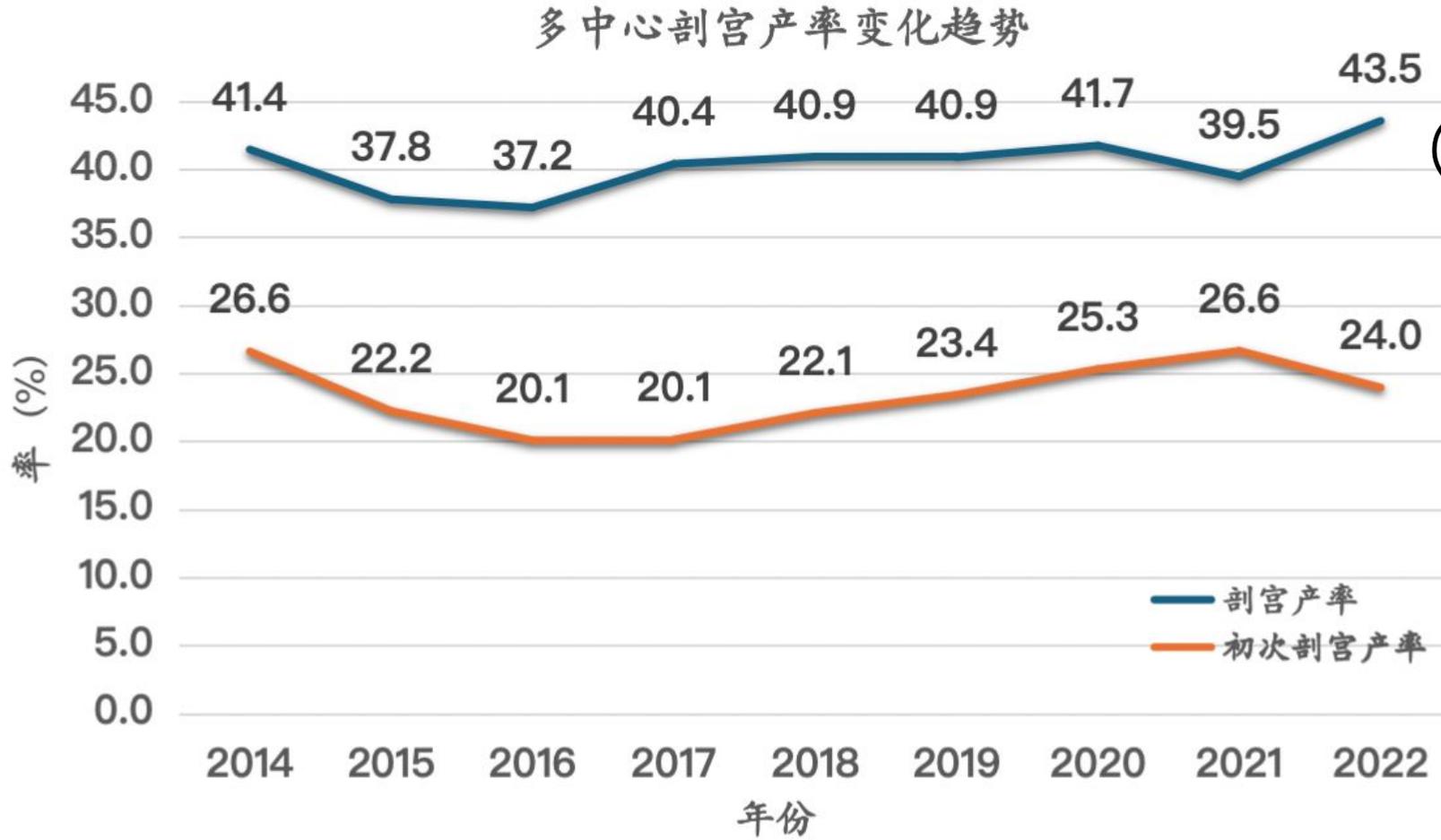


39~47%
(2012-2019)

图1 2012~2019年全国和不同级别医院剖宫产率变化情况



C-section rate in big centers in Guangdong Province



(2014-2022)

WHY

6 big centers in Guangdong Province 301, 895 singleton pregnancies



indication?

medically indicated cesarean section

non-medically indicated cesarean section

CDMR(cesarean delivery on maternal request):

Some pregnant women prefer cesarean delivery and request it without maternal or fetal indication rather than proceeding with a plan for vaginal delivery.



defined in 2006



Method of delivery and pregnancy outcomes in Asia: the WHO global survey on maternal and perinatal health 2007-08

Pisake Lumbiganon¹, Malinee Laopaiboon, A Metin Gülmezoglu, João Paulo Souza, Surasak Taneepanichskul, Pang Ruyan, Deepika Eranjanie Attygalle, Naveen Shrestha, Rintaro Mori, Duc Hinh Nguyen, Thi Bang Hoang, Tung Rathavy, Kang Chuyun, Kannitha Cheang, Mario Festin, Venus Udomprasertgul, Maria Julieta V Germar, Gao Yanqiu, Malabika Roy, Guillermo Carroli, Katherine Ba-Thike, Ekaterina Filatova, José Villar; World Health Organization Global Survey on Maternal and Perinatal Health Research Group

Collaborators, Affiliations + expand

PMID: 20071021(●) DOI: 10.1016/S0140-6736(09)61870-5(●)

Erratum in

Lancet. 2010 Dec 4;376(9756):1902

Abstract

Background: There has been concern about rising rates of caesarean section worldwide. This Article reports the third phase of the WHO global survey, which aimed to estimate the rate of different methods of delivery and to examine the relation between method of delivery and maternal and perinatal outcomes in selected facilities in Africa and Latin America in 2004-05, and in Asia in 2007-08.

