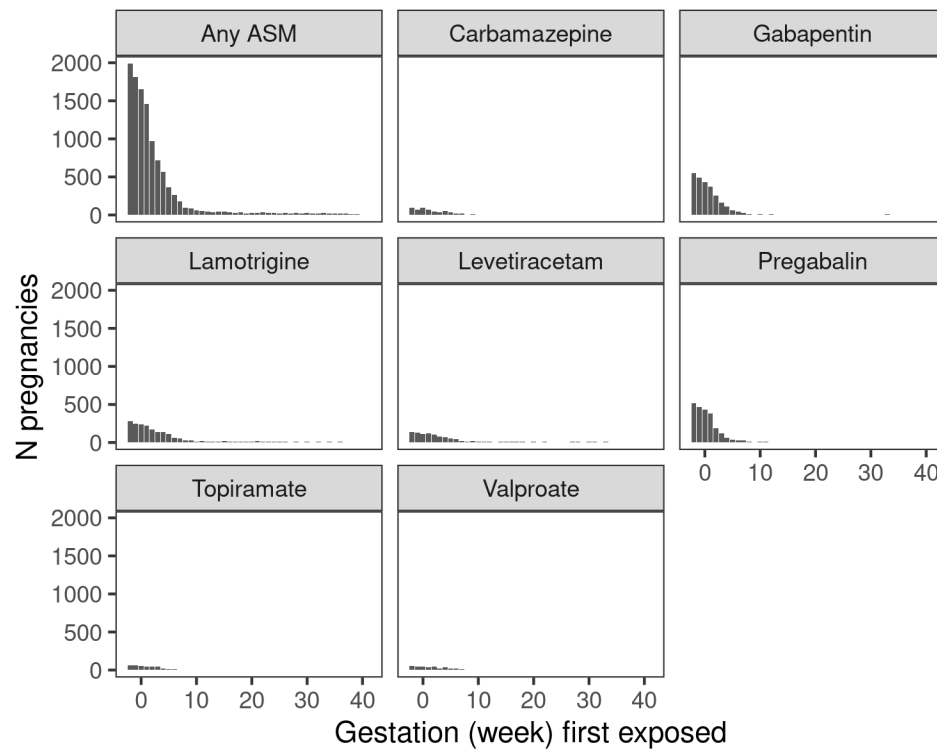
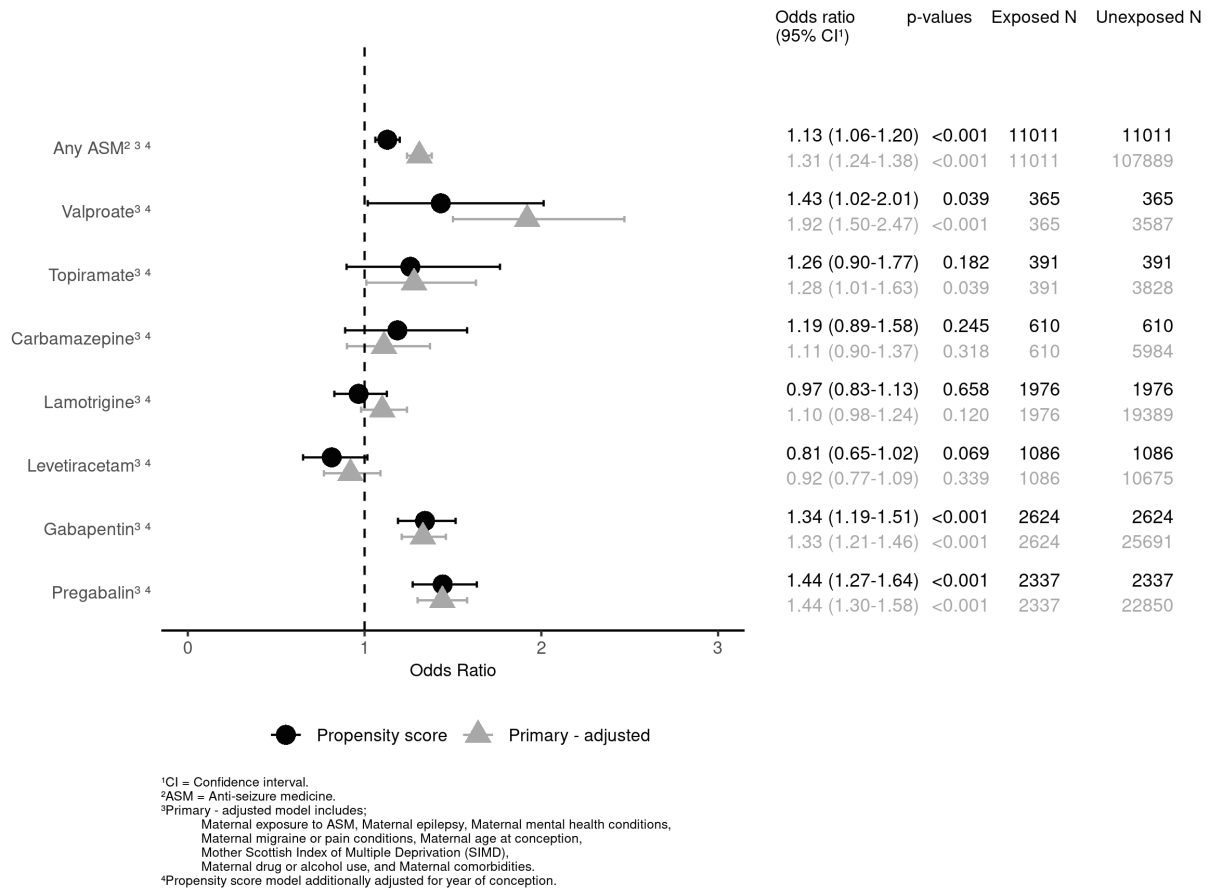


Supplementary Figure 1: All singleton pregnancies conceived in Scotland between 1 April 2010 and 2 July 2023 (pregnancy cohort) that were exposed to an ASM during pregnancy: by gestational week that the pregnancy was first exposed to the ASM.



