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Incidence and trend of preterm birth in China, 1990–2016: a systematic review and meta-analysis

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ABSTRACT

Objectives To update the WHO estimate of preterm birth rate in China in 1990–2016 and to further explore variations by geographic regions and years of occurrence.

Design Systematic review and meta-analysis.

Data sources Pubmed, Embase, Cochrane Library and Sinomed databases were searched from 1990 to 2018.

Eligibility criteria Studies were included if they provided preterm birth data with at least 500 total births. Reviews, case–control studies, intervention studies and studies with insufficient information or published before 1990 were excluded. We estimated pooled incidence of preterm birth by a random effects model, and preterm birth rate in different year, region and by livebirths or all births in subgroup analyses.

Results Our search identified 3945 records. After the removal of duplicates and screening of titles and abstracts, we reviewed 254 studies in full text and excluded 182, leaving 72 new studies. They were combined with the 82 studies included in the WHO report (154 studies, 187 data sets in total for the meta-analysis), including 24 039 084 births from 1990 to 2016. The pooled incidence of preterm birth in China was 6.09% (95% CI 5.86% to 6.31%) but has been steadily increasing from 5.36% (95% CI 4.89% to 5.84%) in 1990–1994 to 7.04% (95% CI 6.09% to 7.99%) in 2015–2016. The annual rate of increase was about 1.05% (95% CI 0.85% to 1.21%). Northwest China appeared to have the highest preterm birth rate (7.3%, 95% CI 4.92% to 9.68% from 1990 to 2016).

Conclusions The incidence of preterm birth in China has been rising gradually in the past three decades. It was 7% in 2016. Preterm birth rate varied by region with the West having the highest occurrence.

Strengths and limitations of this study

- ► This systematic review focused on the current status of preterm birth in China and summarised preterm birth rate over the past three decades.
- ► The meta-analysis updated the estimate of preterm birth rate over time and compared among geographic regions in China.
- ► The inclusion of stillbirth increased preterm birth rate, which calls for a standardised definition for international comparisons.
- ► Most included studies lacked information on the subtypes of preterm birth and the method of gestational age estimation, causing in-depth analysis difficult.

INTRODUCTION

Preterm birth before 37 completed weeks of gestation[1]is often considered as one of the indicators reflecting a country's health level and social development. Complications of preterm birth is the leading cause of child under-5 mortality globally and ranked first in the causes of perinatal mortality in China.[2 3] The survival of preterm infants is at a greater risk of health problems both in the short and longer terms.[4] In addition to the direct health problems and parenting psychological stress,[5] preterm birth also causes enormous healthcare costs.[6 7] Data from Germany showed that the average health costs of a preterm infant in the first year were €9717 EUR higher than that of a full-term infant.[8] In 2005, it was estimated by the Institute of Medicine that the socioeconomic burden associated with preterm birth was at least US$26 billion per year in the USA.[9]

The WHO estimates that the global preterm birth rate was 9.8% (uncertainty interval (UI): 8.3%–10.9%) in 2000, 11.1% (UI: 9.1%–13.4%) in 2010 and 10.6% (UI: 9.0%–12.0%) in 2014.[10 11] Increasing preterm birth rates are affected by multiple factors, including an increasing proportion of pregnant women over 34 years old, greater use of assisted reproduction technology and increasing number of multiple births.[12] Improvement in maternal and perinatal healthcare increases survival of extremely preterm and very preterm infants, who otherwise might have been stillbirths.[13 14] A 2005 study from 16 provinces in China showed that the incidence of preterm birth among 42 139 livebirths was 7.8%.[15] In 2011, Zou *et al* conducted a multicentre survey including 107 905 livebirths from 14 provinces in China reporting a preterm birth rate of 7.1%,[16] which differed substantially from the incidence of 11.0% of singleton livebirths from

63 tertiary hospitals in 23 provinces in China between 2011 and 2014.[17] Yet our multicentre cross-sectional survey involving 89 hospitals in 25 provinces in China has showed that the incidence of preterm birth was 7.3% between 2015 and 2016.[18] In addition to the variations among different studies, the trend of preterm birth rate in China over the past three decades remains unclear. It is also worth noting that China opened two-child policy in 2015.[19] As more families choose to have a second baby, whether the incidence of preterm birth is impacted needs to be explored. Therefore, our study aims to update the WHO estimate of preterm birth rate in China from 2014 to 2016 and to further explore variations by geographic regions and years of occurrence.

METHODS

This study was reported according to the Preferred Reporting Items for Systematic Reviews and Meta-analyses guidelines (online supplemental table S1).

Search strategy

Recently, WHO published a review on global, regional and national estimates of levels of preterm birth rate in 2014.[11] Of note, the literature search was performed in February 2016 and articles published from 1990 to 2016 were screened. Our team participated in the study and conducted literature review of Chinese literature. This study is an update of the estimate for China. We followed the same search strategy and data extraction method as the previous paper for the maximal compatibility. In February 2019, we searched articles published from 2016 to 2018 in the same databases, including Pubmed, Embase, Cochrane Library and Sinomed using the same term as 'preterm birth', 'preterm labour', 'preterm delivery', 'premature labour', 'premature birth', 'premature delivery', 'pprom' or 'premature foetus membrane rupture', cross-referenced with 'China', without language restrictions but restricted to the six most highly cited Chinese medical journals in the Sinomed database. The search strategy is found in online supplemental table S2. Since the publication year of articles in our search had overlapped with WHO's search, we removed the duplicate articles in the title and abstract screening step. It should also be noted that there was, on average, a 2-year time lag between the study year and publication year. Thus, while our literature search was up to 2018, the study year was up to 2016.

Selection criteria

Studies were eligible if preterm birth rate was reported in at least 500 total births in Chinese population.[20] Reports using livebirths or all births as the denominator were all eligible. We excluded reviews, case–control studies, experimental studies or those lacking sufficient information to determine the preterm birth rate. Studies collected before 1990 (or where the time period of collection was not reported) were not eligible. Where there were multiple reports from the same study population, we used only the data with most comprehensive information. Studies focusing on high-risk population only or reporting preterm birth rate less than 3% were also excluded on the basis of biological implausibility.[21]

Data extraction and quality assessments

After removing duplicates, two reviewers screened all titles and abstracts and then assessed the full text of potentially eligible articles independently. For each eligible report, extracted data including author, publication year, region, study design, year of data collection, method of estimating gestational age (GA), definition of preterm birth (per 100 livebirths or all births, singletons or singletons and multiples) and rate of preterm birth. A midpoint year was assigned to each study. Any disagreements were resolved by discussion or a third reviewer.

We assessed the quality of the included studies by the scales recommended by the Agency for Healthcare Research and Quality (AHRQ). For cross-sectional studies, we used a scoring approach of 11 items to grade quality, and publications scored 8–11 points were deemed to be of high quality, whereas a score of 4–7 represented moderate quality and a score of 0–3 represented low quality.[22] For cohort studies, we used the Newcastle-Ottawa Scale recommended by AHRQ to grade quality, which contains three perspectives including the selection of the study groups, the comparability of the groups and the ascertainment of either the exposure or the outcome of interest.[23] Publications with a total score of 7–11 were deemed to be of high quality.

Statistical analyses

To calculate the preterm birth rate in China, we conducted a meta-analysis of the included studies using R V.3.4.4. We evaluated the heterogeneity among studies using both the Cochran Q test statistic and I^2 statistic and assumed a random effects model because of a clear heterogeneity in the included studies. Subgroup analyses and meta-regression were conducted to explain the potential sources of heterogeneity. Factors that were investigated included the midpoint year of data collection, administrative region, method of estimating GA and the definition of preterm birth. In our analysis, we calculated the preterm birth rate in livebirths from the reports using livebirths as the denominator and all births from the reports using all births as the denominator, respectively. All studies (regardless of denominator population) were used to calculate the preterm birth rate. Publication bias was assessed by funnel plot and Egger's linear regression tests. The annual rate of increase = $(PTB_{2015–2016}/PTB_{1990–1994})^{(1/26)}$-1 ($PTB_{2015–2016}$: the preterm birth rate in 2015–2016, $PTB_{1990–1994}$: the preterm birth rate in 1990–1994).

Patient and public involvement

There was no involvement of patients or the public in any part of this research.

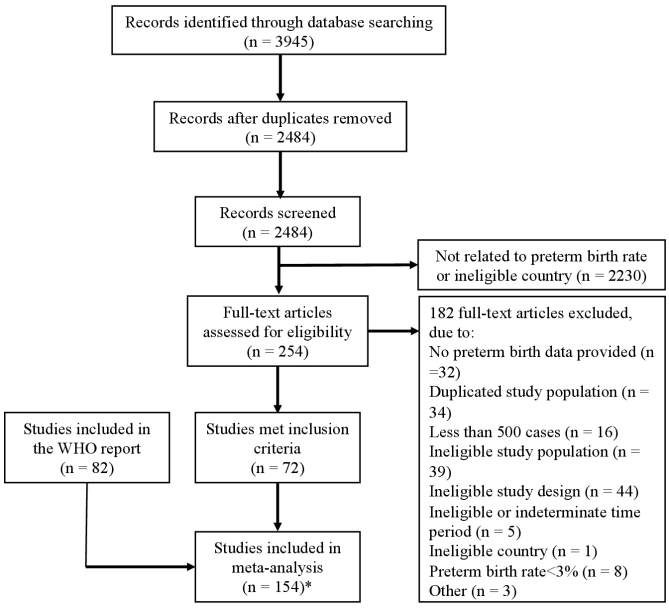

Figure 1 Study selection. *The 154 eligible studies included 187 datasets.

