Supplemental Table 1. Spearman correlations between adherence to several healthy dietary pattern scores and the Pro-Fertility Diet Index (n=375 unique FFQs).

	Pro-Fertility	**MedDiet**	**AHEI2010**	**Fertility Diet**
Pro-Fertility	1.0	0.34	0.29	0.38
MedDiet		1.0	0.61	0.33
aHEI2010			1.0	0.45
Fertility Diet				1.0

Mediterranean Diet (MedDiet): based on dietary intake of 11 items: vegetables, potatoes, legumes, fruits, whole grains, red meat, fish, poultry, alcohol, full fat dairy, olive oil. Range: 0 to 55.

Alternate Healthy Eating Index (aHEI2010): based on dietary intake of 11 items: vegetables (excluding potatoes), fruit, whole grains, nuts and legumes, long-chain omega 3 fats, polyunsaturated fat, alcohol, sugar-sweetened beverages and fruit juice, red and processed meat, trans fat, and sodium. Range: 0 to 110.

Fertility Diet: based on dietary intake of 8 items: ratio of MUFA to TFA, % of energy from vegetable protein, % energy from animal protein, high-fat dairy, iron, multivitamins, glycemic load, and low-fat dairy. Range: 8 to 40.

Supplemental Table 2. Baseline characteristics of 357 women (375 unique FFQs) by quartile of pre-treatment adherence to the Mediterranean Diet in the EARTH Study.

	Mediterranean Diet (MedDiet)				
Quartile (Range)	Q1 (17-28)	Q2 (29-31)	Q3 (32-33)	Q4 (34-44)	p-value[1]
Number of Women/FFQs	90/92	93/100	74/76	100/107	
Personal Characteristics					
Age, years	35.7 (3.8)	34.9 (4.5)	35.2 (3.8)	35.5 (4.0)	0.29
Ever smoker, n (%)	31 (33.7)	24 (24.0)	16 (21.1)	29 (27.1)	0.27
White, n (%)	73 (79.4)	87 (87.0)	63 (82.9)	91 (85.1)	0.52
Education, n (%)					0.71
High school or less	8 (8.7)	7 (7.0)	8 (10.5)	6 (5.6)	
College	31 (24.0)	39 (39.0)	21 (27.6)	38 (35.5)	
Graduate school	53 (57.6)	54 (54.0)	47 (61.8)	63 (58.9)	
BMI, kg/m^2	24.2 (3.8)	24.8 (4.7)	24.3 (4.5)	23.2 (3.9)	0.02
Moderate to vigorous exercise, hrs/wk	2.8 (3.4)	4.0 (4.3)	4.1 (4.1)	4.7 (4.9)	0.005
Baseline Cycle Characteristics					
Infertility diagnosis, n (%)					0.49
Female factor	30 (32.6)	36 (36.0)	22 (29.0)	29 (27.1)	
Male factor	32 (34.8)	27 (27.0)	19 (25.0)	33 (30.8)	
Unexplained	30 (32.6)	37 (37.0)	35 (46.1)	45 (42.1)	
Treatment protocol, n (%)					0.32
Antagonist	16 (17.4)	6 (6.0)	14 (18.4)	12 (11.2)	
Flare	12 (13.0)	12 (12.0)	7 (9.2)	10 (9.4)	
Luteal phase agonist	54 (58.7)	72 (72.0)	49 (64.5)	76 (71.0)	
Egg Donor or Cryo Cycle	10 (10.9)	10 (10.0)	6 (7.9)	9 (8.4)	
Day 3 FSH, IU/L	7.3 (1.7)	7.4 (3.1)	7.3 (2.2)	7.4 (2.8)	0.69
Embryo Transfer Day, n (%)[2]					0.66
Day 2	4 (5.7)	3 (3.9)	2 (3.0)	7 (8.2)	
Day 3	31 (44.3)	38 (48.7)	37 (56.1)	39 (45.9)	
Day 5	35 (50.0)	37 (47.4)	27 (40.9)	39 (45.9)	
Number of Embryos Transferred, n (%)[2]					0.29
1 embryo	19 (27.1)	13 (16.9)	17 (25.8)	26 (30.6)	
2 embryos	39 (55.7)	52 (67.5)	33 (50.0)	45 (52.9)	
3+ embryos	12 (17.1)	12 (15.6)	16 (24.2)	14 (16.5)	
Dietary Characteristics					
Total Calories, kcal/day	1602 (551)	1725 (542)	1799 (564)	2030 (628)	<0.001
Carbohydrates, % of kcal/day	47.6 (8.8)	47.5 (6.7)	50.9 (7.7)	50.3 (7.4)	<0.001
Protein, % of kcal/day	16.9 (3.2)	17.0 (2.7)	16.9 (2.7)	16.2 (2.5)	0.07
Fat, % of kcal/day	33.7 (6.8)	33.8 (5.5)	30.8 (6.0)	33.0 (6.9)	<0.001
Alcohol, g/day	7.6 (12.7)	9.0 (9.9)	9.4 (8.9)	9.1 (9.7)	0.003
Caffeine, mg/day	143 (126)	119 (101)	122 (108)	127 (98)	0.74
Multivitamin Use, n (%)	76 (82.6)	87 (88.8)	66 (88.0)	12 (88.8)	0.53
Duration of Use ≥2 years	55 (72.4)	66 (75.9)	48 (72.7)	67 (70.5)	0.88