The issue of CDMR is particularly serious in China

WHO global survey of CDMR (2010)



0.01~2.10% all over the world

Lumbiganon, P. et al. *Lancet* 375, 490–499 (2010)



Cesarean delivery on maternal request and its influencing factors in Chongqing, China

Ruibin Deng # 1 2 3, Xian Tang # 1 2 3, Jiaxiu Liu 1 2 3, Yuwen Gao 1 2 3, Xiaoni Zhong 4 5 6

Affiliations + expand

PMID: 34011289  PMCID: PMC8132350  DOI: 10.1186/s12884-021-03866-7 

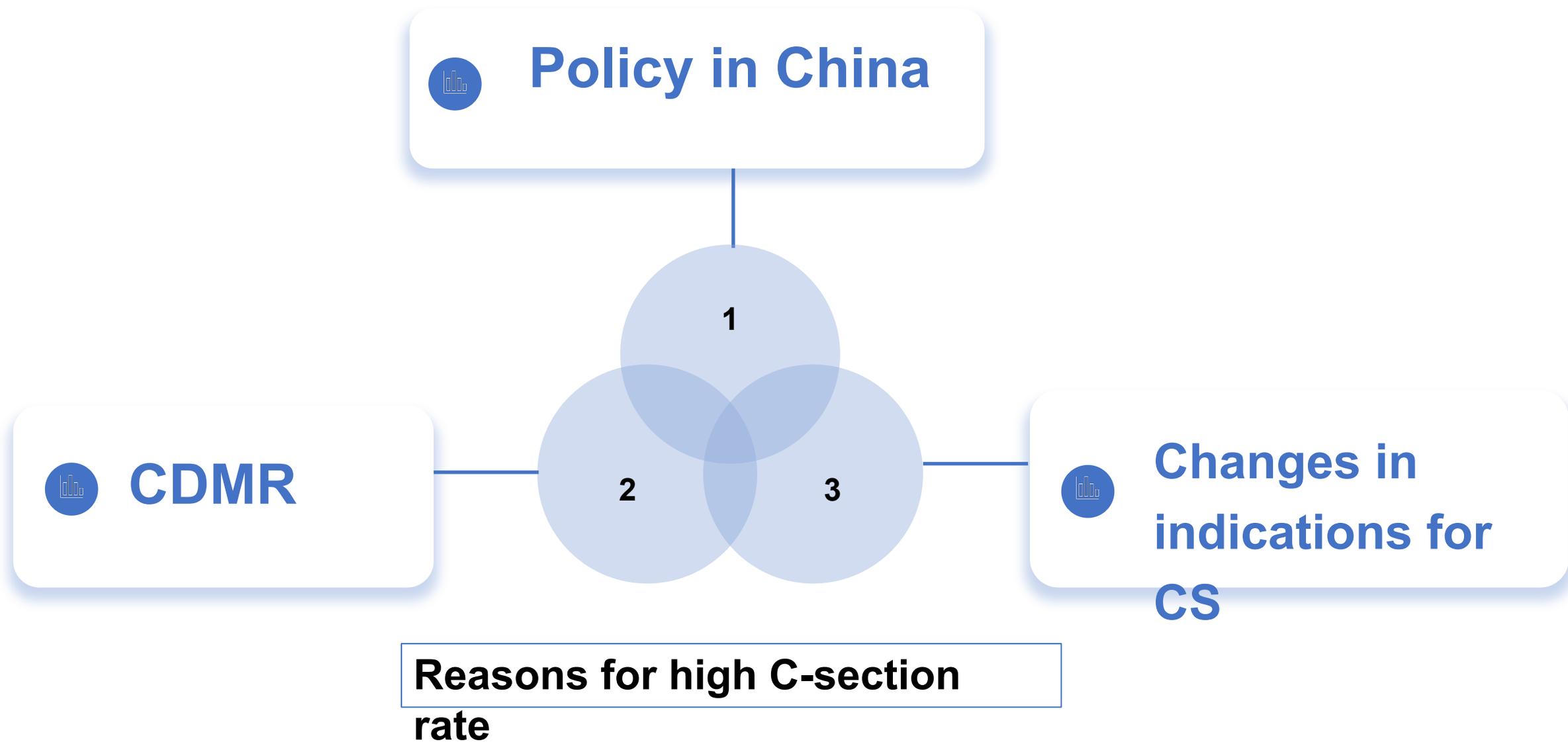
Abstract

Background: A high rate of cesarean delivery has become a cause of global concern. Although the rate of cesarean delivery has declined over recent years, it remains at a high level largely because of cesarean delivery on maternal request (CDMR). Unnecessary cesarean delivery has limited significance in benefiting maternal and infant physical health; in some ways, it might pose potential risks instead. With the implementation of the "Two-child Policy" in China, an increasing number of women plan to have a second child. Accordingly, how to handle the CDMR rate in China remains an important issue.

Methods: Data were collected from a longitudinal follow-up study conducted in Chongqing, China, from 2018 to 2019. A structured questionnaire was administered to subjects for data collection. Basic information, including demographic characteristics, living habits, medical history, and follow-up data of pregnant women, as well as their families and society, was collected. Additionally, delivery outcomes were recorded. Logistic regression was performed to analyze the factors influencing CDMR.

“Maternal request” has become the primary indication for cesarean delivery

2018~2019



全国妇幼健康监测及年报通讯

Policy

2022年第4期 总第108期

国家卫生健康委妇幼司
 全国妇幼卫生监测办公室
 全国妇幼卫生年报办公室

指导
 承办

National Health Commission
Annual Report(2022)