RESULTS

A total of 3945 records were identified. After removal of duplicates and initial screening on the basis of the title and abstract, we reviewed 254 studies in full text. Of these publications, 182 articles were excluded, including 44 were ineligible study design, 39 investigated patients with high-risk for preterm birth, 34 had a duplicated population with other studies, 32 did not provide preterm birth data, 16 had a sample size fewer than 500 patients, 8 had a preterm birth rate less than 3%, 5 had ineligible or unknown year of data collection and 4 were from out of China or had other reasons. After exclusions, we kept 154 studies in the meta-analysis, 82 of which were included in the WHO report[11] while 72 studies were new. These studies employed 187 data sets (figure 1 and online supplemental table S3).[16 17 24–175]

These studies were conducted in seven administrative regions of China, including 41 from the East, 40 from the North, 18 from the South, 16 from the Central, 9 from the Southwest, 6 from the Northwest, 1 from the Northeast, 17 from Hong Kong, Macau and Taiwan and the rest of 39 from multiple provinces. Of the 187 data sets, 110 calculated preterm birth rate in livebirths only, 15 in all births (livebirths and stillbirths) and other 62 data sets did not specify live birth or all births. In terms of epidemiological design, 61 were cross-sectional studies and 93 were cohort studies. According to the quality criteria recommended by AHRQ, 42 studies were high quality, 100 were moderate quality and the remaining 12 were low quality. All included studies defined preterm birth as a delivery before 37 weeks of gestation. Thirty-nine studies estimated GA by last menstrual period (LMP) combined with ultrasound, 39 studies estimated GA by LMP, 5 studies estimated by ultrasound. Among 154 studies, 97 studies included singletons only, 25 studies included both singletons and multiples and 32 studies are unknown.

The estimated pooled preterm birth rate in China from 1990 to 2016 was 6.09% (95% CI 5.86% to 6.31%) overall, ranging from 3% to 16.28%, with considerable heterogeneity (I^2=99.8%, p<0.0001). The estimated preterm birth rate by region was as follows: 5.67% (95% CI 4.26% to 7.09%) in the Central, 6.19% (95% CI 5.66% to 6.73%) in the East, 5.48% (95% CI 4.96% to 6.01%) in the North, 3.8% (95% CI 2.4% to 5.21%) in the Northeast, 7.3% (95% CI 4.92% to 9.68%) in the Northwest, 6.14% (95% CI 5.96% to 6.32%) in the South, 6.96% (95% CI 4.94% to 8.99%) in the Southwest and 6.13% (95% CI 5.55% to 6.71%) in Hong Kong, Macau and Taiwan. Only one study was from the Northeast, thus the preterm birth rate may not be reliable. (figure 2)

The pooled preterm birth rate in China was 6.00% (95% CI 5.69% to 6.3%) for livebirths and 7.01% (95% CI 5.9% to 8.12%) for all births (livebirths and stillbirths). The rate has been increasing in the past three decades, from 5.36% (95% CI 4.89% to 5.84%) in 1990–1994 to 7.04% (95% CI 6.09% to 7.99%) in 2015–2016 (table 1). The average annual rate of increase was 1.05% (95% CI 0.85% to 1.21%).

Univariate meta-regression analysis suggested that the midpoint year (p<0.001), administration region (p=0.009), definition of preterm birth (livebirths/all births (p=0.021), singletons or singletons and multiples (p=0.013)) and method of estimating GA (p=0.095) might have contributed to the heterogeneity, whereas we detected no significant differences in quality level of study (p=0.376). We further conducted multivariate meta-regression, which showed that midpoint year, administration region, and definition of preterm birth (singletons or singletons and multiples) might be sources of heterogeneity. The funnel plot did not suggest any publication bias (p=0.097) (figure 3).

We performed a sensitivity analysis where the low-quality studies were excluded. The results remained essentially the same (online supplemental table S4), confirming that the results were unlikely confounded by the quality of studies.

DISCUSSION

Our study shows that the pooled preterm birth rate in China was 6.09% (95% CI 5.86% to 6.31%) between 1990 and 2016. The incidence of preterm birth has been increasing in China in the past three decades, from 5.36% (95% CI 4.89% to 5.84%) in 1990–1994 to 7.04% (95% CI 6.09% to 7.99%) in 2016. The annual rate of increase was 1.05% (95% CI 0.85% to 1.21%). Preterm birth rate differed by regions, among which West China showed the highest preterm birth rate.

Preterm birth is officially defined as a delivery between 28 and 37 completed weeks of gestation in China.[176] With the development and popularisation of prenatal diagnosis and perinatal care, more and more compromised

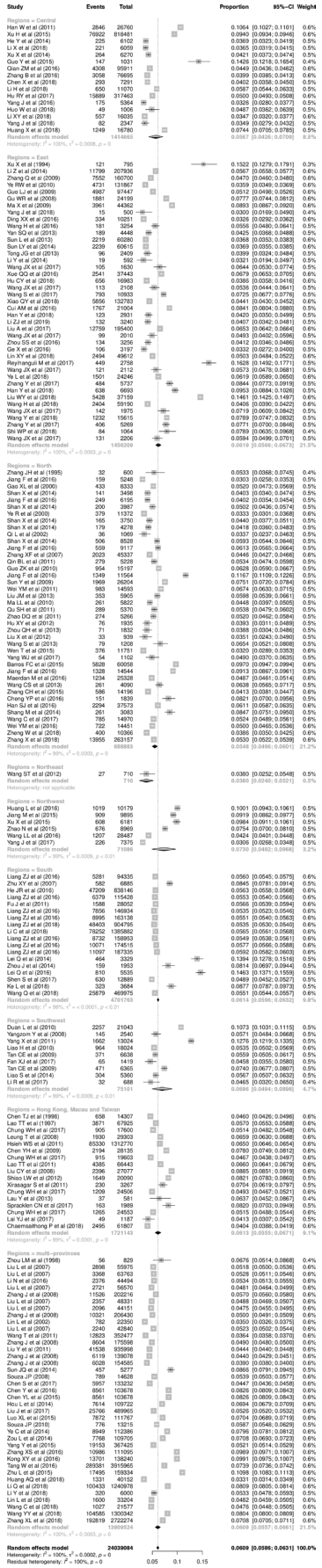

Figure 2 Random effects meta-analysis of preterm birth in China.

fetuses are recognised and born even before 28 weeks of gestation. Many of these extremely preterm births can now survive and included in the statistics of preterm birth. Iatrogenic preterm birth related to medical intervention accounted for a large proportion of preterm birth in China,[18] which may be one of the reasons for the gradual increase in preterm birth rate in recent years. In addition, inclusion of stillbirths in the denominator population increased the overall preterm birth rate. Similarly, Morisaki *et al* found that in a multicountry analysis of the WHO Multi-Country Survey on Maternal and Newborn Health that compared with the preterm birth rate based on livebirths alone, the inclusion of stillbirths had substantially increased the preterm birth rate, which could reflect international disparities in perinatal health more accurately.[177] Their findings are in line with our finding in our univariate meta-regression that preterm birth rate was higher in all births (7.01%, 95% CI 5.9% to 8.12%) than that in livebirths only (6.0%, 95% CI 5.69% to 6.3%), indicating that preterm birth as a public health problem may be more severe than expected. Not only appropriate prevention and management strategies but also more research on aetiology and pathogenesis are needed to reduce preterm birth rate in China.

Assisted reproductive technology (ART) is being increasingly used in China. One nationwide survey of ART from 178 reproductive centres and 13 sperm banks demonstrated that total ART cycle procedures of in vitro fertilisation increased from 78 002 during 1981–2004 to 393 538 during 2005–2011 in China.[178] ART is a known risk factor for preterm birth for both singleton and multiple pregnancies.[179] Meanwhile, the risk of prematurity is much higher in twins than in singletons.[180] Therefore, the popularity of ART may also be one of the possible reasons for the gradual increase in preterm birth rate in China since 1990. Recently installed two-child policy may also be a factor for the increasing preterm birth rate since 2015 as women who had second child were often in advanced age, which is a risk factor for preterm birth.[179]

Subgroup analysis in different administration regions showed that the preterm birth rate was highest in the West, of which the preterm birth rate was 7.3% (95% CI 4.92% to 9.68%) in the Northwest and 6.96% (95% CI 4.94% to 8.99%) in the Southwest. The preterm birth rate in Hong Kong, Macau and Taiwan was estimated to be 6.13% (95% CI 5.55% to 6.71%), which was close to that in the Central and North China. The high preterm rate in the West may be associated with a lower socioeconomic status.[181] On the other hand, the Northeast appeared to have the lowest preterm birth rate. Although only one study was included in our meta-analysis, the preterm birth rate in Northeast (3.8%, 95% CI 2.4% to 5.21%) was in line with our multicentre survey in which the preterm birth rate was 5.2% (95% CI 4.4% to 6.0%).[18] Studies showed that height is inversely associated with the risk of preterm birth.[182] Since women in Northeast China is generally taller,[183] this may partially explain the lowest preterm birth rate in that region. It is also a possibility that as the fetuses there tend

Table 1 Pooled incidence of preterm birth in China, 1990–2016

Characteristic	Number of studies	Number of births	Preterm birth rate (%)		Heterogeneity	Multivariate meta-regression*	
			Estimate	95% CI	I^2 (%)	Coefficient	95% CI
Administration region†							
Central	16	1414665	5.67	4.26 to 7.09	99.9	Ref	Ref
East	41	1456209	6.19	5.66 to 6.73	99.5	0.007	−0.002 to 0.016
North	40	688883	5.48	4.96 to 6.01	98.7	−0.003	−0.013 to 0.006
Northwest	6	71086	7.3	4.92 to 9.68	99.4	0.021	0.007 to 0.035
South	18	4701763	6.14	5.96 to 6.32	98.1	0.015	0.005 to 0.025
Southwest	9	75101	6.96	4.94 to 8.99	99.1	0.014	0.001 to 0.026
Hong Kong, Macau and Taiwan	17	1721143	6.13	5.55 to 6.71	99.1	0.010	−0.001 to 0.022
Multiprovinces	39	13909524	6.09	5.57 to 6.61	99.9	0.012	0.003 to 0.022
Year							
1990–1994	9	417378	5.36	4.89 to 5.84	96.5	Ref	Ref
1995–1999	21	1644484	4.6	4.25 to 4.95	99.1	−0.012	−0.024 to 0.0001
2000–2004	13	2774165	5.68	4.91 to 6.45	99.8	−0.001	−0.014 to 0.012
2005–2009	42	5012931	6.54	6.08 to 6.99	99.7	0.006	−0.005 to 0.017
2010–2014	88	13288977	6.17	5.85 to 6.48	99.8	0.005	−0.006 to 0.016
2015–2016	14	901149	7.04	6.09 to 7.99	99.6	0.016	0.003 to 0.029
Denominator‡							
Live births only	110	17931691	6.00	5.69 to 6.3	99.9	Ref	Ref
All births	15	661838	7.01	5.9 to 8.12	99.7	0.004	−0.005 to 0.012
Unknown births	62	5445555	6.02	5.68 to 6.36	99.5	0.004	−0.001 to 0.009
Method of estimating GA							
LMP	54	15903912	5.79	5.39 to 6.20	99.9	Ref	Ref
Ultrasound	5	176565	5.47	3.96 to 6.99	99.4	−0.011	−0.016 to 0.013
LMP and ultrasound	40	5517976	6.59	6.06 to 7.13	99.8	0.004	−0.003 to 0.011
Unknown	88	2440631	6.09	5.74 to 6.44	99.2	0.003	−0.003 to 0.009
Singletons/multiples							
Singletons only	121	15766450	5.84	5.58 to 6.10	99.8	Ref	Ref
Singletons and multiples	33	1653911	6.69	5.81 to 7.57	99.8	0.015	0.008 to 0.022
Unknown	33	6618723	6.44	5.95 to 6.94	99.8	0.006	−0.0001 to 0.012

*Adjusted variable: quality level of studies.
†Only one study was from Northeast China, in which the preterm birth rate was 3.8% (95% CI: 2.4% to 5.21%). The meta-regression showed no significant difference between Northeast and Central China.
‡All births: livebirths and stillbirths. Unknown births: does not specify live birth or all births.
GA, gestational age; LMP, last menstrual period.