Abbreviations: FFQ; food frequency questionnaire; Q, quartile.

[1]P-values were calculated using a Kruskal-Wallis test for continuous variables and a chi-square test for categorical variables.

[2]Embryo transfer day and number were only assessed among fresh cycles with embryo transfer.

Supplemental Table 3. Baseline characteristics of 357 women (375 unique FFQs) by quartile of pre-treatment adherence to the Alternate Healthy Eating Index 2010 in the EARTH Study.

	Alternate Healthy Eating Index 2010				
Quartile (Range)	Q1 (32-60)	Q2 (61-67)	Q3 (68-74)	Q4 (75-99)	p-value[1]
Number of Women/FFQs	92/95	87/89	88/92	90/99	
Personal Characteristics					
Age, years	35.1 (4.1)	35.2 (4.3)	35.5 (4.2)	35.5 (3.5)	0.65
Ever smoker, n (%)	30 (31.6)	21 (23.6)	22 (23.9)	27 (27.3)	0.58
White, n (%)	79 (83.2)	72 (82.0)	77 (83.7)	85 (85.9)	0.91
Education, n (%)					0.19
High school or less	13 (13.7)	4 (4.5)	5 (5.4)	7 (7.1)	
College	32 (33.7)	34 (38.2)	27 (29.4)	36 (36.4)	
Graduate school	50 (52.6)	51 (57.3)	60 (65.2)	56 (56.6)	
BMI, kg/m^2	24.1 (4.1)	24.5 (4.2)	24.1 (4.7)	23.7 (4.1)	0.42
Moderate to vigorous exercise, hrs/wk	2.8 (3.6)	4.1 (4.1)	3.8 (4.4)	4.9 (4.8)	0.001
Baseline Cycle Characteristics					
Infertility diagnosis, n (%)					0.26
Female factor	31 (32.6)	31 (34.8)	30 (32.6)	25 (25.3)	
Male factor	32 (33.7)	27 (30.3)	28 (30.4)	24 (24.2)	
Unexplained	32 (33.7)	31 (34.8)	34 (37.0)	50 (50.5)	
Treatment protocol, n (%)					0.10
Antagonist	9 (9.5)	10 (11.2)	11 (12.0)	18 (18.2)	
Flare	7 (7.4)	9 (10.1)	17 (18.5)	8 (8.1)	
Luteal phase agonist	68 (71.6)	62 (69.7)	53 (57.6)	68 (68.7)	
Egg Donor or Cryo Cycle	11 (11.6)	8 (9.0)	11 (12.0)	5 (5.1)	
Day 3 FSH, IU/L	7.1 (2.4)	7.3 (1.9)	7.7 (3.3)	7.2 (2.3)	0.87
Embryo Transfer Day, n (%)[2]					0.14
Day 2	4 (5.3)	2 (2.8)	3 (4.4)	7 (8.5)	
Day 3	32 (42.1)	31 (43.1)	42 (60.9)	40 (48.8)	
Day 5	40 (52.6)	39 (54.2)	24 (34.8)	35 (42.7)	
Number of Embryos Transferred, n (%)[2]					0.45
1 embryo	17 (22.4)	23 (31.9)	14 (20.6)	21 (25.6)	
2 embryos	49 (64.5)	34 (47.2)	41 (60.3)	45 (54.9)	
3+ embryos	10 (13.2)	15 (20.8)	13 (19.1)	16 (19.5)	
Dietary Characteristics					
Total Calories, kcal/day	1675 (539)	1779 (609)	1853 (673)	1878 (541)	0.09
Carbohydrates, % of kcal/day	49.8 (7.9)	49.6 (7.1)	50.0 (6.8)	46.8 (8.6)	0.04
Protein, % of kcal/day	16.5 (2.8)	17.0 (2.9)	16.7 (2.7)	16.7 (2.7)	0.64
Fat, % of kcal/day	32.5 (6.3)	32.1 (5.5)	31.9 (5.1)	35.1 (7.7)	0.005
Alcohol, g/day	6.9 (12.6)	8.1 (9.0)	9.4 (9.8)	10.7 (9.5)	<0.001
Caffeine, mg/day	119 (112)	118 (102)	138 (114)	135 (105)	0.27
Multivitamin Use, n (%)	80 (85.1)	79 (88.8)	79 (87.8)	86 (86.9)	0.90
Duration of Use ≥2 years	57 (71.3)	61 (77.2)	54 (68.4)	64 (74.4)	0.62

