Pregnancy outcomes after early-pregnancy use of quit-smoking medicines: Evidence from multi-national real-world data

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Introduction: Quit-smoking medicines, including nicotine replacement therapy (NRT), varenicline, and bupropion are effective for smoking cessation; however, evidence on their effect on pregnancy outcomes remains limited. Among pregnant women who smoke, we examined whether use of these medicines in early pregnancy impacts the risk of adverse pregnancy outcomes.

Methods: We linked population-base data spanning up to 22 years from Australia (New South Wales), New Zealand, Norway, and Sweden. Data included birth, prescription medicine dispensing, hospitalisation, and death records. We defined early-pregnancy medicine use as ≥2 dispensings of the same medicine with supply overlapping the first 19 weeks of gestation and at least one dispensing occurring after conception. Comparison pregnancies were among women who smoked and did not use quit-smoking medicines during pregnancy. We used propensity score matching (1:10) to balance maternal characteristics, calculated relative risks (RR) with 95% confidence intervals (CI) for a range of adverse maternal and baby outcomes, and meta-analysed country-specific estimates.

Results: The study included 2402, 379 and 116 pregnancies with NRT, varenicline and bupropion exposure, respectively. NRT showed no difference in the risk of adverse outcomes overall (41.3% vs 41.5%, RR 0.98, 95%CI 0.87–1.09), but a lower risk of preterm birth <37 weeks (7.2% vs 8.5%, RR 0.84, 95%CI 0.73–0.98) and small-for-gestational-age (21.0% vs 23.9%, RR 0.84, 95%CI 0.81–0.96). Varenicline showed no difference in the risk of adverse outcomes overall (32.7% vs 35.5%, RR 0.92; 95%CI 0.79-1.06), but imprecise estimates for individual outcomes. Bupropion analyses yielded imprecise risk estimates.

Conclusions, implication: Early-pregnancy NRT use was not associated with increased risk of adverse pregnancy outcomes and was associated with modest reductions in preterm birth and small for gestational age, providing reassurance for its use in pregnancy. Evidence for varenicline and bupropion remains limited, highlighting the need for further research.

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