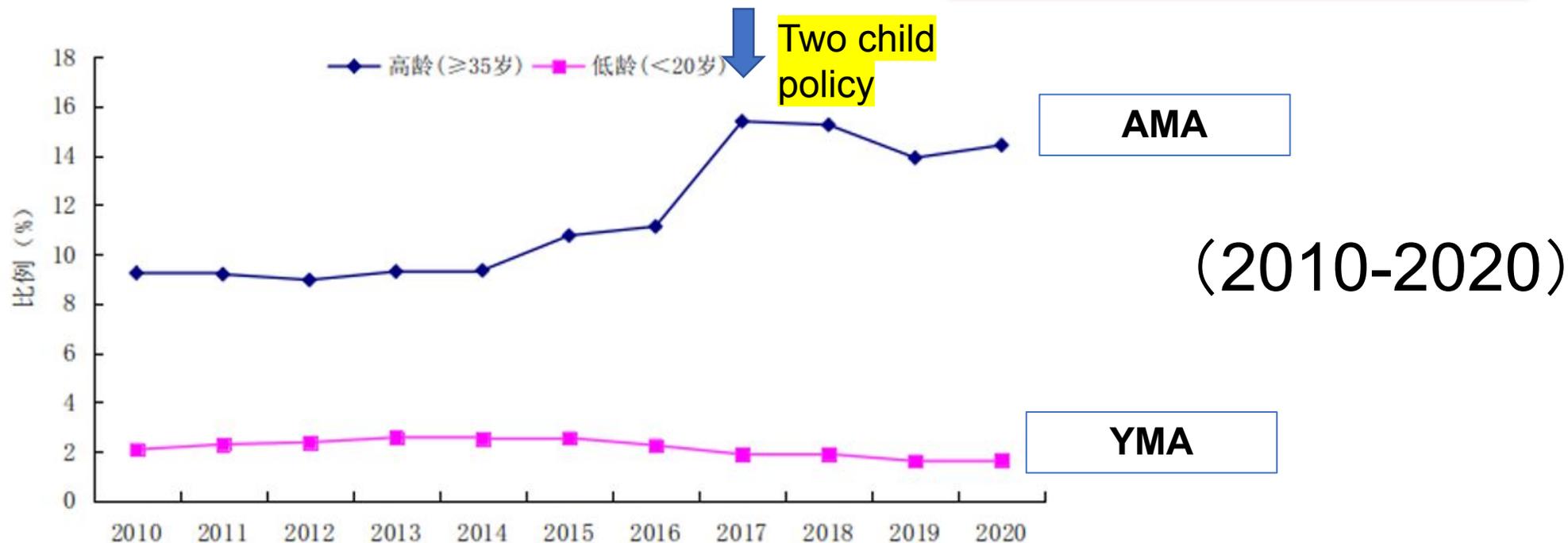
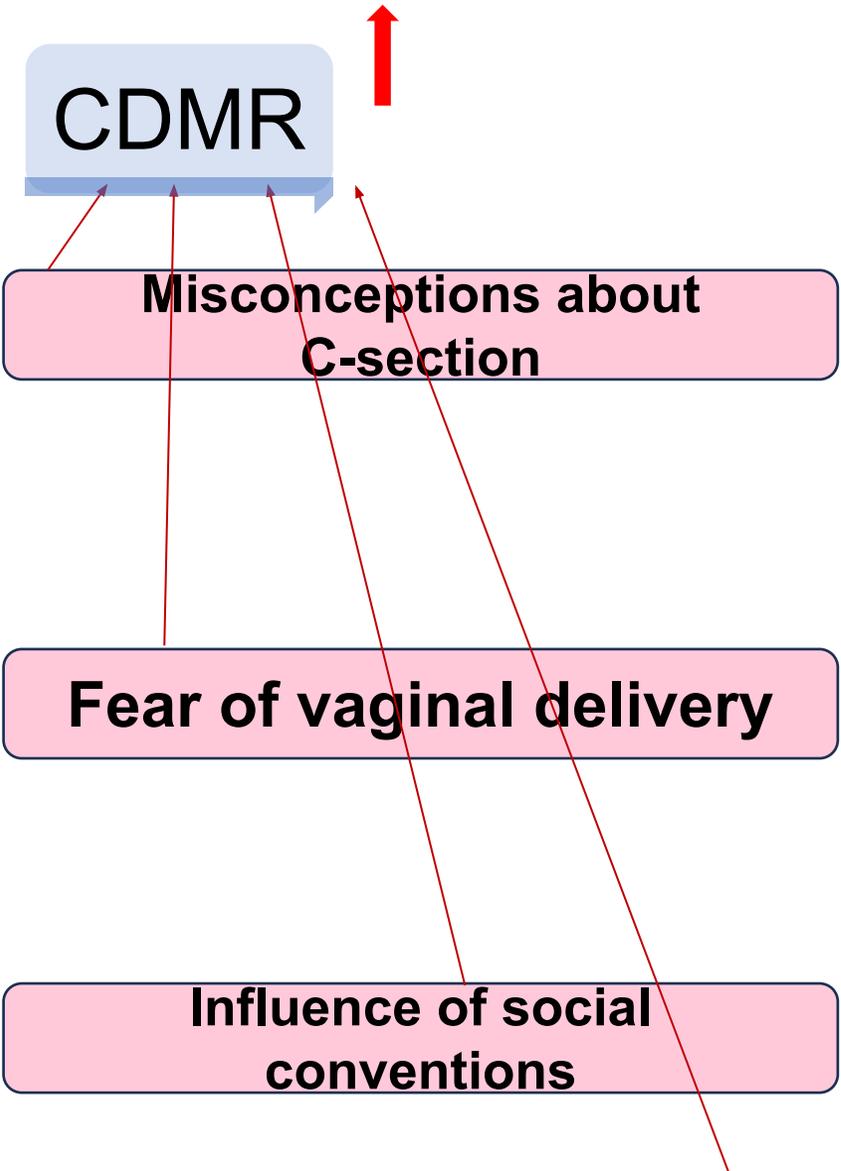


图1 2010~2020年由高龄产妇和低龄产妇分娩的围产儿比例(%)



safer



pain



GOOD day

> BMC Pregnancy Childbirth. IF: 2.8 Q1 2017 Feb 6;17(1):54. doi: 10.1186/s12884-017-1233-8

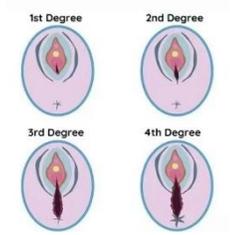
Caesarean deliveries in China

Xin Wang¹, Susan Hellerstein², Lei Hou¹, Liying Zou¹, Yan Ruan¹, Weiyuan Zhang³

It has been suggested that non-indicated caesarean sections are among the main drivers of the high caesarean section rate [1, 8, 9]. A study of 56,968 caesarean sections in southern China showed that the prevalence of caesarean section during 1993–1995, 1996–2000, and 2001–2005 was 13.1, 28.3, and 50.4%, respectively and that the prevalence of caesarean section on maternal request was 0.6, 3.8, and 12.9%, respectively [7]. In the above mentioned WHO study, the overall proportion of women delivering by non-indicated caesarean section ranged from 0.01 to 2.10%, except in China, where this figure was exceptionally high at 11.6% [1].



anxiety



laceration of birth canal



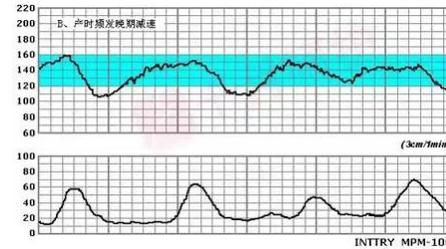
sex

7. Cui HS, Li HT, Zhu LP, Li ZW, Zhou YB, Liu JM. Secular trends in cesarean delivery and cesarean delivery on maternal request among multiparous women who delivered a full-term singleton in Southern China during 1993–2005. *Beijing Da Xue Xue Bao.* 2013;45:422–6. [PubMed] [Google Scholar]

