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External validation of the fetal medicine foundation algorithm for prediction of preecampsia in a chilean population

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Objective

The aim of this study was to validate the Foetal Medicine Foundation algorithm for prediction of pre-eclampsia (PE) in a Chilean population. This model included maternal and obstetrics characteristics and biophysical markers such as mean arterial blood pressure (MAP) and uterine artery Doppler (UtAD) has been published to detect 89% and 57% of early and late-onset PE with a 10% false positive rate (FPR), respectively.

Methods

All pregnant women who attended to the 11-14 weeks ultrasound had an interview to get their demographic details, including body mass index (BMI), and MAP and UtAD were also assessed routinely. The biophysical markers were log transformed, adjusted by maternal characteristics and expressed as multiples of the median (MoM). The Fetal Medicine Foundation risk algorithm was used to calculate the risk for early and late-onset PE in our population. The predictive performance obtained by this algorithm was examined by means of their detection rate, FPR and though the comparison of the area under the ROC curves between the original derivation and this external validation cohort.

Results

A total of 7, 158 pregnancies were included in this study, from which 52 developed early-onset PE (0. 7%) and 135 late-onset PE (1. 9%). The risk generated by the FMF algorithm for early and late-onset PE in our population was 66. 7% and 38. 2% with a 10% FPR, respectively. However the AUC value for prediction of early-onset PE between this external validation cohort and the FMF cohort was not significantly different (0. 90 vs 0. 95; p=0. 40), the algorithm for late-onset PE differ significantly between both cohorts (0. 69 vs 0. 86; p=0. 003).

Conclusion

This study showed that the FMF algorithm for early-onset PE is suitable for our population, however the detection rate is moderately lower in our population and in order to have the same sensitivity, the FPR must rise significantly.