

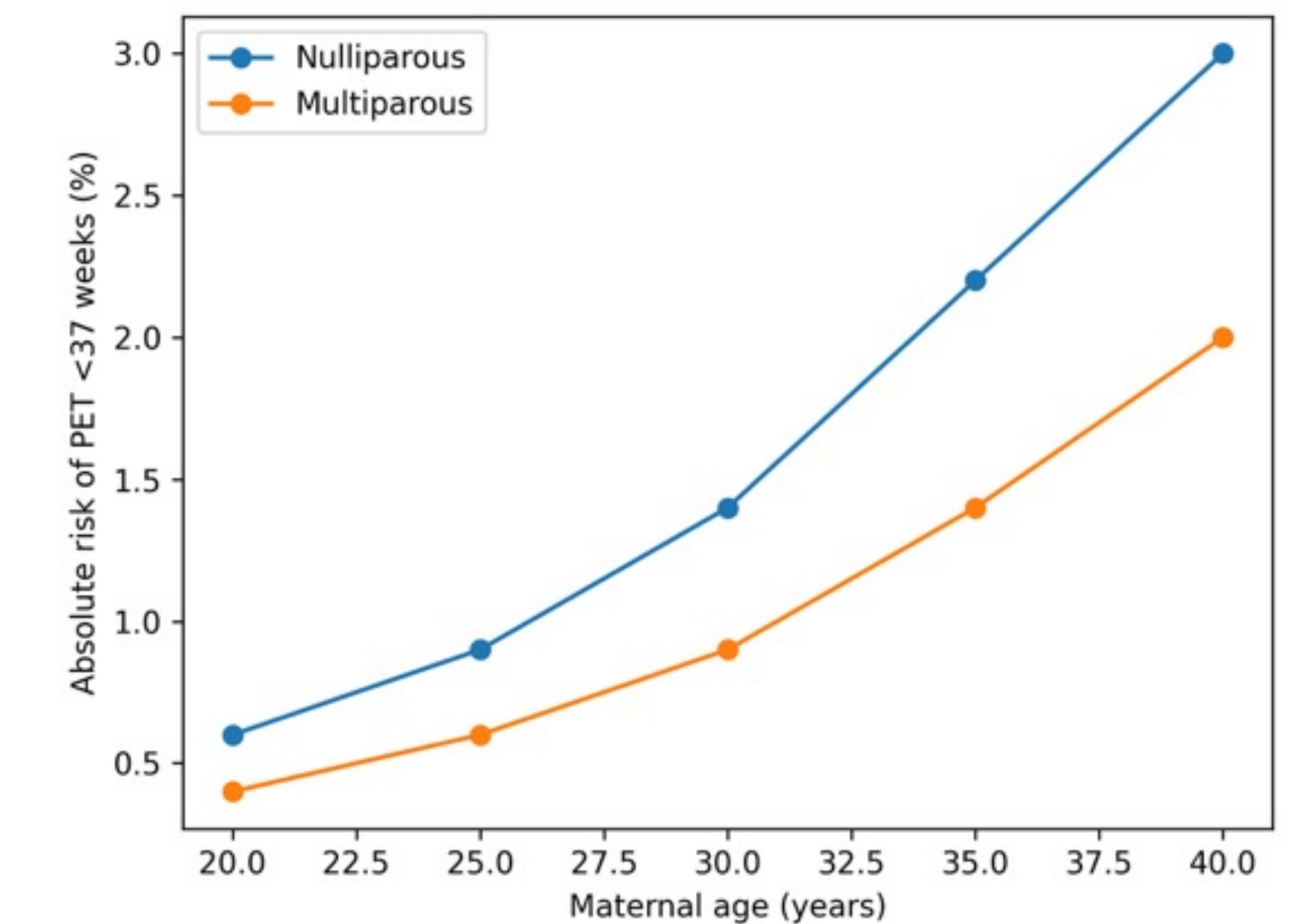
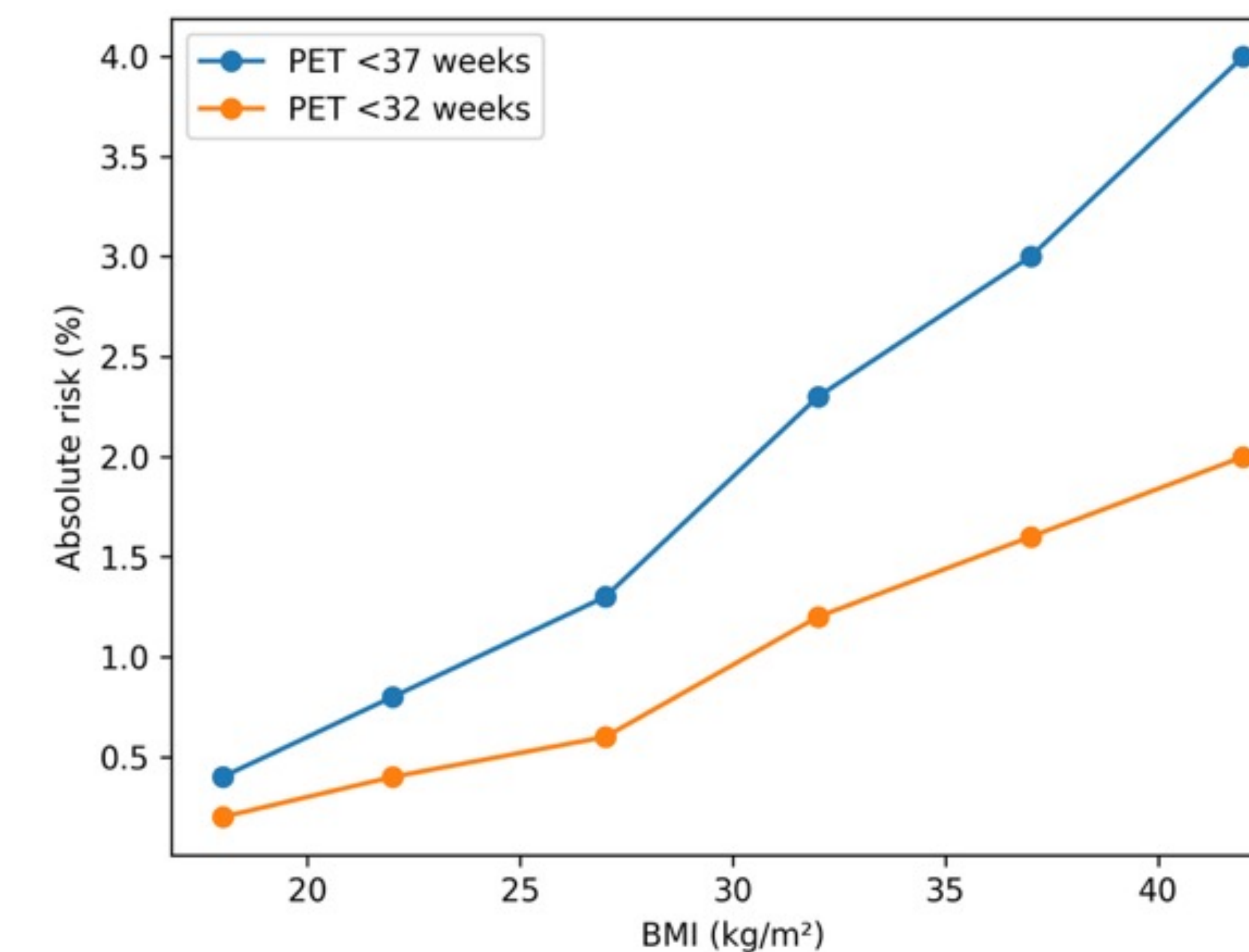
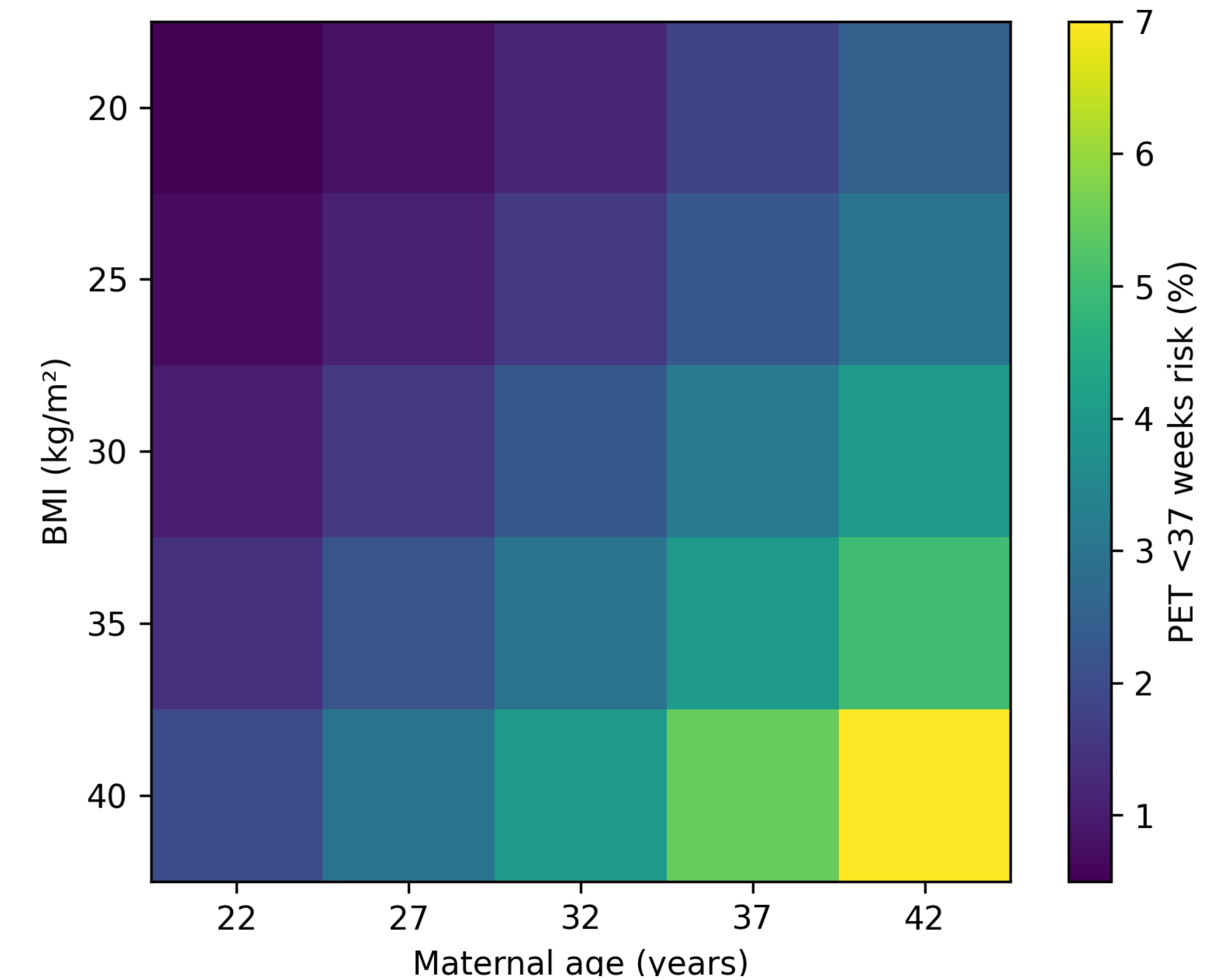
Maternal BMI, age and parity as predictors of pre-eclampsia before 37 and 32 weeks' gestation: a risk modelling study in an Indian population