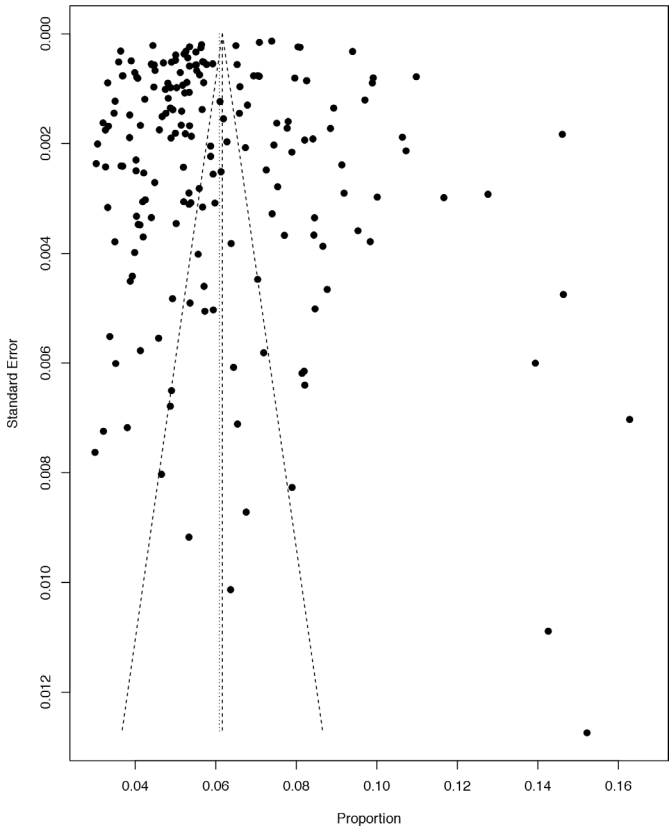

Figure 3 Funnel plot of preterm birth prevalence as a function of prevalence estimate SE.

to be larger, ultrasound might overestimate the GA, and therefore reduce the incidence of preterm birth.

Our meta-analysis has some limitations. First, although the upper limit of the definition of preterm birth is globally accepted as 36 weeks+6 days, the lower limit ranges from 20 to 28 weeks in different part of the world.[11] Many reports in our study did not provide a clear lower limit of gestational week. Second, ultrasound early in pregnancy is considered the gold standard for assessment of GA, but many studies did not specify the method of assessing GA. Though LMP combined with ultrasound to assess GA was predominant assessment method in China, no specific data are available. However, it is likely that the degree of ultrasound use in pregnancy varies with availability of medical resources in different settings and regions. Women only relied on the first day of the LMP might bias the preterm birth rate. The high preterm birth rate in low socioeconomic regions may result from both misclassification and truly higher preterm birth rate. Third, most studies did not provide more detailed information on the subtypes of preterm birth (spontaneous onset, iatrogenic and rupture of the membranes) or the causes of preterm birth, making more in-depth analysis difficult.

Subgroup analysis did not explain the specific causes of heterogeneity (I^2>50%). We conducted univariate meta-regression analysis on various sources and identified significant differences in year, regions and definition of preterm birth, suggesting that these factors might be the main cause of heterogeneity in this meta-analysis. Meanwhile, multivariate meta-regression showed that the West had a higher preterm birth rate than other regions. Compared with 1990–1994, preterm birth rate was higher in 2015–2016. Additionally, the rate was higher in all births than in singletons only. Method of estimating GA was not associated with heterogeneity.

In summary, our meta-analysis showed that the preterm birth rate has been rising in China over the past three decades. It was around 7% in 2016. Preterm birth rate varied by region with the West having the highest occurrence.

Contributors JZ and JV conceived and designed the study. Screening was carried out by SJ, CC and YG. SJ and CC analysed the data and drafted the manuscript. All author commented and revised the final version of this article.

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Competing interests None declared.

Patient consent for publication Not required.

Provenance and peer review Not commissioned; externally peer reviewed.

Data availability statement All data relevant to the study are included in the article or uploaded as supplementary information.

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182 Morisaki N, Ogawa K, Urayama KY, *et al*. Preeclampsia mediates the association between shorter height and increased risk of preterm delivery. *Int J Epidemiol* 2017;46:1690–8.
183 Liu L, YL L. [Correlation of geographical latitude with stature and body weight of urban Han people in China]. *Chinese Journal of Anatomy* 2017;40:307–10.

Table S1: PRISMA 2009 Checklist

Section/topic	#	Checklist item	Reported on page #
TITLE			1
Title	1	Identify the report as a systematic review, meta-analysis, or both.	1
ABSTRACT			2
Structured summary	2	Provide a structured summary including, as applicable: background; objectives; data sources; study eligibility criteria, participants, and interventions; study appraisal and synthesis methods; results; limitations; conclusions and implications of key findings; systematic review registration number.	2
INTRODUCTION			4
Rationale	3	Describe the rationale for the review in the context of what is already known.	4
Objectives	4	Provide an explicit statement of questions being addressed with reference to participants, interventions, comparisons, outcomes, and study design (PICOS).	4
METHODS			4-6
Protocol and registration	5	Indicate if a review protocol exists, if and where it can be accessed (e.g., Web address), and, if available, provide registration information including registration number.	5
Eligibility criteria	6	Specify study characteristics (e.g., PICOS, length of follow-up) and report characteristics (e.g., years considered, language, publication status) used as criteria for eligibility, giving rationale.	5
Information sources	7	Describe all information sources (e.g., databases with dates of coverage, contact with study authors to identify additional studies) in the search and date last searched.	5
Search	8	Present full electronic search strategy for at least one database, including any limits used, such that it could be repeated.	5
Study selection	9	State the process for selecting studies (i.e., screening, eligibility, included in systematic review, and, if applicable, included in the meta-analysis).	5
Data collection process	10	Describe method of data extraction from reports (e.g., piloted forms, independently, in duplicate) and any processes for obtaining and confirming data from investigators.	5-6
Data items	11	List and define all variables for which data were sought (e.g., PICOS, funding sources) and any assumptions and simplifications made.	5
Risk of bias in individual studies	12	Describe methods used for assessing risk of bias of individual studies (including specification of whether this was done at the study or outcome level), and how this information is to be used in any data synthesis.	5-6
Summary measures	13	State the principal summary measures (e.g., risk ratio, difference in means).	6

Table S1: PRISMA 2009 Checklist

Synthesis of results	14	Describe the methods of handling data and combining results of studies, if done, including measures of consistency (e.g., I^2) for each meta-analysis.	6

Section/topic	#	Checklist item	Reported on page #
Risk of bias across studies	15	Specify any assessment of risk of bias that may affect the cumulative evidence (e.g., publication bias, selective reporting within studies).	6
Additional analyses	16	Describe methods of additional analyses (e.g., sensitivity or subgroup analyses, meta-regression), if done, indicating which were pre-specified.	6
RESULTS			6-11
Study selection	17	Give numbers of studies screened, assessed for eligibility, and included in the review, with reasons for exclusions at each stage, ideally with a flow diagram.	6-7
Study characteristics	18	For each study, present characteristics for which data were extracted (e.g., study size, PICOS, follow-up period) and provide the citations.	6-7
Risk of bias within studies	19	Present data on risk of bias of each study and, if available, any outcome level assessment (see item 12).	7
Results of individual studies	20	For all outcomes considered (benefits or harms), present, for each study: (a) simple summary data for each intervention group (b) effect estimates and confidence intervals, ideally with a forest plot.	7-8
Synthesis of results	21	Present results of each meta-analysis done, including confidence intervals and measures of consistency.	9-10
Risk of bias across studies	22	Present results of any assessment of risk of bias across studies (see Item 15).	11
Additional analysis	23	Give results of additional analyses, if done (e.g., sensitivity or subgroup analyses, meta-regression [see Item 16]).	9-11
DISCUSSION			11-13
Summary of evidence	24	Summarize the main findings including the strength of evidence for each main outcome; consider their relevance to key groups (e.g., healthcare providers, users, and policy makers).	11-12
Limitations	25	Discuss limitations at study and outcome level (e.g., risk of bias), and at review-level (e.g., incomplete retrieval of identified research, reporting bias).	12-13
Conclusions	26	Provide a general interpretation of the results in the context of other evidence, and implications for future research.	13
FUNDING			14
Funding	27	Describe sources of funding for the systematic review and other support (e.g., supply of data); role of funders for the systematic review.	14

Table S1: PRISMA 2009 Checklist

From: Moher D, Liberati A, Tetzlaff J, Altman DG, The PRISMA Group (2009). Preferred Reporting Items for Systematic Reviews and Meta-Analyses: The PRISMA Statement. PLoS Med 6(7): e100(doi:10.1371/journal.pmed1000097

For more information, visit: **www.prisma-statement.org**.

