



First-trimester prediction of preeclampsia: external validation of the FMF algorithm in non-selected Latin-American women

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Objective

To assess the predictive performance of the FMF first trimester model for early (ePE) and late (IPE) preeclampsia (PE) in non-selected women from Mexico.

Methods

A validation cohort was created based on 6, 254 women consecutively attending a routine first trimester scan. Models included maternal factors, uterine artery Doppler, and blood pressure. Patient-specific risk for each model was calculated from the formula: $\text{odds}/(1+\text{odds})$, where $\text{odds} = e^Y$ and Y was derived from the formula $Y = -3.657 + 1.592 \times \text{logmaternal factor-derived a-priori risk for early PE} + 31.396 \times \text{logMAP MoM} + 13.322 \times \text{log uterine artery L-PI MoM}$, in case of ePE, and $Y = -0.468 + 2.272 \times \text{logmaternal factor-derived a-priori risk for late PE} + 21.147 \times \text{logMAP MoM} + 3.537 \times \text{log uterine artery L-PI MoM}$, in case of IPE. Model performance was evaluated by Receiver-Operator-Characteristics (ROC) curve analysis for both, early and late preeclampsia.

Results

Preeclampsia occurred in 4% (250/6, 254). Out of this percentage 3.2% (8/250) was diagnosed before 34 weeks of gestation. Performance for the ePE model depicted a 38% and 63% DR for a 5% and 10% false positive rate (FPR) respectively, with an AUC of 0.752 (95% CI: 0.525-0.979). The best cut-off point for individual high risk of ePE was below 1/35 pregnancies (63% DR for a 10% FPR). Model performance for IPE showed a 10% and 15% DR for a 5% and 10% FPR respectively, along with an AUC of 0.515 (95% CI: 0.475-0.555).

Conclusion

In a non-selected Latin-American population, the FMF model underperform in their ability to correctly identify women who develop PE. This underlies the importance of developing region-specific predictive models for PE.