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Objectives To evaluate the role of maternal body mass index (BMI) and maternal age and parity in prediction of pre-eclampsia before 37 and before 32 weeks' gestation, and to develop gestational-age-specific, population-based risk estimates..

Method: This retrospective cohort study included singleton pregnancies undergoing routine antenatal care. Maternal BMI parity and age at booking were recorded. Outcomes were classified as pre-eclampsia requiring delivery before 37 weeks or before 32 weeks' gestation. Baseline risks were derived from population incidence. Likelihood ratios for BMI and maternal age were obtained from meta-analytic and cohort data and applied within a Bayesian framework to estimate individualized absolute risks.

Results: Increasing maternal BMI and advancing maternal age were associated with progressively higher risks of pre-eclampsia. Obese women demonstrated a two- to four-fold increase in likelihood of pre-eclampsia, with greater impact on early-onset disease. Baseline risks for PET <37 and <32 weeks were combined with BMI, age and parity likelihood ratios using Bayesian updating. Risk of PET increased in a dose-response manner with increasing BMI and advancing maternal age. Nulliparous women demonstrated higher absolute risks across BMI categories compared with multiparous women. The effect was more pronounced for PET <32 weeks.



Conclusion: This study demonstrates that BMI and maternal age contribute substantial and quantifiable risk for PET, with parity acting as an important modifier. Likelihood-ratio modelling allows these factors to be expressed as absolute risks, improving clinical interpretability. Population-specific likelihood-ratio modelling allows clinically interpretable risk estimation and may improve early risk stratification.