Table S2: Search strategy:

#1 china

#2 asia

#3 'developing country'/exp

#4 'premature labor'/exp

#5 preterm OR pre-term OR 'pre term' OR premature OR pre-mature OR 'pre mature' OR prematuritas OR prematurity OR pre-maturity OR 'pre maturity':ab,ti

#6 labour OR labor OR birth OR child-birth OR childbirth OR 'child birth' OR delivery OR deliveries OR parturition:ab,ti

#7 #5 AND #6

#8 #4 OR #7

#9 pprom:ab,ti

#10 'premature fetus membrane rupture'/exp

#11 ((prelabor OR pre-labor OR 'pre labor' OR preterm OR pre-term OR 'pre term' OR premature OR pre-mature OR 'pre mature') NEAR/3 (ruptur$ OR membrane$ OR rom)):ab,ti

#12 #9 OR #10 OR #11

#13 #8 OR #12

#14 #1 OR #2 OR #3

#15 #13 AND #14

#16 #15 AND (2016:py OR 2017:py OR 2018:py)

Table S3: Included studies of preterm birth in China, 1990-2016

Included studies	Midpoint year of data collection	Administration region of China	Livebirths/ All births/ Unknown births*	Singletons or multiples	Method of estimating GA (Ultrasound/LMP/Both/ Unknown) ‡	Total births	Study design†	Quality score
Han W et al (2011)[24]	2006	Central	all	both	both	26760	cohort	5
He Y et al (2014)[25]	2010	Central	live	singletons	UK	6102	cohort	7
Xu X et al (2014)[26]	2011	Central	live	UK	UK	6270	cohort	8
Xu H et al (2015)[27]	2007	Central	live	both	both	818481	XS	6
Guo Y et al (2015)[28]	2012	Central	UK	singletons	both	1031	cohort	6
Qian ZM et al (2016)[29]	2012	Central	live	singletons	LMP	95911	cohort	7
Yang J et al (2016)[30]	2013	Central	live	singletons	both	5364	cohort	6
Zhang B et al (2016)[31]	2012	Central	live	singletons	both	76695	cohort	7
Hu RY et al (2017)[32]	2013	Central	live	singletons	both	317463	cohort	6
Chen X et al (2018)[33]	2013	Central	live	singletons	ultrasound	7291	cohort	7
Huang X et al (2018)[34]	2016	Central	live	singletons	UK	16780	cohort	5
Huo W et al (2018)[35]	2014	Central	UK	UK	LMP	1006	cohort	7
Li H et al (2018)[36]	2013	Central	live	singletons	LMP	11070	cohort	7
Li X et al (2018)[37]	2010	Central	live	singletons	both	6059	cohort	6
Li XY et al (2018)[38]	2015	Central	live	singletons	LMP	16035	cohort	5
Yang J et al (2018)[39]	2015	Central	UK	singletons	UK	2347	cohort	6
Xu X et al (1994)[40]	1992	East	live	both	UK	795	XS	4

Li Z et al (2014)[41]	1994	East	live	singletons	LMP	207936	cohort	5
Zhang Q et al (2009)[42]	1995	East	live	singletons	LMP	160700	cohort	7
Ye RW et al (2010)[43]	1998	East	live	singletons	UK	131867	cohort	7
Guo LJ et al (2009)[44]	1998	East	live	singletons	UK	97447	cohort	7
Gu WR et al (2008)[45]	2000	East	all	both	UK	24199	XS	6
Ma X et al (2009)[46]	2007	East	live	UK	LMP	44362	XS	5
Li Y et al (2014)[47]	2011	East	live	singletons	UK	592	cohort	6
Yan SQ et al (2013)[48]	2009	East	live	singletons	UK	4448	cohort	6
Tong JG et al (2013)[49]	2010	East	live	singletons	UK	2409	XS	7
Sun L et al (2013)[50]	2010	East	live	both	LMP	60280	XS	7
Sun LY et al (2014)[51]	2010	East	all	both	UK	60615	XS	7
Ge X et al (2016)[52]	2014	East	live	singletons	both	3197	cohort	6
Cui AM et al (2016)[53]	2013	East	UK	UK	UK	21004	cohort	7
Ding XX et al (2016)[54]	2009	East	live	singletons	both	10251	cohort	7
Wang H et al (2016)[55]	2009	East	live	singletons	LMP	3254	cohort	7
Xue QQ et al (2016)[56]	2011	East	live	both	UK	37443	XS	6
Zhou SS et al (2016)[57]	2013	East	live	singletons	both	3256	cohort	7
Liu A et al (2017)[58]	2013	East	live	UK	UK	195400	XS	3
Reyihanguli M et al (2017)[59]	2014	East	live	singletons	both	2758	cohort	6
Wang JX et al (2017)[60]	2012	East	live	singletons	UK	2108	XS	4
Wang JX et al (2017)[60]	2013	East	live	singletons	UK	2010	XS	4
Wang JX et al (2017)[60]	2014	East	live	singletons	UK	2112	XS	4
Wang JX et al (2017)[60]	2015	East	live	singletons	UK	1975	XS	4
Wang JX et al (2017)[60]	2011	East	live	singletons	UK	1630	XS	4

Wang JX et al (2017)[60]	2016	East	live	singletons	UK	2206	XS	4
Wang S et al (2017)[61]	2012	East	UK	UK	UK	10933	cohort	5
Zhang Y et al (2017)[62]	2014	East	UK	singletons	both	5737	cohort	2
Zhang Y et al (2017)[62]	2015	East	UK	singletons	both	5269	cohort	2
Han Y et al (2018)[63]	2013	East	UK	singletons	both	2931	cohort	7
Han Y et al (2018)[64]	2015	East	live	singletons	UK	6693	cohort	5
Hu CY et al (2018)[65]	2012	East	UK	UK	both	16983	XS	8
Lin XY et al (2018)[66]	2014	East	live	singletons	both	49612	cohort	7
Liu WY et al (2018)[67]	2015	East	live	singletons	LMP	37159	XS	5
Shi WP et al (2018)[68]	2016	East	UK	singletons	both	1064	cohort	6
Wang H et al (2018)[69]	2015	East	all	UK	LMP	59190	XS	5
Wang Y et al (2018)[70]	2015	East	UK	UK	UK	15615	cohort	3
Xiao QY et al (2018)[71]	2012	East	live	singletons	LMP	132783	XS	6
Yang J et al (2018)[72]	2007	East	live	singletons	UK	500	cohort	4
Ye L et al (2018)[73]	2014	East	live	singletons	UK	24246	cohort	6
Li ZJ et al (2019)[74]	2013	East	live	singletons	both	3240	cohort	5
Chen TJ et al (1996)[75]	1992	Hong Kong, Macau and Taiwan	live	singletons	LMP	14307	XS	4
Lao TT et al (1997)[76]	1994	Hong Kong, Macau and Taiwan	UK	UK	UK	67925	XS	4
Chen YH et al (2009)[77]	2002	Hong Kong, Macau and Taiwan	live	singletons	ultrasound	28135	cohort	6
Hsieh WS et al (2011)[78]	2001	Hong Kong, Macau and Taiwan	live	singletons	LMP	1312770	cohort	6
Leung T et al (2008)[79]	2000	Hong Kong, Macau and Taiwan	all	singletons	UK	29303	cohort	5
Shiao LW et al (2012)[80]	2005	Hong Kong, Macau and Taiwan	live	both	both	20090	cohort	7
Liu CY et al (2008)[81]	2005	Hong Kong, Macau and Taiwan	all	singletons	UK	27077	XS	5
Xirasagar S et al (2011)[82]	2005	Hong Kong, Macau and Taiwan	live	singletons	both	3267	cohort	6

Lao TT et al (2011)[83]	2003	Hong Kong, Macau and Taiwan	UK	singletons	ultrasound	66443	cohort	6
Lau Y et al (2013)[84]	2009	Hong Kong, Macau and Taiwan	UK	UK	LMP	581	cohort	6
Chung WH et al (2017)[85]	1997	Hong Kong, Macau and Taiwan	UK	singletons	UK	17600	XS	2
Chung WH et al (2017)[85]	2002	Hong Kong, Macau and Taiwan	UK	singletons	UK	19603	XS	2
Chung WH et al (2017)[85]	2007	Hong Kong, Macau and Taiwan	UK	singletons	UK	24506	XS	2
Chung WH et al (2017)[85]	2012	Hong Kong, Macau and Taiwan	UK	singletons	UK	24553	XS	2
Lai YJ et al (2017)[86]	2012	Hong Kong, Macau and Taiwan	UK	singletons	UK	1187	cohort	5
Spracklen CN et al (2017)[87]	2009	Hong Kong, Macau and Taiwan	UK	singletons	UK	1989	cohort	6
Chaemsaithong P et al (2018)[88]	2013	Hong Kong, Macau and Taiwan	UK	singletons	ultrasound	61807	cohort	6
Zhou LM et al (1998)[89]	1992	multi-provinces	live	singletons	LMP	829	cohort	5
Lin L et al (2002)[90]	1998	multi-provinces	live	both	UK	22350	XS	6
Liu Y et al (2011)[91]	2000	multi-provinces	live	singletons	LMP	935998	cohort	7
Liu L et al (2007)[92]	1993	multi-provinces	live	singletons	LMP	55975	cohort	6
Liu L et al (2007)[92]	1994	multi-provinces	live	singletons	LMP	63763	cohort	6
Liu L et al (2007)[92]	1995	multi-provinces	live	singletons	LMP	56570	cohort	6
Liu L et al (2007)[92]	1996	multi-provinces	live	singletons	LMP	48331	cohort	6
Liu L et al (2007)[92]	1997	multi-provinces	live	singletons	LMP	44151	cohort	6
Liu L et al (2007)[92]	1998	multi-provinces	live	singletons	LMP	42840	cohort	6
Sun JQ et al (2014)[93]	2005	multi-provinces	live	both	UK	5277	XS	5
Wang T et al (2011)[94]	1999	multi-provinces	live	singletons	LMP	352477	cohort	7
Zhang J et al (2008)[95]	1995	multi-provinces	UK	singletons	LMP	202216	cohort	6
Zhang J et al (2008)[95]	1997	multi-provinces	UK	singletons	LMP	206430	cohort	6
Zhang J et al (2008)[95]	1999	multi-provinces	UK	singletons	LMP	175598	cohort	6