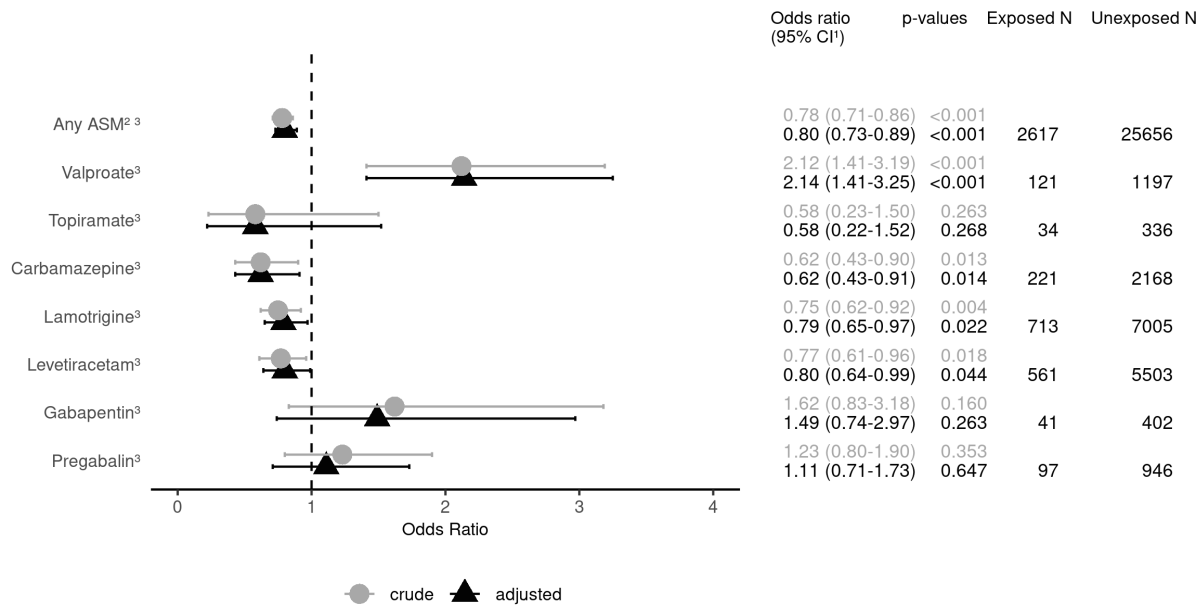
ASM exposure during pregnancy is counted from 28 days before conception (-2 weeks gestation) up to the end of pregnancy. Total pregnancies exposed to ASM over the study period were: any ASM $n = 11,011$; Valproate $n = 365$; Topiramate $n = 391$; Carbamazepine $n = 610$; Lamotrigine $n = 1,976$; Levetiracetam $n = 1,086$; Gabapentin $n = 2,624$; Pregabalin $n = 2,337$.

Supplementary Figure 2: Odds ratios for the association between exposure to anti-seizure medicine (ASM) during pregnancy and pregnancy loss. Propensity score approach and primary analysis (adjusted) models.



Singleton pregnancies conceived in Scotland between 1 April 2010 to 2 July 2023 (pregnancy cohort). Forest plot shows odds ratios from conditional logistic regression models using the propensity score approach and from the primary analysis models (adjusted models). The total sample sizes for each ASM exposure group (N in exposed cohort and N in matched unexposed groups) are shown in the right hand columns. The number with pregnancy loss outcome in the exposed and unexposed groups can be found in Supplementary Data 11.