8. Huang K, Tao F, Bogg L, Tang S. Impact of alternative reimbursement strategies in the new cooperative medical scheme on caesarean delivery rates a mixed-method study in rural China. *BMC Health Serv Res.* 2012;12:217. doi: 10.1186/1472-6963-12-217 IF: 2.7 Q2 IF: 2.7 Q2. [PMC free article] [PubMed] [CrossRef] [Google Scholar]

9. Feng XL, Xu L, Guo Y, Ronsmans C. Factors influencing rising caesarean section rates in China between 1988 and 2008. *Bull World Health Organ.* 2012;90(1):30–9. doi: 10.2471/BLT.11.090399 IF: 8.4 Q1 IF: 8.4 Q1. [PMC free article] [PubMed] [CrossRef] [Google Scholar]

Change of indication

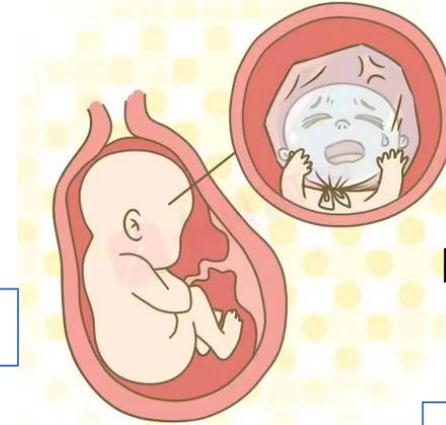


Abnormal FHR

Inconsistent interpretation

= ?

Overdiagnosis



Fetal Distress



First indication

Early 1990s

Cephalopelvic Disproportion

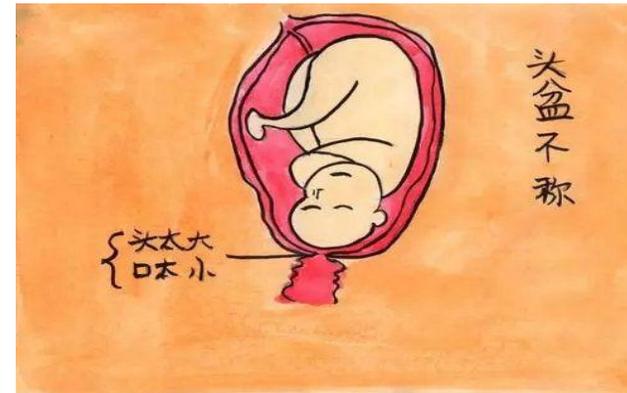


Fetal heart rate monitoring



Ultrasonud

Intrauterine fetal condition



Abused



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If indicated
Maternal-fetal morbidity and mortality



5%-15% ?

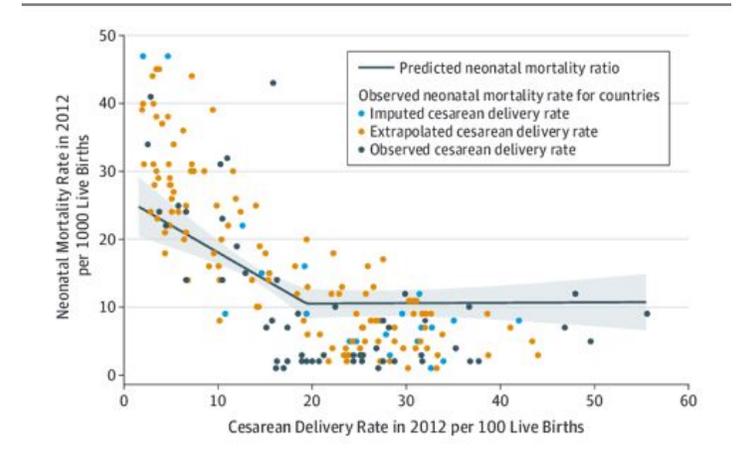
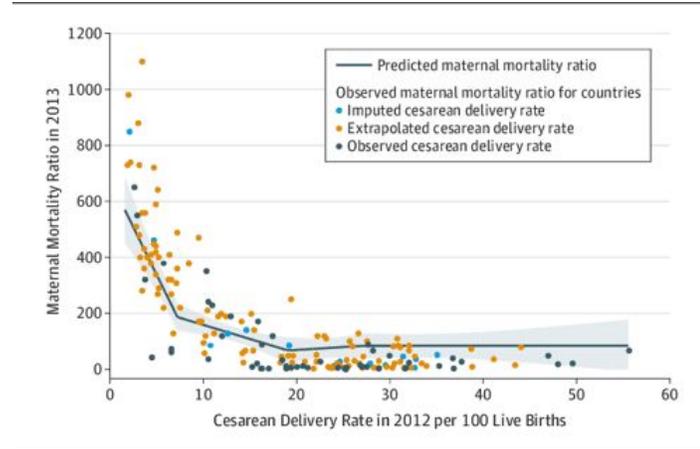


1997

Relationship Between Cesarean Delivery Rate and Maternal and Neonatal Mortality.

G. Molina, T. Weiser, +8 authors A. Haynes • Published in Journal of the American... 1 December 2015 • Medicine • JAMA

TLDR A cross-sectional, ecological study estimating annual cesarean delivery rates from data collected during 2005 to 2012 for all 194 WHO member states to estimate the contemporary relationship between national levels of cesAREan delivery and maternal and neonatal mortality.