Zhang J et al (2008)[95]	2001	multi-provinces	UK	singletons	LMP	139078	cohort	6
Zhang J et al (2008)[95]	2003	multi-provinces	UK	singletons	LMP	154585	cohort	6
Souza JP et al (2010)[96]	2008	multi-provinces	live	both	UK	14628	XS	8
Zhu L et al (2015)[17]	2013	multi-provinces	live	singletons	both	159334	XS	7
Chen YL et al (2015)[97]	2011	multi-provinces	live	UK	both	103678	XS	7
Chen Y et al (2016)[98]	2011	multi-provinces	all	both	both	103678	XS	8
Hou L et al (2014)[99]	2011	multi-provinces	UK	singletons	UK	109722	XS	7
Luo XL et al (2015)[100]	2011	multi-provinces	live	both	LMP	111767	XS	8
Ye C et al (2014)[101]	2011	multi-provinces	all	UK	UK	112386	XS	6
Zou L et al (2014)[16]	2011	multi-provinces	all	both	LMP	109705	XS	6
Souza JP et al (2013)[102]	2011	multi-provinces	live	both	UK	13215	XS	8
Yang Y et al (2015)[103]	2012	multi-provinces	live	singletons	LMP	367425	cohort	7
Huang AQ et al (2018)[104]	2014	multi-provinces	live	singletons	LMP	40152	XS	7
Kong XY et al (2016)[105]	2013	multi-provinces	live	UK	LMP	138240	XS	7
Li N et al (2016)[106]	1995	multi-provinces	live	singletons	LMP	44494	cohort	7
Tang W et al (2016)[107]	2013	multi-provinces	live	UK	LMP	3915965	XS	5
Zhang XS et al (2016)[108]	2012	multi-provinces	live	UK	UK	111095	XS	8
Chen S et al (2017)[109]	2011	multi-provinces	live	singletons	LMP	133232	cohort	7
Liu J et al (2017)[110]	2011	multi-provinces	live	singletons	UK	489965	cohort	8
Li Q et al (2018)[111]	2014	multi-provinces	live	singletons	LMP	1240978	cohort	6
Li Y et al (2018)[112]	2014	multi-provinces	UK	singletons	UK	6000	XS	5
Lin L et al (2018)[113]	2014	multi-provinces	live	singletons	LMP	33204	XS	7
Wang C et al (2018)[114]	2014	multi-provinces	UK	singletons	LMP	21577	XS	7
Wang YY et al (2018)[115]	2014	multi-provinces	live	singletons	LMP	1300342	cohort	8

Zhang XL et al (2018)[116]	2014	multi-provinces	UK	singletons	LMP	2722274	cohort	6
Zhang JH et al (1995)[117]	1991	North	UK	UK	UK	600	XS	5
Ye R et al (2000)[118]	1997	North	UK	both	UK	11372	XS	3
Gao XL et al (2000)[119]	1996	North	all	both	UK	8333	XS	4
Qi L et al (2002)[120]	2000	North	UK	UK	UK	1069	cohort	5
Zhang XF et al (2007)[121]	2004	North	live	UK	UK	45337	XS	6
Guo ZK et al (2010)[122]	2007	North	all	both	UK	15197	XS	9
Sun Y et al (2009)[123]	2007	North	UK	UK	UK	26204	XS	6
Qin BL et al (2011)[124]	2006	North	UK	UK	UK	5228	XS	4
Ma LL et al (2010)[125]	2008	North	live	both	both	5822	XS	7
Qu SH et al (2011)[126]	2009	North	UK	singletons	UK	5370	cohort	4
Wei YM et al (2011)[127]	2007	North	UK	UK	UK	14593	cohort	5
Zhao DQ et al (2011)[128]	2009	North	UK	singletons	UK	5266	cohort	5
Liu JM et al (2013)[129]	2008	North	live	singletons	UK	5905	cohort	7
Shan X et al (2014)[130]	1996	North	live	both	UK	3498	cohort	5
Shan X et al (2014)[130]	1997	North	live	both	UK	3987	cohort	5
Shan X et al (2014)[130]	1998	North	live	both	UK	3750	cohort	5
Shan X et al (2014)[130]	1999	North	live	both	UK	4278	cohort	5
Shan X et al (2014)[130]	2000	North	live	both	UK	8528	cohort	5
Hu XY et al (2012)[131]	2010	North	UK	UK	UK	1935	XS	6
Zhou QH et al (2013)[132]	2010	North	UK	singletons	UK	1832	cohort	6
Wang S et al (2013)[133]	2011	North	UK	UK	UK	1208	cohort	5
Liu X et al (2012)[134]	2011	North	UK	singletons	UK	939	cohort	6
Wang CS et al (2013)[135]	2012	North	UK	singletons	UK	4090	XS	7

Zhang CH et al (2015)[136]	2012	North	live	singletons	both	14196	cohort	6
Shang M et al (2014)[137]	2013	North	UK	singletons	UK	3083	cohort	6
Wen T et al (2015)[138]	2011	North	live	singletons	both	11751	cohort	5
Barros FC et al (2015)[139]	2012	North	all	both	both	60058	XS	6
Han SJ et al (2016)[140]	2013	North	UK	both	UK	37573	cohort	4
Maerdan M et al (2016)[141]	2012	North	UK	singletons	LMP	25328	XS	3
Wei YM et al (2016)[142]	2013	North	live	singletons	UK	14451	cohort	4
Cheng YP et al (2016)[143]	2013	North	live	UK	LMP	1839	XS	8
Jiang F et al (2016)[144]	1992	North	UK	both	UK	5248	XS	5
Jiang F et al (2016)[144]	1997	North	UK	both	UK	6195	XS	5
Jiang F et al (2016)[144]	2002	North	UK	both	UK	9117	XS	5
Jiang F et al (2016)[144]	2007	North	UK	both	UK	11564	XS	5
Jiang F et al (2016)[144]	2012	North	UK	both	UK	14544	XS	5
Yang WJ et al (2017)[145]	2011	North	UK	singletons	UK	1102	XS	7
Wang C et al (2017)[146]	2013	North	UK	singletons	UK	14970	XS	6
Zheng W et al (2018)[147]	2014	North	UK	singletons	UK	10366	cohort	6
Zhang X et al (2018)[148]	2016	North	UK	UK	UK	263157	XS	5
Wang ST et al (2012)[149]	2008	Northeast	UK	UK	UK	710	cohort	6
Xu X et al (2015)[150]	2011	Northwest	UK	singletons	UK	6181	cohort	4
Jiang M et al (2015)[151]	2011	Northwest	live	singletons	both	9895	cohort	6
Zhao N et al (2015)[152]	2011	Northwest	live	singletons	LMP	8969	cohort	7
Huang L et al (2016)[153]	2011	Northwest	live	singletons	LMP	10179	cohort	6
Wang LL et al (2016)[154]	2012	Northwest	live	UK	UK	28487	XS	7
Yang J et al (2017)[155]	2013	Northwest	live	singletons	both	7375	XS	6

Zhu XY et al (2007)[156]	2005	South	live	UK	UK	6885	XS	6
Fu J et al (2011)[157]	2007	South	live	singletons	both	28052	XS	5
Zhou J et al (2014)[158]	2011	South	all	UK	UK	1953	cohort	7
Lei Q et al (2014)[159]	2011	South	UK	singletons	UK	3329	cohort	7
He JR et al (2016)[160]	2006	South	UK	singletons	both	838146	XS	7
Lei Q et al (2016)[161]	2013	South	UK	singletons	both	5535	cohort	5
Liang ZJ et al (2016)[162]	2005	South	live	singletons	LMP	94335	XS	6
Liang ZJ et al (2016)[162]	2006	South	live	singletons	LMP	115428	XS	6
Liang ZJ et al (2016)[162]	2007	South	live	singletons	LMP	146934	XS	6
Liang ZJ et al (2016)[162]	2008	South	live	singletons	LMP	163138	XS	6
Liang ZJ et al (2016)[162]	2009	South	live	singletons	LMP	158953	XS	6
Liang ZJ et al (2016)[162]	2010	South	live	singletons	LMP	174515	XS	6
Liang ZJ et al (2016)[162]	2011	South	live	singletons	LMP	187335	XS	6
Shen S et al (2017)[163]	2014	South	live	singletons	ultrasound	12889	cohort	7
Ke L et al (2018)[164]	2015	South	live	singletons	both	3684	cohort	5
Li C et al (2018)[165]	2008	South	live	UK	both	1385882	cohort	6
Liang ZJ et al (2018)[166]	2008	South	live	singletons	both	904795	XS	6
Wang Q et al (2018)[167]	2016	South	live	singletons	both	469975	cohort	7
Yangzom Y et al (2008)[168]	2005	Southwest	live	both	both	2540	cohort	5
Yang X et al (2011)[169]	2006	Southwest	live	both	UK	13024	XS	6
Duan L et al (2010)[170]	2005	Southwest	live	singletons	UK	21043	cohort	8
Tan CE et al (2009)[171]	2008	Southwest	live	UK	UK	6638	cohort	4
Tan CE et al (2009)[171]	2009	Southwest	live	UK	UK	6365	cohort	4
Liao H et al (2010)[172]	2008	Southwest	all	singletons	both	18024	cohort	7

Liao S et al (2014)[173]	2010	Southwest	all	singletons	both	5360	cohort	6
Fan XJ et al (2017)[174]	2009	Southwest	UK	singletons	LMP	1419	cohort	7
Li R et al (2017)[175]	2013	Southwest	UK	singletons	both	688	cohort	8

*All births: livebirths and stillbirths. Unknown births: does not specify live birth or all births.

‡UK: unknown.

†XS: cross-sectional study. Cohort: cohort study.

Table S4. Sensitivity analysis for low-quality studies on pooled incidence of preterm birth in China, 1990-2016.