Abbreviations: FFQ; food frequency questionnaire; Q, quartile.

[1]P-values were calculated using a Kruskal-Wallis test for continuous variables and a chi-square test for categorical variables.
[2]Embryo transfer day and number were only assessed among fresh cycles with embryo transfer.

Supplemental Table 4. Baseline characteristics of 357 women (375 unique FFQs) by quartile of pre-treatment adherence to the Fertility Diet in the EARTH Study.

	Fertility Diet				
Quartile (Range)	Q1 (13-22)	Q2 (23-25)	Q3 (26-28)	Q4 (29-35)	p-value[1]
Number of Women/FFQs	99/100	93/98	89/95	76/82	
Personal Characteristics					
Age, years	35.2 (4.2)	35.3 (4.0)	35.6 (4.1)	35.1 (3.8)	0.95
Ever smoker, n (%)	21 (21.0)	30 (30.6)	23 (24.2)	26 (31.7)	0.29
White, n (%)	84 (84.0)	81 (82.7)	76 (80.0)	73 (89.0)	0.43
Education, n (%)					0.004
High school or less	17 (17.0)	6 (6.1)	4 (4.2)	2 (2.4)	
College	32 (32.0)	30 (30.6)	38 (40.0)	29 (35.4)	
Graduate school	51 (51.0)	62 (63.3)	53 (55.8)	51 (62.2)	
BMI, kg/m^2	24.6 (4.9)	24.8 (4.3)	23.6 (3.8)	23.2 (3.6)	0.03
Moderate to vigorous exercise, hrs/wk	3.3 (3.7)	4.4 (4.4)	4.4 (5.0)	3.6 (3.9)	0.19
Baseline Cycle Characteristics					
Infertility diagnosis, n (%)					0.51
Female factor	27 (27.0)	38 (38.8)	29 (30.5)	23 (28.1)	
Male factor	30 (30.0)	30 (30.6)	27 (28.4)	24 (29.3)	
Unexplained	43 (43.0)	30 (30.6)	39 (41.1)	35 (42.7)	
Treatment protocol, n (%)					0.41
Antagonist	14 (14.0)	9 (9.2)	13 (13.7)	12 (14.6)	
Flare	9 (9.0)	11 (11.2)	11 (11.6)	10 (12.2)	
Luteal phase agonist	70 (70.0)	62 (63.3)	65 (68.4)	54 (65.9)	
Egg Donor or Cryo Cycle	7 (7.0)	16 (16.3)	6 (6.3)	6 (7.3)	
Day 3 FSH, IU/L	7.0 (1.7)	7.5 (2.8)	7.7 (3.3)	7.1 (1.8)	0.72
Embryo Transfer Day, n (%)[2]					0.14
Day 2	2 (2.4)	5 (6.8)	2 (2.7)	7 (10.3)	
Day 3	36 (43.9)	41 (55.4)	35 (46.7)	33 (48.5)	
Day 5	44 (53.7)	28 (37.8)	38 (50.7)	28 (41.2)	
Number of Embryos Transferred, n (%)[2]					0.75
1 embryo	17 (20.7)	16 (21.9)	20 (26.7)	22 (32.4)	
2 embryos	48 (58.5)	44 (60.3)	42 (56.0)	35 (51.5)	
3+ embryos	17 (20.7)	13 (17.8)	13 (17.3)	11 (16.2)	
Dietary Characteristics					
Total Calories, kcal/day	1845 (571)	1872 (637)	1740 (570)	1714 (592)	0.13
Carbohydrates, % of kcal/day	49.7 (7.8)	48.6 (7.2)	49.9 (8.1)	47.6 (7.9)	0.21
Protein, % of kcal/day	17.2 (2.6)	17.0 (2.8)	16.9 (3.1)	15.7 (2.4)	<0.001
Fat, % of kcal/day	31.6 (5.7)	32.9 (6.7)	32.5 (6.3)	35.1 (6.5)	0.008
Alcohol, g/day	8.1 (11.5)	9.7 (11.3)	7.3 (7.4)	10.3 (10.7)	0.07
Caffeine, mg/day	142 (118)	131 (115)	106 (91.1)	132 (104)	0.18
Multivitamin Use, n (%)	59 (60.2)	93 (95.9)	93 (97.9)	79 (96.3)	<0.001
Duration of Use ≥2 years	42 (71.2)	67 (72.0)	72 (77.4)	55 (69.6)	0.68