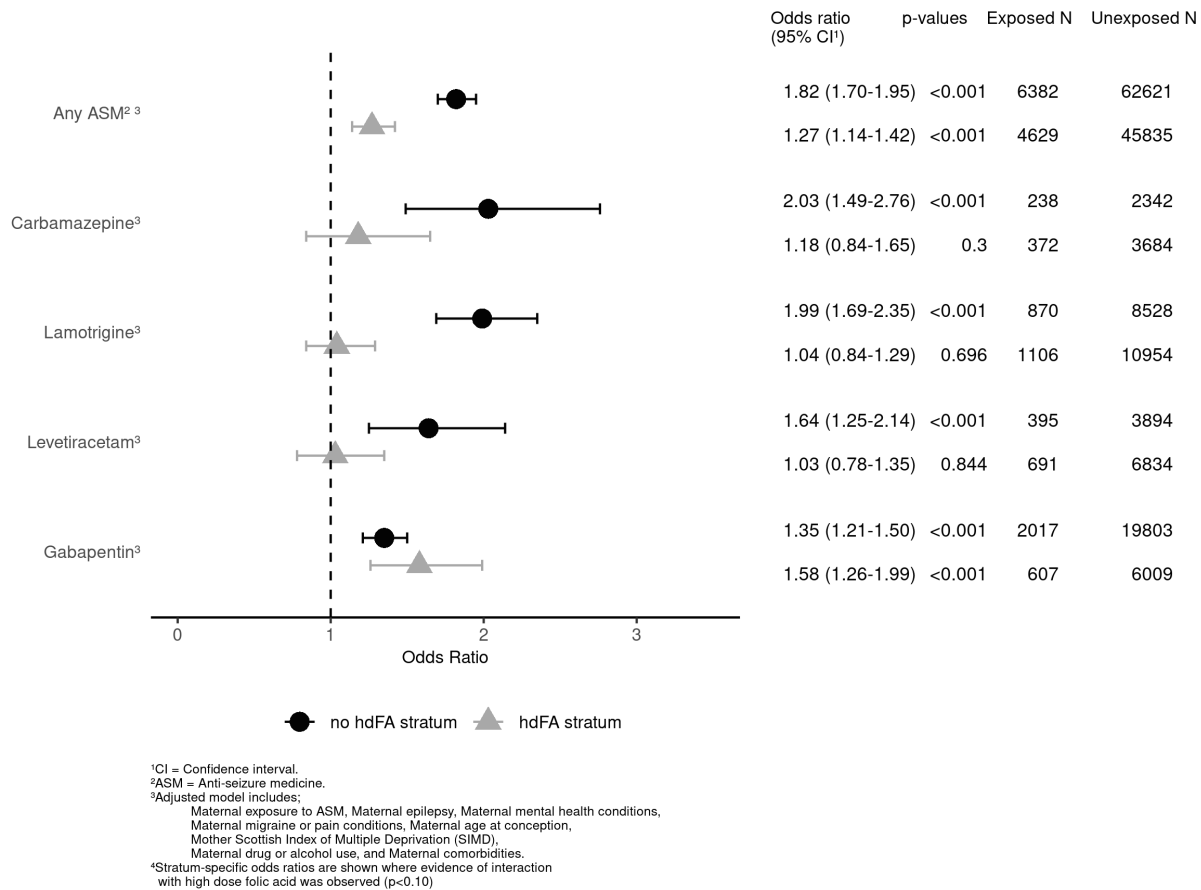
Supplementary Figure 3: Odds ratios for the association between exposure to anti-seizure medicine (ASM) during pregnancy and pregnancy loss; restricted to pregnancies from women reported to have epilepsy.



¹CI = Confidence interval.
²ASM = Anti-seizure medicine.
³Adjusted model includes;
 Maternal exposure to ASM, Maternal epilepsy, Maternal mental health conditions,
 Maternal migraine or pain conditions, Maternal age at conception,
 Mother Scottish Index of Multiple Deprivation (SIMD),
 Maternal drug or alcohol use, and Maternal comorbidities.

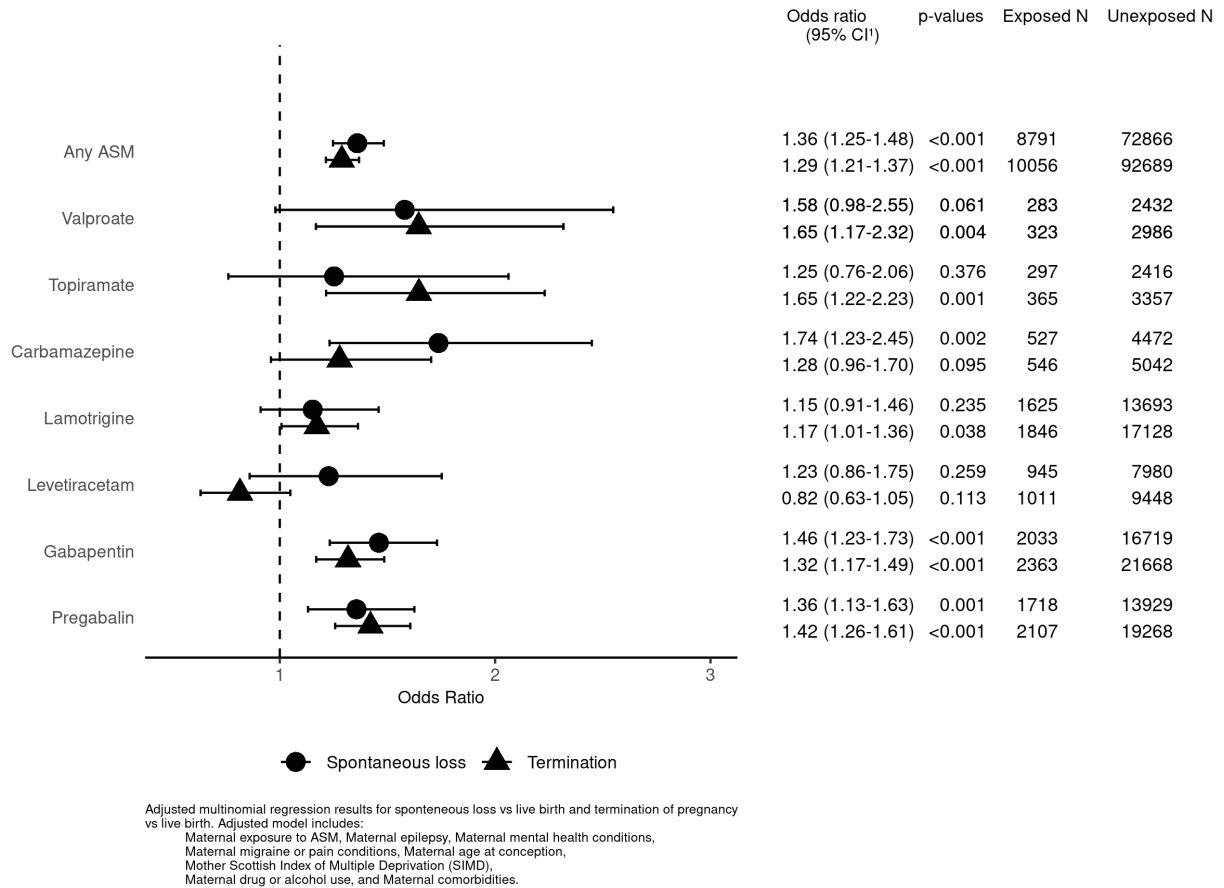
Singleton pregnancies conceived in Scotland between 1 April 2010 to 2 July 2023 (pregnancy cohort). Forest plot shows crude and adjusted odds ratios from conditional logistic regression models. The total sample sizes for each ASM exposure group (N in exposed cohort and N in matched unexposed groups) are shown in the right hand columns. The number with pregnancy loss outcome in the exposed and unexposed groups can be found in Supplementary Data 12.