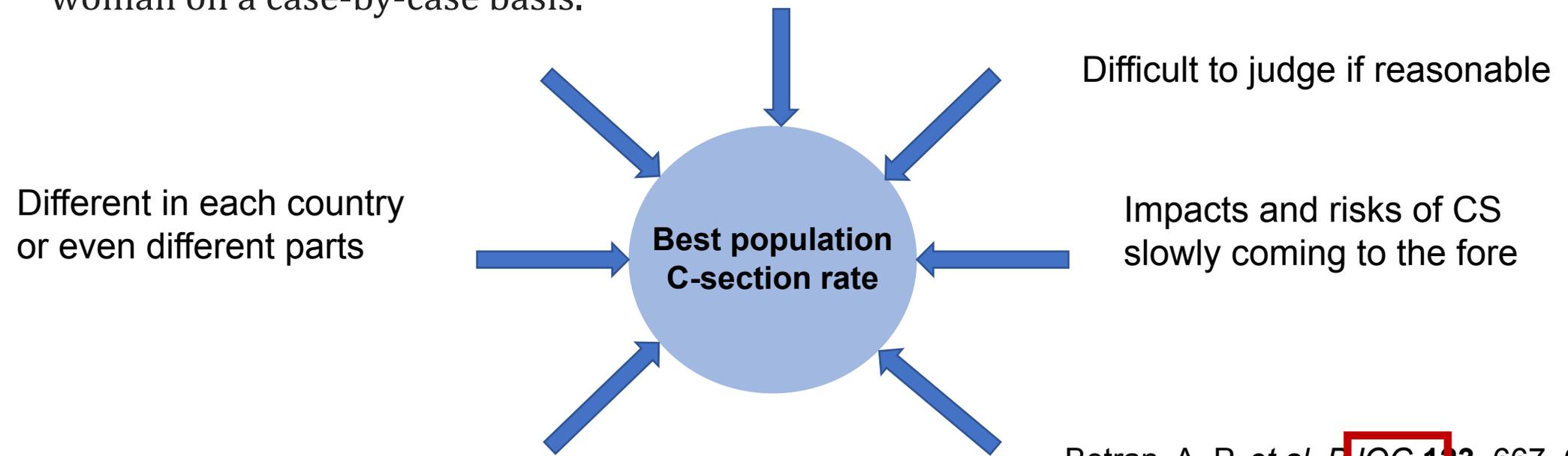


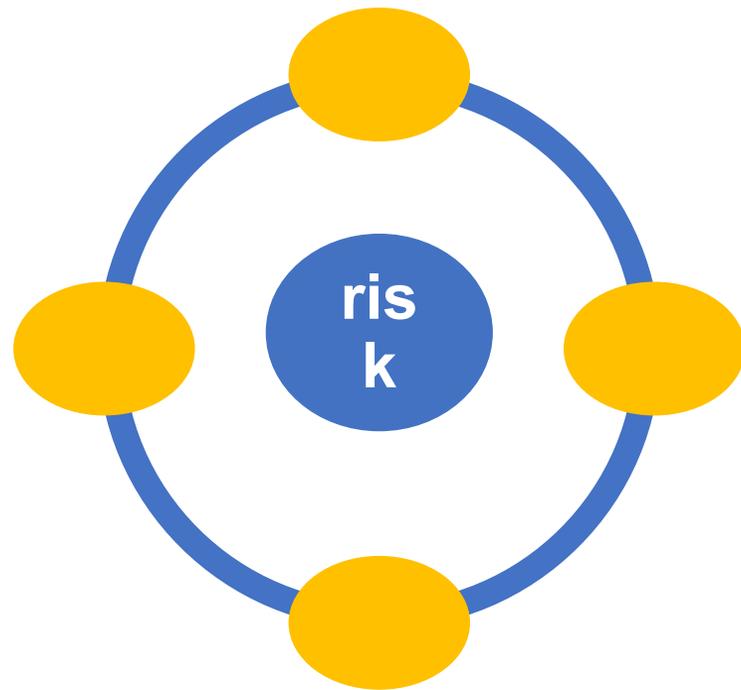


WHO Statement on Caesarean Section Rates 2016

A P Betran ¹, M R Torloni ², J J Zhang ³, A M Gülmezoglu ¹;
WHO Working Group on Caesarean Section

CS should be undertaken when medically necessary, and rather than striving to achieve a specific rate, efforts should focus on providing caesarean section to all women in need. How to define the woman 'in need' can only be ascertained by the health care providers caring for the woman on a case-by-case basis.





risk to the health of women and children



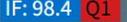
risk to Chinese medical care



risk to China's population development

Short-term and long-term effects of caesarean section on the health of women and children

Prof Jane Sandall, PhD   • Prof Rachel M Tribe, PhD • Lisa Avery, MD • Prof Glen Mola, FRCOG • Prof Gerard HA Visser, PhD • Prof Caroline SE Homer, PhD • et al. [Show all authors](#)

Published: October 13, 2018 • DOI: [https://doi.org/10.1016/S0140-6736\(18\)31930-5](https://doi.org/10.1016/S0140-6736(18)31930-5) 



Subsequent adverse pregnancy outcomes :

uterine rupture, abnormal placentation, preterm birth...

Increased risk of maternal mortality and severe acute morbidity

bleeding,transfusion, adhesions, surgical injury, hysterectomy...

Multiple cesarean sections are associated with a higher risk of maternal morbidity and mortality



altered immune development, an increased likelihood of allergy, atopy, and asthma, and reduced intestinal gut microbiome diversity.



**Occupy medical
resources**

**Affect the development of midwifery
medicine**

**Increase the health insurance
burden**

Impact on China's
healthcare



Comparison of hospital delivery costs between cesarean section and natural delivery and analysis of influencing factors

[Article in English, Chinese]

Sisi Ouyang¹, Zhenzhen Yao², Wen Dai², Yixu Liu², Puying Liu³, Jiayou Luo⁴

Affiliations + expand

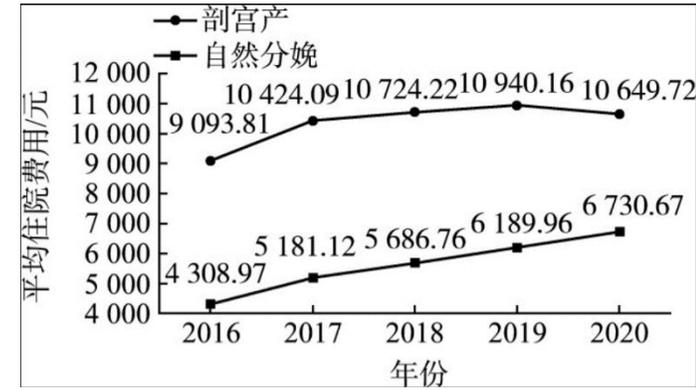
PMID: 37539576^(*) PMID: PMC10930408^(*) DOI: 10.11817/j.issn.1672-7347.2023.220385^(*)

Abstract in English, Chinese

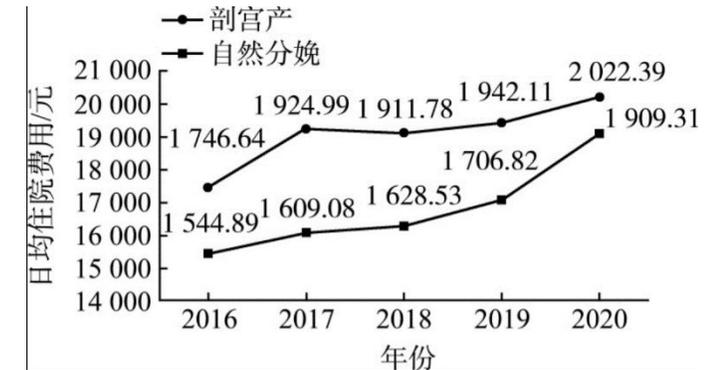
Objectives: The increasing costs of hospital delivery have increased the economic burden of pregnant women, and the mode of delivery is the main factor affecting the costs of hospital delivery. This study aims to explore the difference in costs between cesarean section and natural delivery, and to provide reference for controlling the increase of hospital delivery costs.