Characteristic	Numbers of studies	Number of births	Preterm birth rate (%)		Heterogeneity	Multivariate meta-regression‡	
			Estimate	95%CI	I^2 (%)	Coefficient	95%CI
Administration region*							
Central	16	1414665	5.67	4.26-7.09	99.9%	Ref	Ref
East	36	1233688	6.11	5.54-6.68	99.5%	0.006	-0.003 to 0.015
North	35	594789	5.56	4.96-6.17	98.8%	-0.004	-0.014 to 0.006
Northwest	5	64905	6.80	4.29-9.31	99.4%	0.016	0.001 to 0.030
South	18	4701763	6.14	5.96-6.32	98.1%	0.014	0.004 to 0.024
Southwest	7	62098	7.09	4.49-9.68	99.3%	0.014	0.0003 to 0.028
Hong Kong, Macau and Taiwan	13	1634881	6.51	5.83-7.19	99.2%	0.013	0.001 to 0.025
Multi-provinces	39	13909524	6.09	5.57-6.61	99.9%	0.012	0.003 to 0.021
Year							
1990-1994	9	417378	5.36	4.89-5.84	96.5%	Ref	Ref
1995-1999	19	1615512	4.64	4.27-5.00	99.1%	-0.011	-0.023 to 0.001
2000-2004	12	2754562	5.68	4.91-6.45	99.8%	-0.001	-0.014 to 0.012
2005-2009	37	4969552	6.74	6.25-7.24	99.8%	0.008	-0.003 to 0.020
2010-2014	81	12979754	6.13	5.80-6.47	99.8%	0.006	-0.005 to 0.017
2015-2016	12	880265	6.91	5.89-7.94	99.7%	0.016	0.003 to 0.030
Denominator†							
Live births only	105	17708337	6.01	5.70-6.33	99.9%	Ref	Ref
All births	15	661838	7.01	5.90-8.12	99.7%	0.003	-0.006 to 0.011
Unknown births	50	5246848	6.01	5.62-6.39	99.6%	0.003	-0.003 to 0.008
Method of estimating GA							
LMP	53	15878584	5.81	5.40-6.22	99.9%	Ref	Ref
Ultrasound	5	176565	5.47	3.96-6.99	99.4%	-0.003	-0.017 to 0.012
Ultrasound and LMP	38	5506970	6.51	5.97-7.06	99.8%	0.003	-0.004 to 0.010
Unknown	74	2054904	6.16	5.76-6.57	99.3%	0.004	-0.003 to 0.010

Singletons/multiples							
Singletons only	110	15617352	5.84	5.56-6.12	99.8%	Ref	Ref
Singletons and multiples	31	1604966	6.82	5.90-7.73	99.8%	0.015	0.008 to 0.022
Unknown	29	6394705	6.38	5.83-6.93	99.8%	0.006	-0.001 to 0.013

*Only one study was from Northeast China, in which the preterm birth rate was 3.8% (95%CI: 2.4 - 5.21%). The meta-regression showed no significant difference between Northeast and Central China.

†All births: livebirths and stillbirths. Unknown births: Does not specify live birth or all births.

‡Adjusted variable: Quality level of studies.

Table S1: PRISMA 2009 Checklist

Section/topic	#	Checklist item	Reported on page #
TITLE			1
Title	1	Identify the report as a systematic review, meta-analysis, or both.	1
ABSTRACT			2
Structured summary	2	Provide a structured summary including, as applicable: background; objectives; data sources; study eligibility criteria, participants, and interventions; study appraisal and synthesis methods; results; limitations; conclusions and implications of key findings; systematic review registration number.	2
INTRODUCTION			4
Rationale	3	Describe the rationale for the review in the context of what is already known.	4
Objectives	4	Provide an explicit statement of questions being addressed with reference to participants, interventions, comparisons, outcomes, and study design (PICOS).	4
METHODS			4-6
Protocol and registration	5	Indicate if a review protocol exists, if and where it can be accessed (e.g., Web address), and, if available, provide registration information including registration number.	5
Eligibility criteria	6	Specify study characteristics (e.g., PICOS, length of follow-up) and report characteristics (e.g., years considered, language, publication status) used as criteria for eligibility, giving rationale.	5
Information sources	7	Describe all information sources (e.g., databases with dates of coverage, contact with study authors to identify additional studies) in the search and date last searched.	5
Search	8	Present full electronic search strategy for at least one database, including any limits used, such that it could be repeated.	5
Study selection	9	State the process for selecting studies (i.e., screening, eligibility, included in systematic review, and, if applicable, included in the meta-analysis).	5
Data collection process	10	Describe method of data extraction from reports (e.g., piloted forms, independently, in duplicate) and any processes for obtaining and confirming data from investigators.	5-6
Data items	11	List and define all variables for which data were sought (e.g., PICOS, funding sources) and any assumptions and simplifications made.	5
Risk of bias in individual studies	12	Describe methods used for assessing risk of bias of individual studies (including specification of whether this was done at the study or outcome level), and how this information is to be used in any data synthesis.	5-6
Summary measures	13	State the principal summary measures (e.g., risk ratio, difference in means).	6

Table S1: PRISMA 2009 Checklist

Synthesis of results	14	Describe the methods of handling data and combining results of studies, if done, including measures of consistency (e.g., I^2) for each meta-analysis.	6

Section/topic	#	Checklist item	Reported on page #
Risk of bias across studies	15	Specify any assessment of risk of bias that may affect the cumulative evidence (e.g., publication bias, selective reporting within studies).	6
Additional analyses	16	Describe methods of additional analyses (e.g., sensitivity or subgroup analyses, meta-regression), if done, indicating which were pre-specified.	6
RESULTS			6-11
Study selection	17	Give numbers of studies screened, assessed for eligibility, and included in the review, with reasons for exclusions at each stage, ideally with a flow diagram.	6-7
Study characteristics	18	For each study, present characteristics for which data were extracted (e.g., study size, PICOS, follow-up period) and provide the citations.	6-7
Risk of bias within studies	19	Present data on risk of bias of each study and, if available, any outcome level assessment (see item 12).	7
Results of individual studies	20	For all outcomes considered (benefits or harms), present, for each study: (a) simple summary data for each intervention group (b) effect estimates and confidence intervals, ideally with a forest plot.	7-8
Synthesis of results	21	Present results of each meta-analysis done, including confidence intervals and measures of consistency.	9-10
Risk of bias across studies	22	Present results of any assessment of risk of bias across studies (see Item 15).	11
Additional analysis	23	Give results of additional analyses, if done (e.g., sensitivity or subgroup analyses, meta-regression [see Item 16]).	9-11
DISCUSSION			11-13
Summary of evidence	24	Summarize the main findings including the strength of evidence for each main outcome; consider their relevance to key groups (e.g., healthcare providers, users, and policy makers).	11-12
Limitations	25	Discuss limitations at study and outcome level (e.g., risk of bias), and at review-level (e.g., incomplete retrieval of identified research, reporting bias).	12-13
Conclusions	26	Provide a general interpretation of the results in the context of other evidence, and implications for future research.	13
FUNDING			14
Funding	27	Describe sources of funding for the systematic review and other support (e.g., supply of data); role of funders for the systematic review.	14

Table S1: PRISMA 2009 Checklist

From: Moher D, Liberati A, Tetzlaff J, Altman DG, The PRISMA Group (2009). Preferred Reporting Items for Systematic Reviews and Meta-Analyses: The PRISMA Statement. PLoS Med 6(7): e100(doi:10.1371/journal.pmed1000097

For more information, visit: **www.prisma-statement.org**.

Table S2: Search strategy:

#1 china

#2 asia

#3 'developing country'/exp

#4 'premature labor'/exp

#5 preterm OR pre-term OR 'pre term' OR premature OR pre-mature OR 'pre mature' OR prematuritas OR prematurity OR pre-maturity OR 'pre maturity':ab,ti

#6 labour OR labor OR birth OR child-birth OR childbirth OR 'child birth' OR delivery OR deliveries OR parturition:ab,ti

#7 #5 AND #6

#8 #4 OR #7

#9 pprom:ab,ti

#10 'premature fetus membrane rupture'/exp

#11 ((prelabor OR pre-labor OR 'pre labor' OR preterm OR pre-term OR 'pre term' OR premature OR pre-mature OR 'pre mature') NEAR/3 (ruptur$ OR membrane$ OR rom)):ab,ti

#12 #9 OR #10 OR #11

#13 #8 OR #12

#14 #1 OR #2 OR #3

#15 #13 AND #14

#16 #15 AND (2016:py OR 2017:py OR 2018:py)

Table S3: Included studies of preterm birth in China, 1990-2016

Included studies	Midpoint year of data collection	Administration region of China	Livebirths/ All births/ Unknown births*	Singletons or multiples	Method of estimating GA (Ultrasound/LMP/Both/ Unknown) ‡	Total births	Study design†	Quality score
Han W et al (2011)[24]	2006	Central	all	both	both	26760	cohort	5
He Y et al (2014)[25]	2010	Central	live	singletons	UK	6102	cohort	7
Xu X et al (2014)[26]	2011	Central	live	UK	UK	6270	cohort	8
Xu H et al (2015)[27]	2007	Central	live	both	both	818481	XS	6
Guo Y et al (2015)[28]	2012	Central	UK	singletons	both	1031	cohort	6
Qian ZM et al (2016)[29]	2012	Central	live	singletons	LMP	95911	cohort	7
Yang J et al (2016)[30]	2013	Central	live	singletons	both	5364	cohort	6
Zhang B et al (2016)[31]	2012	Central	live	singletons	both	76695	cohort	7
Hu RY et al (2017)[32]	2013	Central	live	singletons	both	317463	cohort	6
Chen X et al (2018)[33]	2013	Central	live	singletons	ultrasound	7291	cohort	7
Huang X et al (2018)[34]	2016	Central	live	singletons	UK	16780	cohort	5
Huo W et al (2018)[35]	2014	Central	UK	UK	LMP	1006	cohort	7
Li H et al (2018)[36]	2013	Central	live	singletons	LMP	11070	cohort	7
Li X et al (2018)[37]	2010	Central	live	singletons	both	6059	cohort	6
Li XY et al (2018)[38]	2015	Central	live	singletons	LMP	16035	cohort	5
Yang J et al (2018)[39]	2015	Central	UK	singletons	UK	2347	cohort	6
Xu X et al (1994)[40]	1992	East	live	both	UK	795	XS	4