Supplementary Figure 4: Odds ratios for the association between exposure to anti-seizure medicine (ASM) during pregnancy and pregnancy loss; stratified by maternal high dose folic acid status.



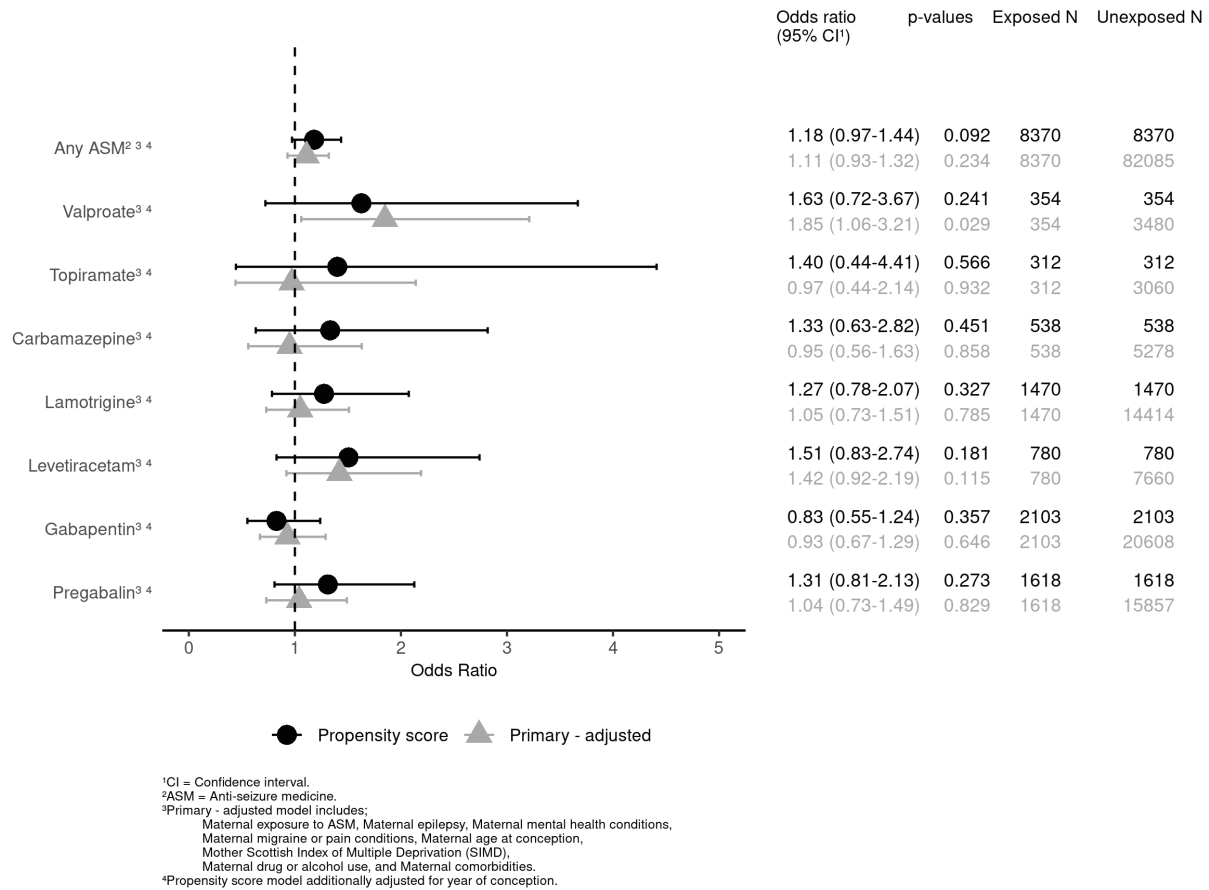
Singleton pregnancies conceived in Scotland between 1 April 2010 to 2 July 2023 (pregnancy cohort). Adjusted odds ratios from conditional logistic regression stratified by high dose folic acid status, pregnancy cohort. Stratified models were only performed for exposures where there was a significant interaction term in the model including an interaction term between maternal high dose folic acid status and ASM exposure (see Supplementary Data 13). The total sample sizes for each ASM exposure group (N in exposed cohort and N in matched unexposed groups) are shown in the right hand columns. The number with pregnancy loss outcome in the exposed and unexposed groups can be found in Supplementary Data 14.

