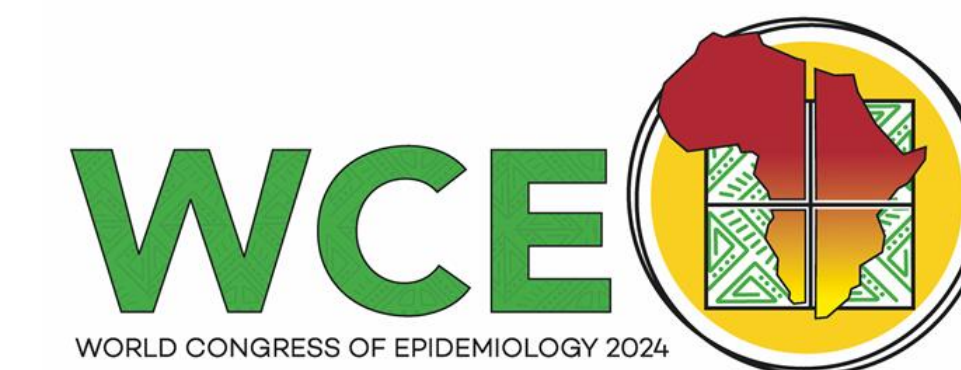




Association of paternal age with secondary sex ratio and adverse neonatal outcomes

P3-P2



Wenxue Xiong¹; Xijia Tang¹; Xiaohua Liu²; Hua Nie²; Weibing Qin²; Jiabao Wu²; Li Ling^{1,3*}; Lu Han^{2*}

¹Department of Medical Statistics, School of Public Health, Sun Yat-sen University, Guangzhou, China; ²NHC Key Laboratory of Male Reproduction and Genetics, Guangdong Provincial Reproductive Science Institute (Guangdong Provincial Fertility Hospital), Guangzhou, China; ³Clinical Research Design Division, Clinical Research Center, Sun Yat-sen Memorial Hospital, Sun Yat-sen University, Guangzhou, China.

Paternal age was moderately associated with caesarean delivery and preterm birth. These findings may be clinically useful in preconception counseling on paternal age-related pregnancy risks.

BACKGROUND

Is paternal age associated with secondary sex ratio and adverse neonatal outcomes?

Advanced maternal age has long been recognized as a major risk factor for adverse neonatal outcomes. However, the association between paternal age and the risk of adverse neonatal outcomes are not well established, yet it is biologically plausible that an increasing number of genetic and epigenetic sperm abnormalities in older males may contribute to adverse neonatal outcomes. The joint effect of paternal and maternal age on neonatal outcomes was also not well investigated.

METHODS

- Based on the National Free Preconception Checkups Project between 2014 and 2019, in Guangdong Province, China.
- Paternal age at maternal last menstrual period was measured.
- Outcomes included secondary sex ratio, caesarean delivery, preterm birth, small for gestational age, and perinatal infant death.
- The modified Poisson regression model was employed to estimate relative risk and 95% confidence interval and logistic regression models was used to analyze the relative importance of predictors.
- The additive interactions between paternal and maternal age on neonatal outcomes was measured.

RESULTS

- 783 988 men (mean [SD] age, 28.9 [4.8] years) and their female partners (26.7 [4.3] years) with singleton birth were included in the final analysis.

Table 1. Association between paternal age with neonatal outcomes.

Outcomes	Paternal age (RR, 95% CI) ^a			
	<25 (n= 130,219)	25–34 (n= 557,671)	35–44 (n= 90,670)	>44 (n= 5428)
Secondary sex ratio	1.00 (0.99–1.01)	1.00	1.00 (0.99–1.01)	1.02 (0.99–1.05)
Caesarean delivery	0.92 (0.90–0.93)	1.00	1.05 (1.04–1.07)	0.95 (0.91–0.98)
Preterm birth	1.07 (1.03–1.10)	1.00	1.17 (1.12–1.22)	1.34 (1.18–1.51)
Small for gestational age	0.99 (0.97–1.02)	1.00	0.98 (0.94–1.01)	1.03 (0.92–1.15)
Perinatal infant death	0.79 (0.66–0.94)	1.00	1.04 (0.83–1.29)	0.93 (0.46–1.91)

^a Adjusted for maternal characteristics (age, education, body mass index, diabetes, alcohol intake, tobacco exposure, and first gestation), paternal characteristics (body mass index, alcohol intake, and tobacco use), and couple's economic pressure.

