Fecundability among Women with Type 1 and Type 2 Diabetes in the Norwegian Mother and Child Cohort Study

Online-Only Appendix

Table A-1 Demographic factors among 76,864 women with 1st MoBa pregnancies, by whether they reported to have planned their pregnancy

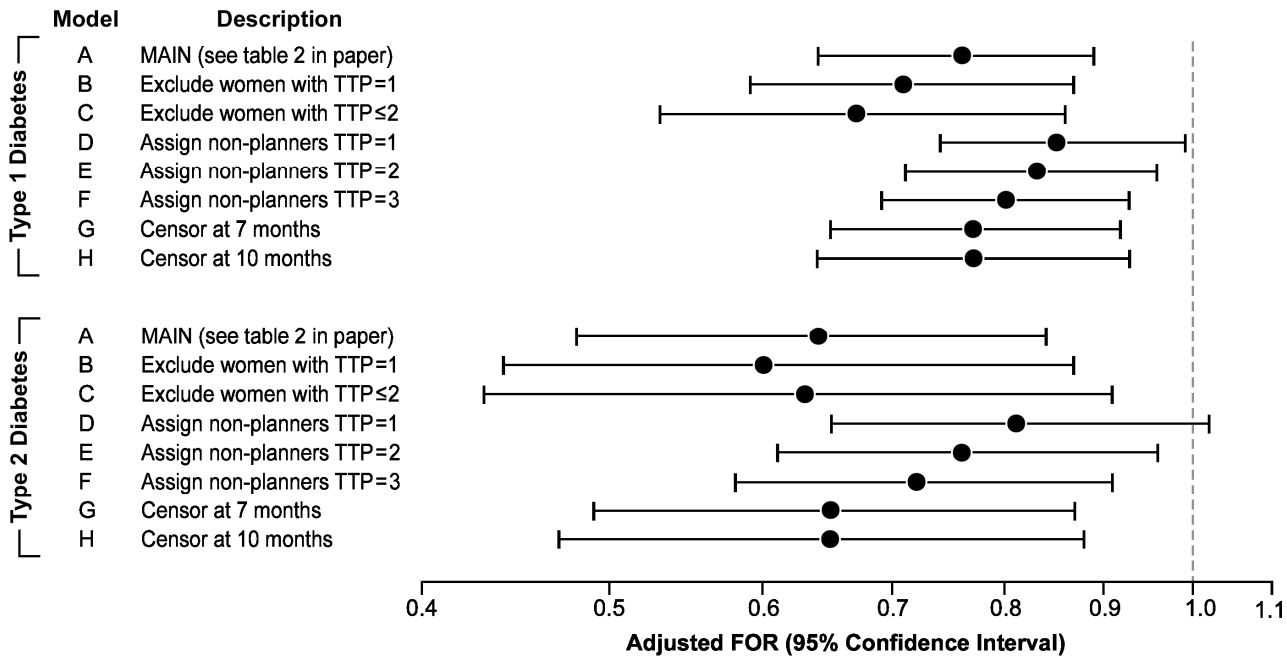| Maternal Characteristics	Planners (N = 61,682) %	Non-Planners (N = 15,182) %
Age (mean)	29.9	28.1
Pregnancy body mass index (kg/m2) (mean)	24.1	23.9
Diabetes Status		
None	98.6	98.5
Type 1	0.4	0.4
Type 2	0.2	0.3
Missing	0.9	0.9
Smoking 3 months before pregnancy		
Daily	17.5	31.7
Sometimes	10.3	10.8
None	72.1	57.1
Missing	0.2	0.4
Highest completed or on-going years of education		
≤12 years	35.4	56.5
13-16 years	40.5	28.4
>16 years	22.1	12.8
Other	2.1	2.2
Regular menstrual cycles 12 months before pregnancy		
Yes	78.6	3.1
No	21.0	26.5
Missing	0.4	0.4
Infertility treatment for current pregnancy		
Yes	7.4	0.5
No	92.6	99.6
Frequency of intercourse during the month before pregnancy		
>2 times per week	48.1	39.8
1-2 times per week	35.3	32.0
<1 time per week	14.8	25.7
Missing	1.8	2.5
Parity		
0	51.9	57.0
1	31.4	20.3
>1	16.6	22.7

Figure A-1 Adjusted fedundability odds ratios (FOR) and 95% Confidence Intervals for the association between diabetes and time-to-pregnancy, according to various sensitivity analyses. Model A is the main analysis presented in Table 2 in the paper. Models B and C address wantedness bias which may result if women who did not plan their pregnancy (non-planners) respond that the pregnancy was in fact planned when asked about it in retrospect [1, 2]. These women would then be incorrectly classified as planners and generally report short time-to-pregnancy (TTP). Therefore, to assess wantedness bias, we excluded women who reported either a TTP=1 (Model B) or TTP=2 (Model C). Models D, E, and F assess planning bias, which may occur by excluding non-planners from the analysis [1, 2]. To estmate the impact of excluding this group, non-planners were assigned either TTP=1 (Model D), TTP=2 (Model E) or TTP=3 (Model F) and included in the analysis. To assess medical intervention bias, which may result if the exposure under study is associated with the probability that women will receive successful medical help for infertility [1, 2], we conducted sensitivity analyses censoring TTP at either 7 months (Model G) or 10 months (Model H).

Equation for the Proportional Probability Model:

The following equation denotes the general form of the proportional probability model for analysis of time-to-pregnancy data [3]:

$$\ln(\text{conception risk at month } i \mid (E, X_1, X_2, \cdots, X_k) = \alpha_i + \beta E + \beta_1 X_1 + \beta_2 X_2 \cdots + \beta_k X_k$$

In this equation, the conception risk is the month specific probability of pregnancy, assuming the woman did not get pregnant in any previous month, E is the exposure of interest, X_1 through X_k are covariates, and α_i is the baseline conception risk at month i. A logistic regression model can be fit to time-to-pregnancy data (through PROC LOGISTIC in SAS) using woman-month as the unit of analysis. The fecundability odds ratio is then estimated by exponentiating the estimated beta.

[1]   Weinberg CR, Baird DD, Wilcox AJ (1994) Sources of bias in studies of time to pregnancy. Stat Med 13: 671-681

[2]   Joffe M, Key J, Best N, Keiding N, Scheike T, Jensen TK (2005) Studying time to pregnancy by use of a retrospective design. American Journal of Epidemiology 162: 115-124

[3]   Weinberg CR, Wilcox AJ (2008) Methodologic Issues in Reproductive Epidemiology. In: Rothman KJ, Greenland S, Lash TL (eds) Modern Epidemiology. Lippincott Williams & Wilkins, Philadelphia PA, pp 620-640