Supplementary Figure 5: Odds ratios for the association between exposure to anti-seizure medicine (ASM) during pregnancy and spontaneous loss and termination of pregnancy compared to live birth.



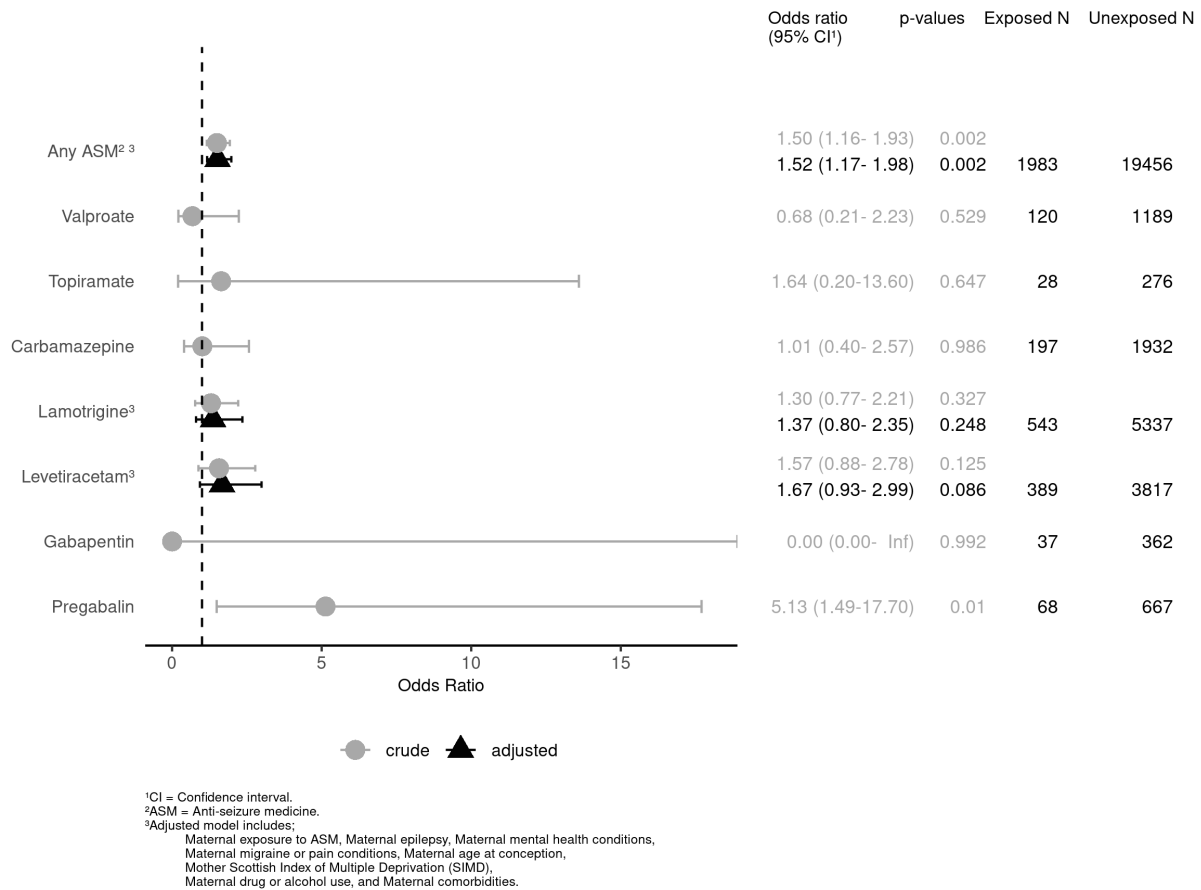
Singleton pregnancies conceived in Scotland between 1 April 2010 and 2 July 2023 (pregnancy cohort). Separating pregnancy outcomes. Odds ratios from multinomial conditional logistic regression. The total sample sizes for each ASM exposure group (N in exposed cohort and N in matched unexposed groups) are shown in the right hand columns. The number with each pregnancy loss type in the exposed and unexposed groups can be found in Supplementary Data 15.

Supplementary Figure 6: Odds ratios for the association between exposure to anti-seizure medicine (ASM) during pregnancy and congenital conditions. Propensity score approach and primary analysis (adjusted) models.