Methods: The data of inpatient delivery in the Hunan Maternal and Child Health Care Hospital from January 2016 to December 2020 were selected to compare the total inpatient costs and average daily costs of cesarean section and natural delivery. The linear trend model was used to analyze the trend change of inpatient delivery costs and the generalized linear model was used to analyze the influential factors for inpatient delivery costs.

	C-section	Vaginal delivery
Average hospitalization cost	10447.25 yuan	5567.95 yuan
Average daily costs	1902.57 yuan	1666.40 yuan



Trends of hospitalization costs for cesarean section and natural delivery from 2016 to 2020



Trends of average daily hospitalization costs for cesarean section and natural delivery from 2016 to 2020

The first cesarean section reduces the number of subsequent births

Cesarean section lengthens subsequent birth spacing

Cesarean section increases adverse effects on NEXT pregnancy and delivery

adverse effects on reproduction

affect

Population development of China





content

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How to decrease C-section rate ?

Implementation of
local, regional, and
national efforts

Education about
the benefits of
vaginal delivery



国务院关于印发中国妇女发展纲要和 中国儿童发展纲要的通知

各省、自治区、直辖市人民政府，国务院各部委、各直属机构：

现将《中国妇女发展纲要（2011—2020年）》和《中国儿童发展纲要（2011—2020年）》印发给你们，请认真贯彻执行。

国务院

二〇一一年七月三十日

4. 保障孕产妇安全分娩。加强基层医疗保健机构产科建设和人员培训，提高产科服务质量和孕产妇卫生保健水平。孕产妇系统管理率达到85%以上，全国孕产妇住院分娩率达到98%以上，农村孕产妇住院分娩率达到96%以上。健全孕产妇医疗急救网络，推广适宜助产技术，加强孕产妇危重症救治。落实农村孕产妇住院分娩补助政策。为孕产妇提供必要的心理指导和健康教育，普及自然分娩知识，帮助其科学选择分娩方式，控制剖宫产率。

Government Programme to reduce the CS rate

中国妇幼保健协会启动专门项目给剖宫产“降温”

中央政府门户网站 www.gov.cn 2010年06月10日 来源: 新华社

【字体: 大 中 小】【Email推荐】 发送 打印本页 关闭窗口

新华社北京6月10日电(记者 周婷玉)随着产科技术的发展,孕妇正常分娩过程受到越来越多干扰,剖宫产率在我国持续升高。中国妇幼保健协会10日在北京启动“促进自然分娩,保障母婴安康”项目,旨在通过系列措施给剖宫产“降温”。

这一为期5年的项目总目标是创造一个促进自然分娩的社会环境和理念、推广促进自然分娩的适宜助产技术和规范的健康教育内容和方法、降低不必要的剖宫产以及孕产妇和婴儿死亡率等。

项目具体目标是:全国至少建立100个“促进自然分娩,保障母婴安康”培训中心,开展持续有效的培训,推广助产和产前健康教育适宜技术;至少培训2000名有关助产适宜技术和产前健康教育师资;全国至少100家医疗机构达到示范妇幼保健院或医院标准;促进助产士职称系列和正规助产专业建立。

Provide necessary psychological guidance and health education for pregnant women, popularize the knowledge of natural childbirth, help them scientifically choose the way of childbirth, and control the rate of cesarean section

The project "Promoting Natural childbirth and Safeguarding maternal and Child Health" was carried out
The reduction of cesarean section rate has been included in the assessment indicators of maternal and child health work in all localities

Reduce the number of CDMR



医政医管局

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关于开展分娩镇痛试点工作的通知

发布时间: 2018-11-20 来源:



国卫办医函〔2018〕1009号

各省、自治区、直辖市及新疆生产建设兵团卫生健康委（卫生计生委）：

为贯彻落实《关于印发加强和完善麻醉医疗服务意见的通知》（国卫医发〔2018〕21号）精神，进一步规范分娩镇痛相关诊疗行为，提升产妇分娩镇痛水平，提高围产期医疗服务质量，我委决定在全国开展分娩镇痛试点工作。现将工作方案印发给你们，请遵照执行。各地卫生健康行政部门要切实加强组织领导，结合实际认真组织实施，确保试点工作顺利开展，并及时将试点有关情况报送我委。

国家卫生健康委联系人：医政医管局 丁雯、王斐

联系电话：010—68791885、68791889

中国医师协会联系人：全科与继教部 王振华

联系电话：010—63318368

国家卫生健康委办公厅

2018年11月15日

（信息公开形式：主动公开）

Popularize natural childbirth under conditions of analgesia

The National Health Commission issued the Notice on Carrying out the Pilot Work of Labor Analgesia to popularize natural delivery under analgesia conditions and promote the gradual decline of C-section rate. This greatly encourages pregnant women who give up vaginal delivery for fear of pain.



High risk pregnancy



More Obstetric Challenges

You can see that we have done a lot of CS rate-important indicator of obstetric care

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BMC Public Health

RESEARCH

Open Access



Changes in the characteristics and outcomes of high-risk pregnant women who delivered prior to and after China's universal two-child policy: a real-world retrospective study, 2010–2021

Caixia Zhu^{1†}, Shaofeng Zhang^{1†}, Lixia Shen^{1†}, Lisha Ye¹, Minjin Zhan¹, Shiqin Cai¹, Jingwan Huang¹, Zilian Wang^{1*} and Haitian Chen^{1*}



2010–2021:

- To identify the maternal and neonatal outcomes under different family planning policies.
- To suggest specific recommendations to overcome the challenges of the new family policy.





Real-world retrospective study

- ✓ 39,016 singleton pregnancies
- ✓ Jan 2010 -- Dec 2021

A tertiary center-based

- ✓ Maternal demographics, complications, delivery mode and obstetric outcomes were analyzed.