Li Z et al (2014)[41]	1994	East	live	singletons	LMP	207936	cohort	5
Zhang Q et al (2009)[42]	1995	East	live	singletons	LMP	160700	cohort	7
Ye RW et al (2010)[43]	1998	East	live	singletons	UK	131867	cohort	7
Guo LJ et al (2009)[44]	1998	East	live	singletons	UK	97447	cohort	7
Gu WR et al (2008)[45]	2000	East	all	both	UK	24199	XS	6
Ma X et al (2009)[46]	2007	East	live	UK	LMP	44362	XS	5
Li Y et al (2014)[47]	2011	East	live	singletons	UK	592	cohort	6
Yan SQ et al (2013)[48]	2009	East	live	singletons	UK	4448	cohort	6
Tong JG et al (2013)[49]	2010	East	live	singletons	UK	2409	XS	7
Sun L et al (2013)[50]	2010	East	live	both	LMP	60280	XS	7
Sun LY et al (2014)[51]	2010	East	all	both	UK	60615	XS	7
Ge X et al (2016)[52]	2014	East	live	singletons	both	3197	cohort	6
Cui AM et al (2016)[53]	2013	East	UK	UK	UK	21004	cohort	7
Ding XX et al (2016)[54]	2009	East	live	singletons	both	10251	cohort	7
Wang H et al (2016)[55]	2009	East	live	singletons	LMP	3254	cohort	7
Xue QQ et al (2016)[56]	2011	East	live	both	UK	37443	XS	6
Zhou SS et al (2016)[57]	2013	East	live	singletons	both	3256	cohort	7
Liu A et al (2017)[58]	2013	East	live	UK	UK	195400	XS	3
Reyihanguli M et al (2017)[59]	2014	East	live	singletons	both	2758	cohort	6
Wang JX et al (2017)[60]	2012	East	live	singletons	UK	2108	XS	4
Wang JX et al (2017)[60]	2013	East	live	singletons	UK	2010	XS	4
Wang JX et al (2017)[60]	2014	East	live	singletons	UK	2112	XS	4
Wang JX et al (2017)[60]	2015	East	live	singletons	UK	1975	XS	4
Wang JX et al (2017)[60]	2011	East	live	singletons	UK	1630	XS	4

Wang JX et al (2017)[60]	2016	East	live	singletons	UK	2206	XS	4
Wang S et al (2017)[61]	2012	East	UK	UK	UK	10933	cohort	5
Zhang Y et al (2017)[62]	2014	East	UK	singletons	both	5737	cohort	2
Zhang Y et al (2017)[62]	2015	East	UK	singletons	both	5269	cohort	2
Han Y et al (2018)[63]	2013	East	UK	singletons	both	2931	cohort	7
Han Y et al (2018)[64]	2015	East	live	singletons	UK	6693	cohort	5
Hu CY et al (2018)[65]	2012	East	UK	UK	both	16983	XS	8
Lin XY et al (2018)[66]	2014	East	live	singletons	both	49612	cohort	7
Liu WY et al (2018)[67]	2015	East	live	singletons	LMP	37159	XS	5
Shi WP et al (2018)[68]	2016	East	UK	singletons	both	1064	cohort	6
Wang H et al (2018)[69]	2015	East	all	UK	LMP	59190	XS	5
Wang Y et al (2018)[70]	2015	East	UK	UK	UK	15615	cohort	3
Xiao QY et al (2018)[71]	2012	East	live	singletons	LMP	132783	XS	6
Yang J et al (2018)[72]	2007	East	live	singletons	UK	500	cohort	4
Ye L et al (2018)[73]	2014	East	live	singletons	UK	24246	cohort	6
Li ZJ et al (2019)[74]	2013	East	live	singletons	both	3240	cohort	5
Chen TJ et al (1996)[75]	1992	Hong Kong, Macau and Taiwan	live	singletons	LMP	14307	XS	4
Lao TT et al (1997)[76]	1994	Hong Kong, Macau and Taiwan	UK	UK	UK	67925	XS	4
Chen YH et al (2009)[77]	2002	Hong Kong, Macau and Taiwan	live	singletons	ultrasound	28135	cohort	6
Hsieh WS et al (2011)[78]	2001	Hong Kong, Macau and Taiwan	live	singletons	LMP	1312770	cohort	6
Leung T et al (2008)[79]	2000	Hong Kong, Macau and Taiwan	all	singletons	UK	29303	cohort	5
Shiao LW et al (2012)[80]	2005	Hong Kong, Macau and Taiwan	live	both	both	20090	cohort	7
Liu CY et al (2008)[81]	2005	Hong Kong, Macau and Taiwan	all	singletons	UK	27077	XS	5
Xirasagar S et al (2011)[82]	2005	Hong Kong, Macau and Taiwan	live	singletons	both	3267	cohort	6

Lao TT et al (2011)[83]	2003	Hong Kong, Macau and Taiwan	UK	singletons	ultrasound	66443	cohort	6
Lau Y et al (2013)[84]	2009	Hong Kong, Macau and Taiwan	UK	UK	LMP	581	cohort	6
Chung WH et al (2017)[85]	1997	Hong Kong, Macau and Taiwan	UK	singletons	UK	17600	XS	2
Chung WH et al (2017)[85]	2002	Hong Kong, Macau and Taiwan	UK	singletons	UK	19603	XS	2
Chung WH et al (2017)[85]	2007	Hong Kong, Macau and Taiwan	UK	singletons	UK	24506	XS	2
Chung WH et al (2017)[85]	2012	Hong Kong, Macau and Taiwan	UK	singletons	UK	24553	XS	2
Lai YJ et al (2017)[86]	2012	Hong Kong, Macau and Taiwan	UK	singletons	UK	1187	cohort	5
Spracklen CN et al (2017)[87]	2009	Hong Kong, Macau and Taiwan	UK	singletons	UK	1989	cohort	6
Chaemsaithong P et al (2018)[88]	2013	Hong Kong, Macau and Taiwan	UK	singletons	ultrasound	61807	cohort	6
Zhou LM et al (1998)[89]	1992	multi-provinces	live	singletons	LMP	829	cohort	5
Lin L et al (2002)[90]	1998	multi-provinces	live	both	UK	22350	XS	6
Liu Y et al (2011)[91]	2000	multi-provinces	live	singletons	LMP	935998	cohort	7
Liu L et al (2007)[92]	1993	multi-provinces	live	singletons	LMP	55975	cohort	6
Liu L et al (2007)[92]	1994	multi-provinces	live	singletons	LMP	63763	cohort	6
Liu L et al (2007)[92]	1995	multi-provinces	live	singletons	LMP	56570	cohort	6
Liu L et al (2007)[92]	1996	multi-provinces	live	singletons	LMP	48331	cohort	6
Liu L et al (2007)[92]	1997	multi-provinces	live	singletons	LMP	44151	cohort	6
Liu L et al (2007)[92]	1998	multi-provinces	live	singletons	LMP	42840	cohort	6
Sun JQ et al (2014)[93]	2005	multi-provinces	live	both	UK	5277	XS	5
Wang T et al (2011)[94]	1999	multi-provinces	live	singletons	LMP	352477	cohort	7
Zhang J et al (2008)[95]	1995	multi-provinces	UK	singletons	LMP	202216	cohort	6
Zhang J et al (2008)[95]	1997	multi-provinces	UK	singletons	LMP	206430	cohort	6
Zhang J et al (2008)[95]	1999	multi-provinces	UK	singletons	LMP	175598	cohort	6

Zhang J et al (2008)[95]	2001	multi-provinces	UK	singletons	LMP	139078	cohort	6
Zhang J et al (2008)[95]	2003	multi-provinces	UK	singletons	LMP	154585	cohort	6
Souza JP et al (2010)[96]	2008	multi-provinces	live	both	UK	14628	XS	8
Zhu L et al (2015)[17]	2013	multi-provinces	live	singletons	both	159334	XS	7
Chen YL et al (2015)[97]	2011	multi-provinces	live	UK	both	103678	XS	7
Chen Y et al (2016)[98]	2011	multi-provinces	all	both	both	103678	XS	8
Hou L et al (2014)[99]	2011	multi-provinces	UK	singletons	UK	109722	XS	7
Luo XL et al (2015)[100]	2011	multi-provinces	live	both	LMP	111767	XS	8
Ye C et al (2014)[101]	2011	multi-provinces	all	UK	UK	112386	XS	6
Zou L et al (2014)[16]	2011	multi-provinces	all	both	LMP	109705	XS	6
Souza JP et al (2013)[102]	2011	multi-provinces	live	both	UK	13215	XS	8
Yang Y et al (2015)[103]	2012	multi-provinces	live	singletons	LMP	367425	cohort	7
Huang AQ et al (2018)[104]	2014	multi-provinces	live	singletons	LMP	40152	XS	7
Kong XY et al (2016)[105]	2013	multi-provinces	live	UK	LMP	138240	XS	7
Li N et al (2016)[106]	1995	multi-provinces	live	singletons	LMP	44494	cohort	7
Tang W et al (2016)[107]	2013	multi-provinces	live	UK	LMP	3915965	XS	5
Zhang XS et al (2016)[108]	2012	multi-provinces	live	UK	UK	111095	XS	8
Chen S et al (2017)[109]	2011	multi-provinces	live	singletons	LMP	133232	cohort	7
Liu J et al (2017)[110]	2011	multi-provinces	live	singletons	UK	489965	cohort	8
Li Q et al (2018)[111]	2014	multi-provinces	live	singletons	LMP	1240978	cohort	6
Li Y et al (2018)[112]	2014	multi-provinces	UK	singletons	UK	6000	XS	5
Lin L et al (2018)[113]	2014	multi-provinces	live	singletons	LMP	33204	XS	7
Wang C et al (2018)[114]	2014	multi-provinces	UK	singletons	LMP	21577	XS	7
Wang YY et al (2018)[115]	2014	multi-provinces	live	singletons	LMP	1300342	cohort	8