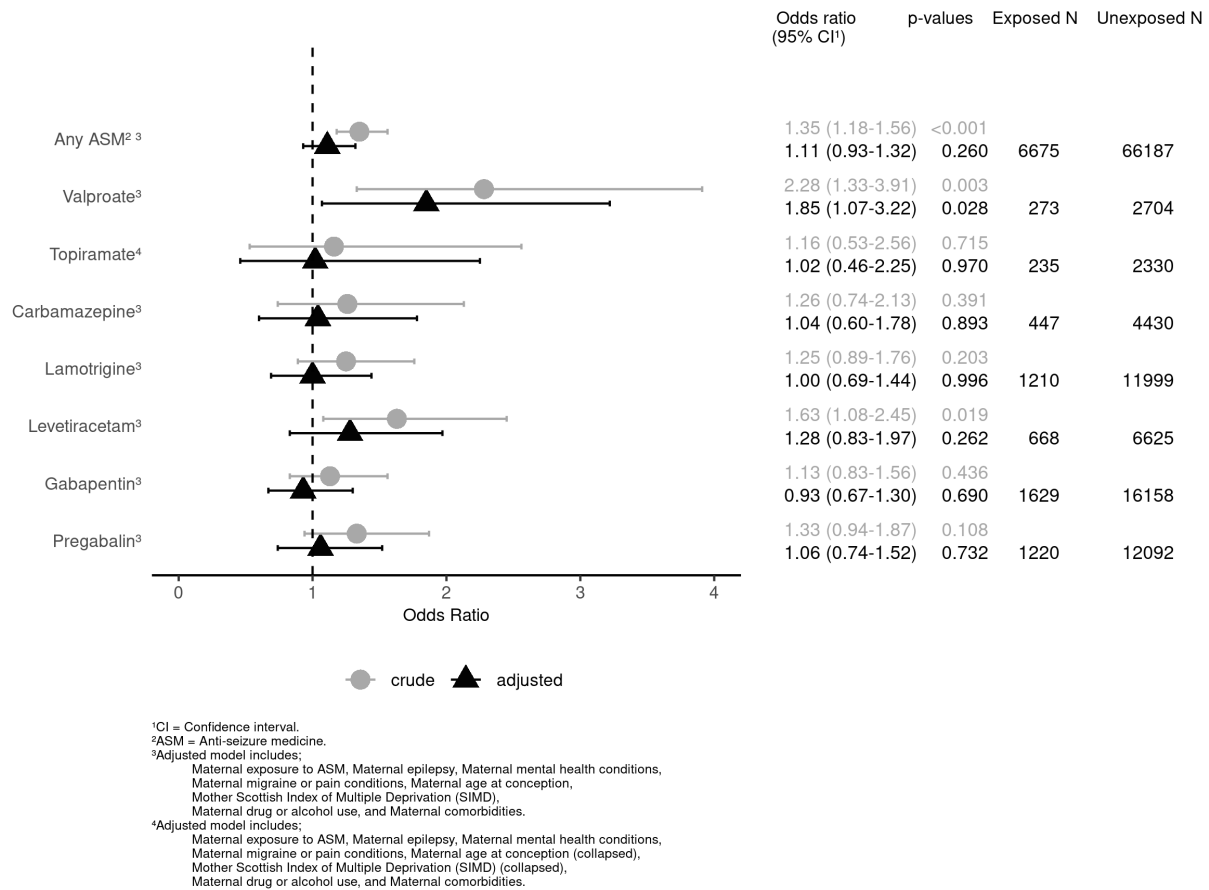
Babies from singleton pregnancies conceived in Scotland between 1 April 2010 and 2 April 2021 (baby cohort). Forest plot shows odds ratios from conditional logistic regression models using the propensity score approach and adjusted odds ratios from the primary analysis models. The total sample sizes for each ASM exposure group (N in exposed cohort and N in matched unexposed groups) are shown in the right hand columns. The number with the congenital condition outcome in the exposed and unexposed groups can be found in Supplementary Data 11.

Supplementary Figure 7: Odds ratios for the association between exposure to anti-seizure medicine (ASM) during pregnancy and congenital conditions. Restricted to babies from women reported to have epilepsy.



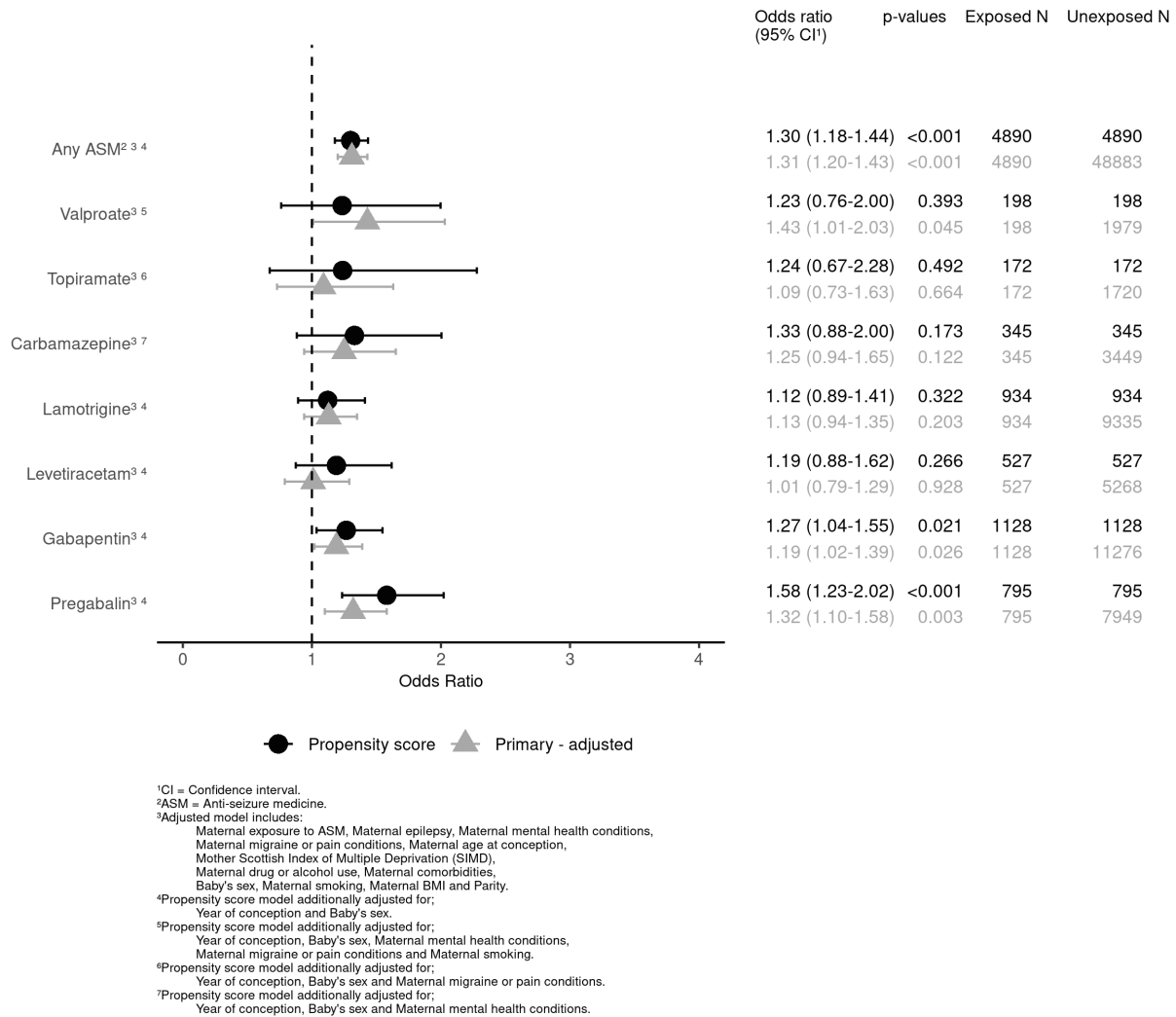
Babies from singleton pregnancies conceived in Scotland between 1 April 2010 and 2 April 2021 (baby cohort). Forest plot shows crude and adjusted odds ratios from conditional logistic regression models. Adjusted models were not run for valproate, topiramate, carbamazepine, gabapentin and pregabalin cohorts, due to the small number of women with epilepsy in these exposed cohorts. The total sample sizes for each ASM exposure group (N in exposed cohort and N in matched unexposed groups) are shown in the right hand columns. The number with the congenital condition outcome in the exposed and unexposed groups can be found in Supplementary Data 12.