RESULTS CONTINUED

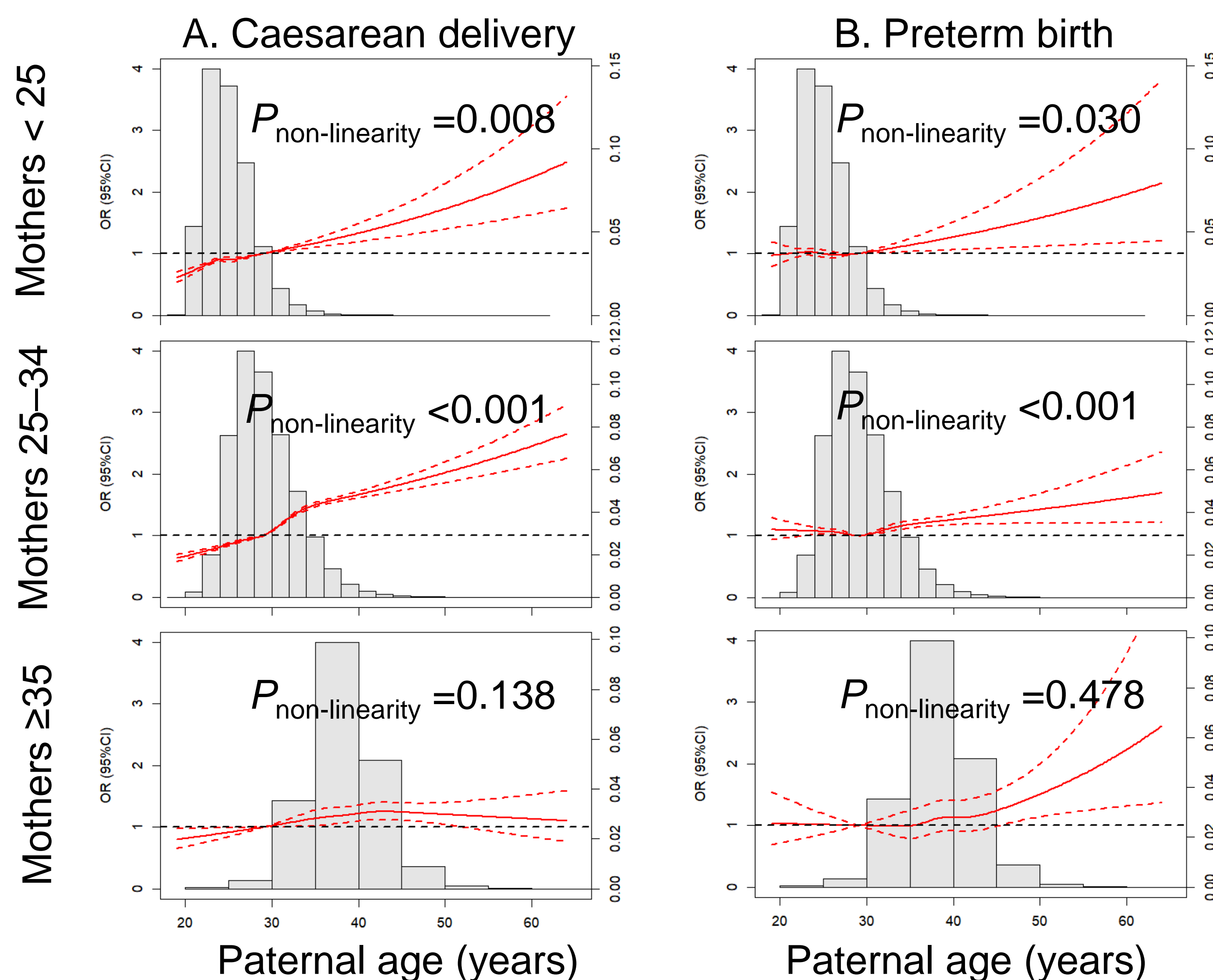


Figure 1. Dose-response association of paternal age with caesarean delivery (A) and preterm birth (B), stratified by maternal age group.