Zhang XL et al (2018)[116]	2014	multi-provinces	UK	singletons	LMP	2722274	cohort	6
Zhang JH et al (1995)[117]	1991	North	UK	UK	UK	600	XS	5
Ye R et al (2000)[118]	1997	North	UK	both	UK	11372	XS	3
Gao XL et al (2000)[119]	1996	North	all	both	UK	8333	XS	4
Qi L et al (2002)[120]	2000	North	UK	UK	UK	1069	cohort	5
Zhang XF et al (2007)[121]	2004	North	live	UK	UK	45337	XS	6
Guo ZK et al (2010)[122]	2007	North	all	both	UK	15197	XS	9
Sun Y et al (2009)[123]	2007	North	UK	UK	UK	26204	XS	6
Qin BL et al (2011)[124]	2006	North	UK	UK	UK	5228	XS	4
Ma LL et al (2010)[125]	2008	North	live	both	both	5822	XS	7
Qu SH et al (2011)[126]	2009	North	UK	singletons	UK	5370	cohort	4
Wei YM et al (2011)[127]	2007	North	UK	UK	UK	14593	cohort	5
Zhao DQ et al (2011)[128]	2009	North	UK	singletons	UK	5266	cohort	5
Liu JM et al (2013)[129]	2008	North	live	singletons	UK	5905	cohort	7
Shan X et al (2014)[130]	1996	North	live	both	UK	3498	cohort	5
Shan X et al (2014)[130]	1997	North	live	both	UK	3987	cohort	5
Shan X et al (2014)[130]	1998	North	live	both	UK	3750	cohort	5
Shan X et al (2014)[130]	1999	North	live	both	UK	4278	cohort	5
Shan X et al (2014)[130]	2000	North	live	both	UK	8528	cohort	5
Hu XY et al (2012)[131]	2010	North	UK	UK	UK	1935	XS	6
Zhou QH et al (2013)[132]	2010	North	UK	singletons	UK	1832	cohort	6
Wang S et al (2013)[133]	2011	North	UK	UK	UK	1208	cohort	5
Liu X et al (2012)[134]	2011	North	UK	singletons	UK	939	cohort	6
Wang CS et al (2013)[135]	2012	North	UK	singletons	UK	4090	XS	7

Zhang CH et al (2015)[136]	2012	North	live	singletons	both	14196	cohort	6
Shang M et al (2014)[137]	2013	North	UK	singletons	UK	3083	cohort	6
Wen T et al (2015)[138]	2011	North	live	singletons	both	11751	cohort	5
Barros FC et al (2015)[139]	2012	North	all	both	both	60058	XS	6
Han SJ et al (2016)[140]	2013	North	UK	both	UK	37573	cohort	4
Maerdan M et al (2016)[141]	2012	North	UK	singletons	LMP	25328	XS	3
Wei YM et al (2016)[142]	2013	North	live	singletons	UK	14451	cohort	4
Cheng YP et al (2016)[143]	2013	North	live	UK	LMP	1839	XS	8
Jiang F et al (2016)[144]	1992	North	UK	both	UK	5248	XS	5
Jiang F et al (2016)[144]	1997	North	UK	both	UK	6195	XS	5
Jiang F et al (2016)[144]	2002	North	UK	both	UK	9117	XS	5
Jiang F et al (2016)[144]	2007	North	UK	both	UK	11564	XS	5
Jiang F et al (2016)[144]	2012	North	UK	both	UK	14544	XS	5
Yang WJ et al (2017)[145]	2011	North	UK	singletons	UK	1102	XS	7
Wang C et al (2017)[146]	2013	North	UK	singletons	UK	14970	XS	6
Zheng W et al (2018)[147]	2014	North	UK	singletons	UK	10366	cohort	6
Zhang X et al (2018)[148]	2016	North	UK	UK	UK	263157	XS	5
Wang ST et al (2012)[149]	2008	Northeast	UK	UK	UK	710	cohort	6
Xu X et al (2015)[150]	2011	Northwest	UK	singletons	UK	6181	cohort	4
Jiang M et al (2015)[151]	2011	Northwest	live	singletons	both	9895	cohort	6
Zhao N et al (2015)[152]	2011	Northwest	live	singletons	LMP	8969	cohort	7
Huang L et al (2016)[153]	2011	Northwest	live	singletons	LMP	10179	cohort	6
Wang LL et al (2016)[154]	2012	Northwest	live	UK	UK	28487	XS	7
Yang J et al (2017)[155]	2013	Northwest	live	singletons	both	7375	XS	6

Zhu XY et al (2007)[156]	2005	South	live	UK	UK	6885	XS	6
Fu J et al (2011)[157]	2007	South	live	singletons	both	28052	XS	5
Zhou J et al (2014)[158]	2011	South	all	UK	UK	1953	cohort	7
Lei Q et al (2014)[159]	2011	South	UK	singletons	UK	3329	cohort	7
He JR et al (2016)[160]	2006	South	UK	singletons	both	838146	XS	7
Lei Q et al (2016)[161]	2013	South	UK	singletons	both	5535	cohort	5
Liang ZJ et al (2016)[162]	2005	South	live	singletons	LMP	94335	XS	6
Liang ZJ et al (2016)[162]	2006	South	live	singletons	LMP	115428	XS	6
Liang ZJ et al (2016)[162]	2007	South	live	singletons	LMP	146934	XS	6
Liang ZJ et al (2016)[162]	2008	South	live	singletons	LMP	163138	XS	6
Liang ZJ et al (2016)[162]	2009	South	live	singletons	LMP	158953	XS	6
Liang ZJ et al (2016)[162]	2010	South	live	singletons	LMP	174515	XS	6
Liang ZJ et al (2016)[162]	2011	South	live	singletons	LMP	187335	XS	6
Shen S et al (2017)[163]	2014	South	live	singletons	ultrasound	12889	cohort	7
Ke L et al (2018)[164]	2015	South	live	singletons	both	3684	cohort	5
Li C et al (2018)[165]	2008	South	live	UK	both	1385882	cohort	6
Liang ZJ et al (2018)[166]	2008	South	live	singletons	both	904795	XS	6
Wang Q et al (2018)[167]	2016	South	live	singletons	both	469975	cohort	7
Yangzom Y et al (2008)[168]	2005	Southwest	live	both	both	2540	cohort	5
Yang X et al (2011)[169]	2006	Southwest	live	both	UK	13024	XS	6
Duan L et al (2010)[170]	2005	Southwest	live	singletons	UK	21043	cohort	8
Tan CE et al (2009)[171]	2008	Southwest	live	UK	UK	6638	cohort	4
Tan CE et al (2009)[171]	2009	Southwest	live	UK	UK	6365	cohort	4
Liao H et al (2010)[172]	2008	Southwest	all	singletons	both	18024	cohort	7

Liao S et al (2014)[173]	2010	Southwest	all	singletons	both	5360	cohort	6
Fan XJ et al (2017)[174]	2009	Southwest	UK	singletons	LMP	1419	cohort	7
Li R et al (2017)[175]	2013	Southwest	UK	singletons	both	688	cohort	8

*All births: livebirths and stillbirths. Unknown births: does not specify live birth or all births.

‡UK: unknown.

†XS: cross-sectional study. Cohort: cohort study.

Table S4. Sensitivity analysis for low-quality studies on pooled incidence of preterm birth in China, 1990-2016.

Characteristic	Numbers of studies	Number of births	Preterm birth rate (%)		Heterogeneity	Multivariate meta-regression‡	
			Estimate	95%CI	I^2 (%)	Coefficient	95%CI
Administration region*							
Central	16	1414665	5.67	4.26-7.09	99.9%	Ref	Ref
East	36	1233688	6.11	5.54-6.68	99.5%	0.006	-0.003 to 0.015
North	35	594789	5.56	4.96-6.17	98.8%	-0.004	-0.014 to 0.006
Northwest	5	64905	6.80	4.29-9.31	99.4%	0.016	0.001 to 0.030
South	18	4701763	6.14	5.96-6.32	98.1%	0.014	0.004 to 0.024
Southwest	7	62098	7.09	4.49-9.68	99.3%	0.014	0.0003 to 0.028
Hong Kong, Macau and Taiwan	13	1634881	6.51	5.83-7.19	99.2%	0.013	0.001 to 0.025
Multi-provinces	39	13909524	6.09	5.57-6.61	99.9%	0.012	0.003 to 0.021
Year							
1990-1994	9	417378	5.36	4.89-5.84	96.5%	Ref	Ref
1995-1999	19	1615512	4.64	4.27-5.00	99.1%	-0.011	-0.023 to 0.001
2000-2004	12	2754562	5.68	4.91-6.45	99.8%	-0.001	-0.014 to 0.012
2005-2009	37	4969552	6.74	6.25-7.24	99.8%	0.008	-0.003 to 0.020
2010-2014	81	12979754	6.13	5.80-6.47	99.8%	0.006	-0.005 to 0.017
2015-2016	12	880265	6.91	5.89-7.94	99.7%	0.016	0.003 to 0.030
Denominator†							
Live births only	105	17708337	6.01	5.70-6.33	99.9%	Ref	Ref
All births	15	661838	7.01	5.90-8.12	99.7%	0.003	-0.006 to 0.011
Unknown births	50	5246848	6.01	5.62-6.39	99.6%	0.003	-0.003 to 0.008
Method of estimating GA							
LMP	53	15878584	5.81	5.40-6.22	99.9%	Ref	Ref
Ultrasound	5	176565	5.47	3.96-6.99	99.4%	-0.003	-0.017 to 0.012
Ultrasound and LMP	38	5506970	6.51	5.97-7.06	99.8%	0.003	-0.004 to 0.010
Unknown	74	2054904	6.16	5.76-6.57	99.3%	0.004	-0.003 to 0.010

Singletons/multiples							
Singletons only	110	15617352	5.84	5.56-6.12	99.8%	Ref	Ref
Singletons and multiples	31	1604966	6.82	5.90-7.73	99.8%	0.015	0.008 to 0.022
Unknown	29	6394705	6.38	5.83-6.93	99.8%	0.006	-0.001 to 0.013

*Only one study was from Northeast China, in which the preterm birth rate was 3.8% (95%CI: 2.4 - 5.21%). The meta-regression showed no significant difference between Northeast and Central China.

†All births: livebirths and stillbirths. Unknown births: Does not specify live birth or all births.

‡Adjusted variable: Quality level of studies.