- ✓ Two groups:
 - OCP: 2010–2015年
 - TCP: 2016–2021年

* OCP: one-child policy period
TCP: two-child policy period

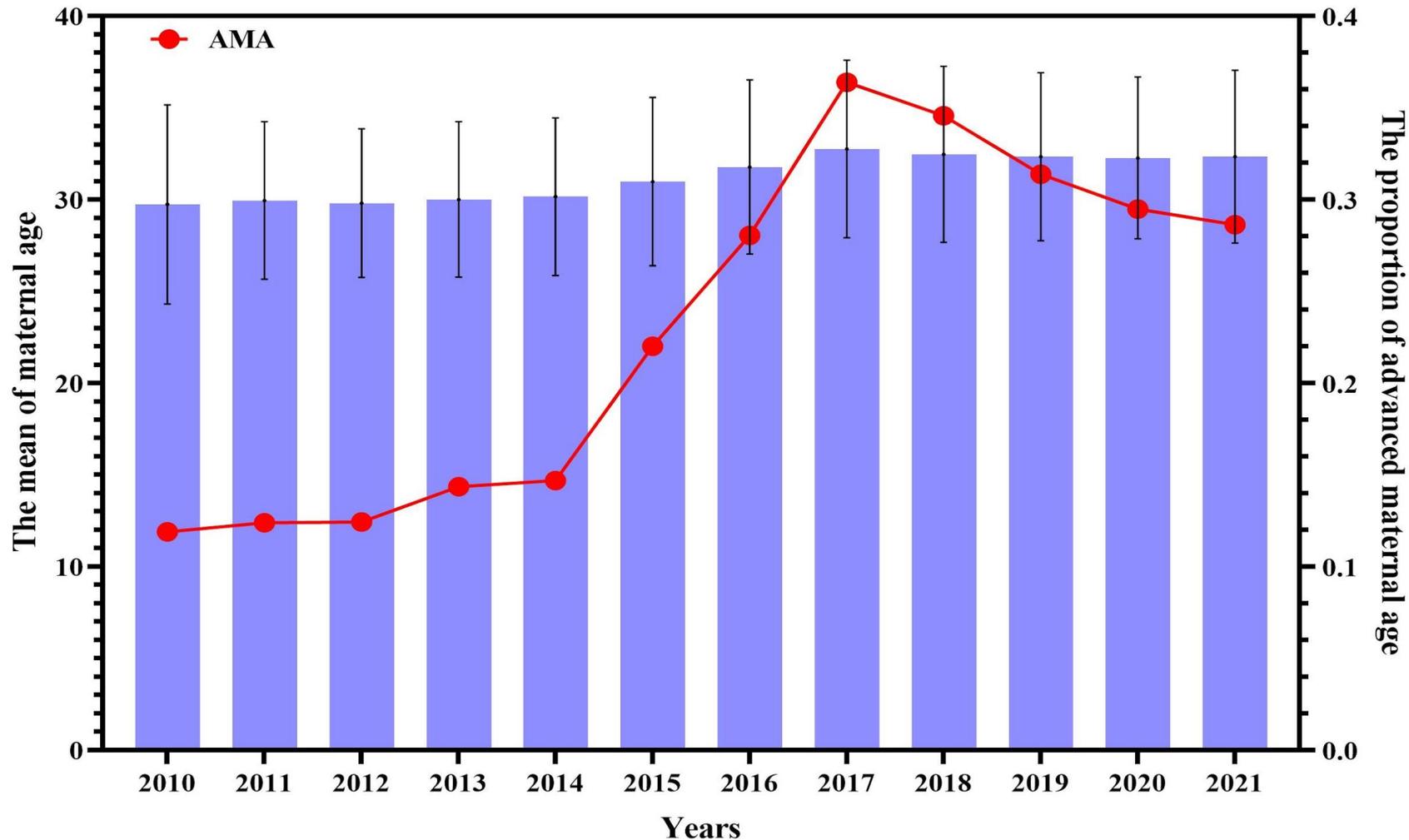
age at

◆ The maternal age in TCP group was greater than that in OCP group.