Supplementary Figure 8: Odds ratios for the association between exposure to anti-seizure medicine (ASM) during pregnancy and congenital conditions. Restricted to babies reaching at least 12+0 weeks gestation.



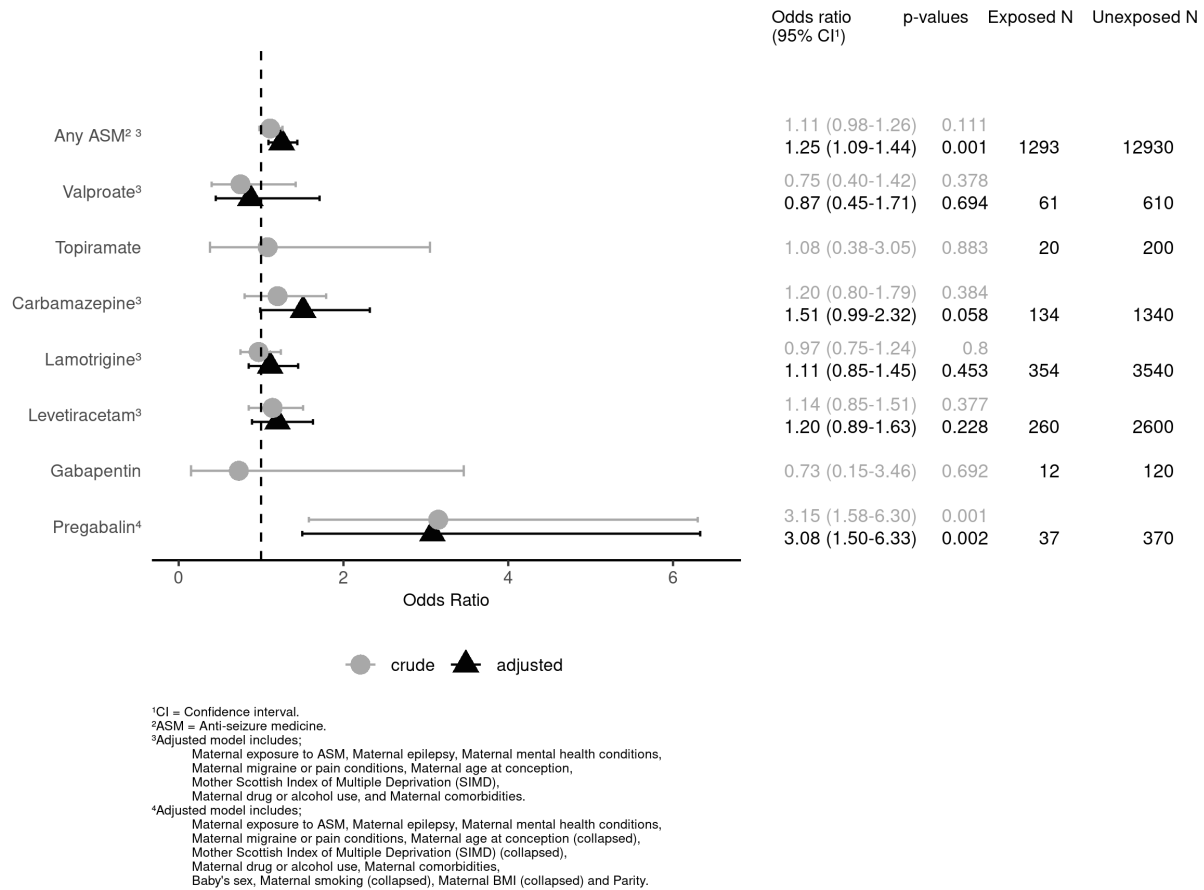
Babies from singleton pregnancies conceived in Scotland between 1 April 2010 and 2 April 2021 (baby cohort). Forest plot shows crude and adjusted odds ratios from conditional logistic regression models. The total sample sizes for each ASM exposure group (N in exposed cohort and N in matched unexposed groups) are shown in the right hand columns. The number with the congenital condition outcome in the exposed and unexposed groups can be found in Supplementary Data 17.