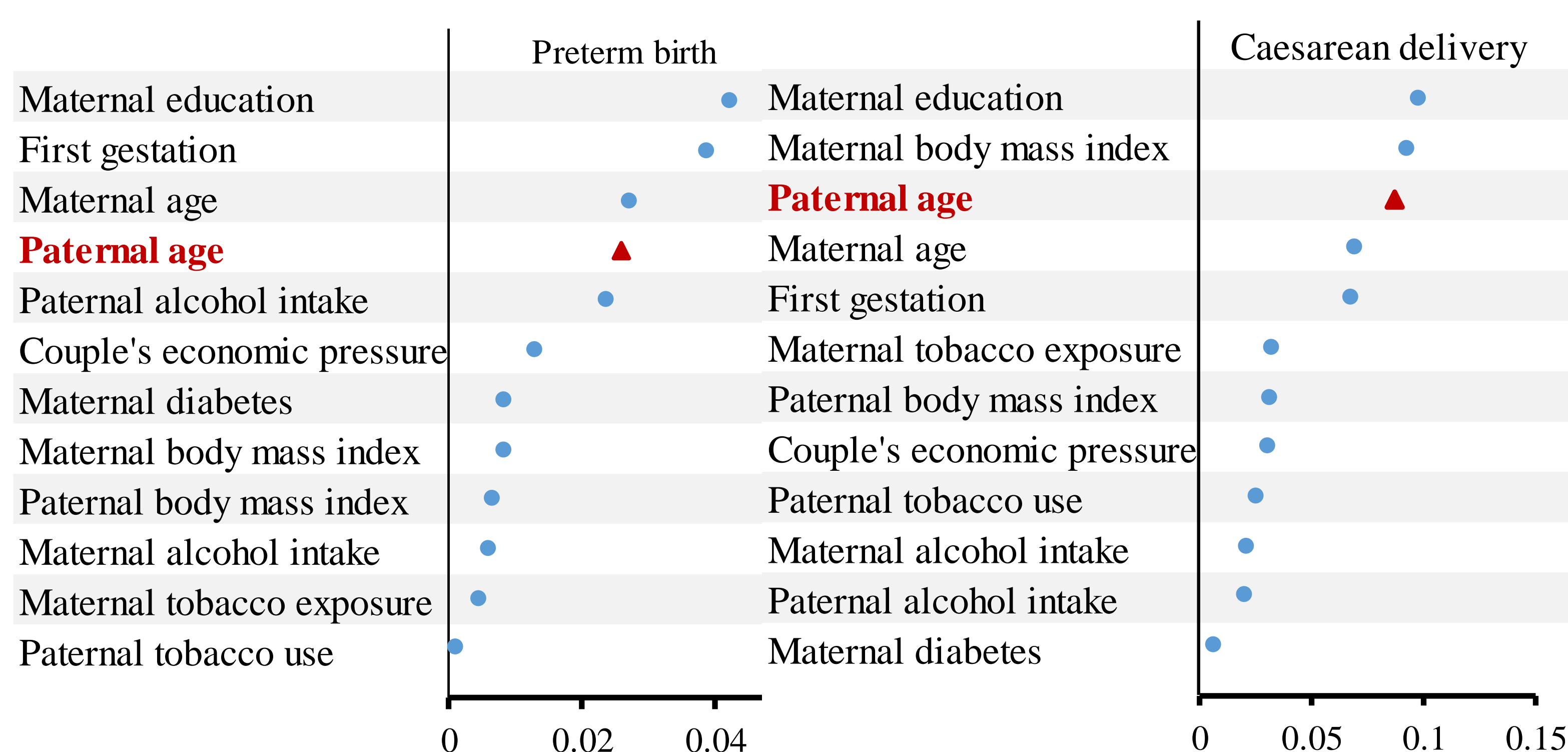


Figure 2. Relative importance of risk factors for predicting preterm birth and caesarean delivery by the absolute standardized coefficients.

CONCLUSIONS

- Paternal age was moderately associated with increased risk of caesarean delivery and preterm birth.
- These findings provide important evidence for preconception health care and may be clinically useful in preconception counseling on paternal age-related pregnancy risks.

ADDITIONAL KEY INFORMATION

Author Contact Information: Email: xiongwx5@mail2.sysu.edu.cn

Acknowledgements: We thank all the health workers and participants throughout Guangdong Province for their considerable efforts and collaboration in the National Free Preconception Checkup Project.