AMA

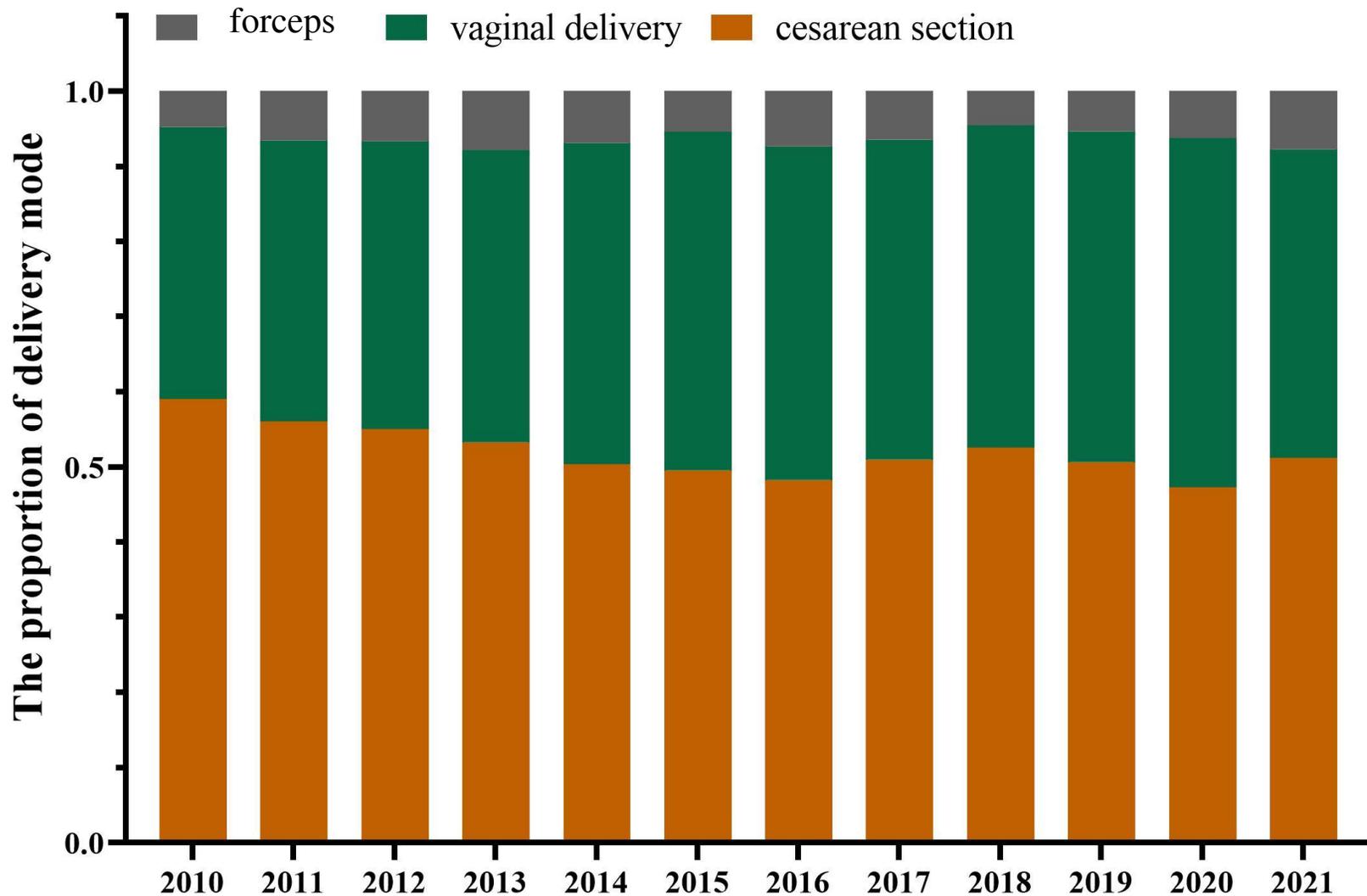
◆ OCP: 14.6%
◆ TCP: 31.6%
P<0.001

*AMA: advanced maternal age



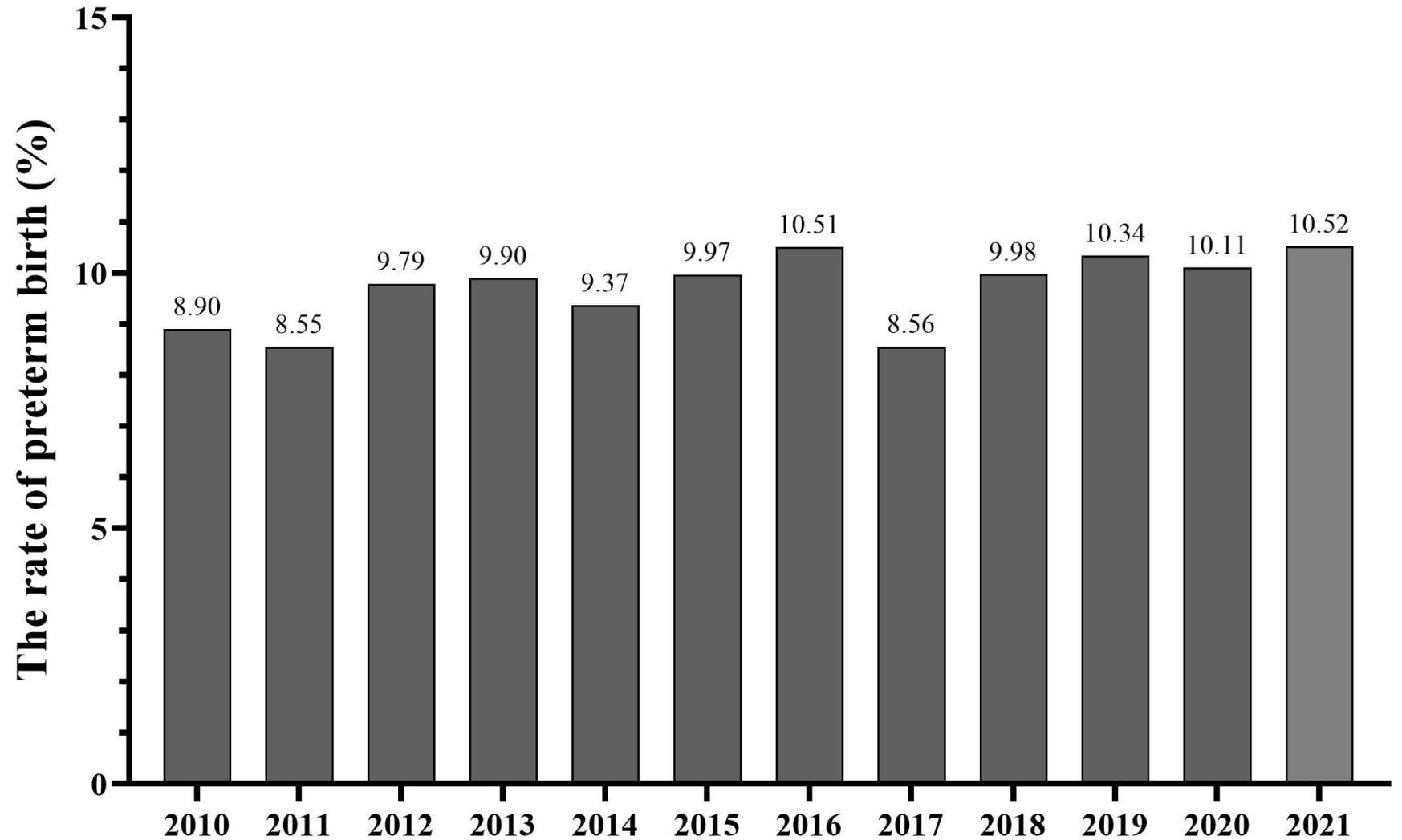
C-section rate

- ◆ OCP: 53.7%
- ◆ TCP: 49.9%
- P<0.001



Preterm birth rate

- ◆ OCP: 9.4%
- ◆ TCP: 10.0%
- P=0.048



Long-term management of childbearing

Conclusions

In summary, after implementation of the universal two-child policy, more pregnancies occurred in women with AMA, and women were more likely to have multiple children. The rate of cesarean section significantly declined in the TCP period after adjusting for parity and fetal distress. After adjusting for the same confounding factors, the risk of postpartum hemorrhage in the TCP period was similar in pregnant women ≥ 35 years old, but increased in pregnant women < 35 years old. As the Chinese government has announced a three-child policy, the findings of this study highlight the increased trend of AMA among pregnant women for obstetricians as well as adverse obstetric outcomes.

Prevent

Predict

Pre-warning

Planning

Previews

5P





中山大學 附属第一医院

The First Affiliated Hospital, Sun Yat-sen University

谢谢观看

Thanks for watching

28 August
2024

The First Affiliated Hospital, Sun Yat-sen University
Haitian
Chen