Supplementary Figure 9: Odds ratios for the association between exposure to anti-seizure medicine (ASM) during pregnancy and early childhood developmental concerns (at 27-30 months review). Propensity score approach and primary analysis (adjusted) models.



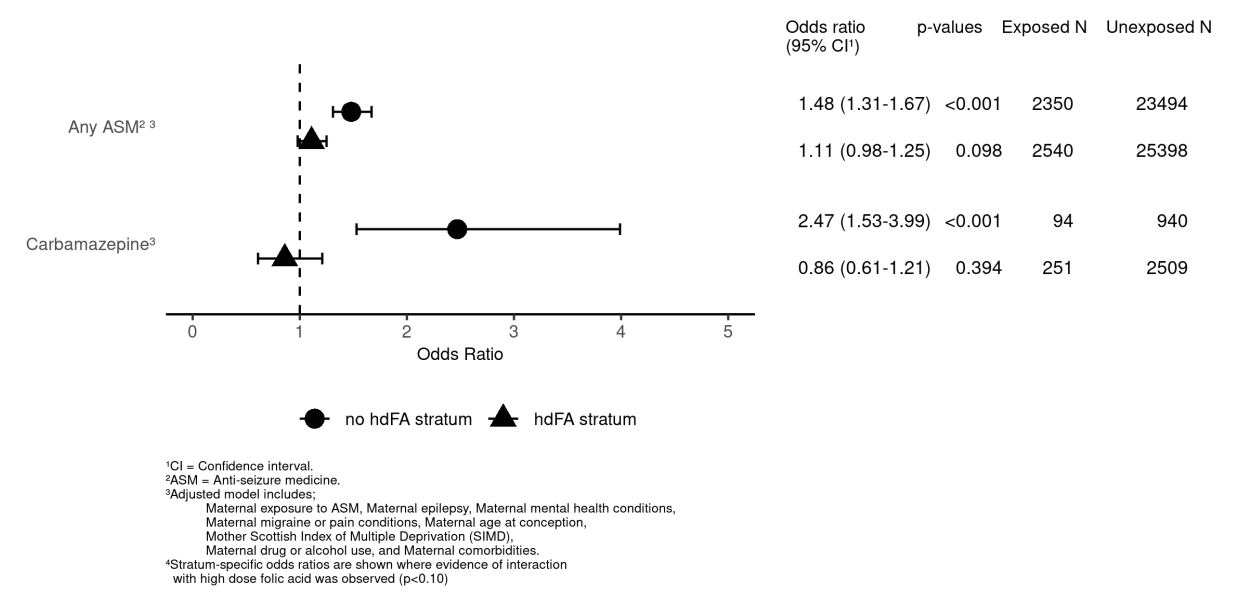
Live births from singleton pregnancies conceived in Scotland between 1 April 2010 to 1 July 2020 (live birth cohort) Forest plot shows odds ratios from conditional logistic regression models using the propensity score approach and adjusted odds ratios from the primary analysis models. The total sample sizes for each ASM exposure group (N in exposed cohort and N in matched unexposed groups) are shown in the right hand columns. The number with early childhood developmental concerns in the exposed and unexposed groups can be found in Supplementary Data 11.

Supplementary Figure 10: Odds ratios for the association between exposure to anti-seizure medicine (ASM) during pregnancy and early childhood developmental concerns (at 27-30 month assessment). Restricted to live-born babies to women reported to have epilepsy.



Live births from singleton pregnancies conceived in Scotland between 1 April 2010 and 1 July 2020 (live birth cohort). Forest plot shows crude and adjusted odds ratios from conditional logistic regression models. Adjusted models were not run for topiramate and gabapentin cohorts, due to the small number of women with epilepsy in these exposed cohorts. The total sample sizes for each ASM exposure group (N in exposed cohort and N in matched unexposed groups) are shown in the right hand columns. The number with early childhood developmental concerns in the exposed and unexposed groups can be found in Supplementary Data 12.

Supplementary Figure 11: Odds ratios for the association between exposure to anti-seizure medicine (ASM) during pregnancy and early childhood developmental concerns (at 27-30 month assessment). Stratified by maternal high dose folic acid status.



Live births from singleton pregnancies conceived in Scotland between 1 April 2010 and 1 July 2020 (live birth cohort). Adjusted odds ratios from conditional logistic regression stratified by high dose folic acid status, live birth cohort. Stratified models were only performed for exposures where there was a significant interaction term in the model including an interaction term between maternal high dose folic acid status and ASM exposure (see Supplementary Data 13). The total sample sizes for each ASM exposure group (N in exposed cohort and N in matched unexposed groups) are shown in the right hand columns. The number with early childhood developmental concerns in the exposed and unexposed groups can be found in Supplementary Data 14.