Abbreviations: FFQ; food frequency questionnaire; Q, quartile.

[1]P-values were calculated using a Kruskal-Wallis test for continuous variables and a chi-square test for categorical variables.
[2]Embryo transfer day and number were only assessed among fresh cycles with embryo transfer.

Supplemental Table 5. Association between pre-treatment adherence to the Pro-Fertility Diet and probability of failing at various points during an ART cycle in the EARTH Study.

	Adjusted Proportions (95% CI)[1]			
	Failing Prior to Embryo Transfer (n=608 cycles)	Total Pregnancy Loss (n=343 cycles)[2]	Biochemical Loss (n=343 cycles)[3]	Clinical Pregnancy Loss (n=305 cycles)[4]
Pro-Fertility Diet				
Q1 (11-20)	0.13 (0.08, 0.19)	0.28 (0.19, 0.39)	0.12 (0.06, 0.22)	0.18 (0.11, 0.28)
Q2 (21-23)	0.13 (0.08, 0.21)	0.38 (0.29, 0.49)	0.12 (0.07, 0.20)	0.28 (0.19, 0.40)
Q3 (24-25)	0.06 (0.03, 0.12)	0.26 (0.18, 0.36)	0.09 (0.05, 0.17)	0.18 (0.11, 0.28)
Q4 (26-32)	0.06 (0.03, 0.13)	0.16 (0.10, 0.25)	0.09 (0.05, 0.15)	0.08 (0.04, 0.15)
P for trend	0.03	0.02	0.60	0.01

	Adjusted Odds Ratio (95% CI)[1]			
	Failing Prior to Embryo Transfer (n=608 cycles)	Total Pregnancy Loss (n=343 cycles)[2]	Biochemical Loss (n=343 cycles)[3]	Clinical Pregnancy Loss (n=305 cycles)[4]
Pro-Fertility Diet (per 1 SD)	0.75 (0.57, 0.98)	0.74 (0.60, 0.92)	0.90 (0.67, 1.19)	0.69 (0.54, 0.90)

[1]Analyses were run using logistic regression models with generalized estimating equations. Data are presented as predicted marginal proportions (95% CI) or odds ratios (95% CI) adjusted for calorie intake, age, BMI, smoking status, and moderate to vigorous exercise.

[2]Defined as a positive beta-hCG that did not result in live birth.

[3]Defined as a positive beta-hCG that did result in clinical pregnancy.

[4]Defined as a clinical pregnancy that did not result in live birth.

Supplemental Table 6. Sensitivity analyses for the associations between pre-treatment adherence to various dietary patterns and probability of live birth following ART in the EARTH Study.
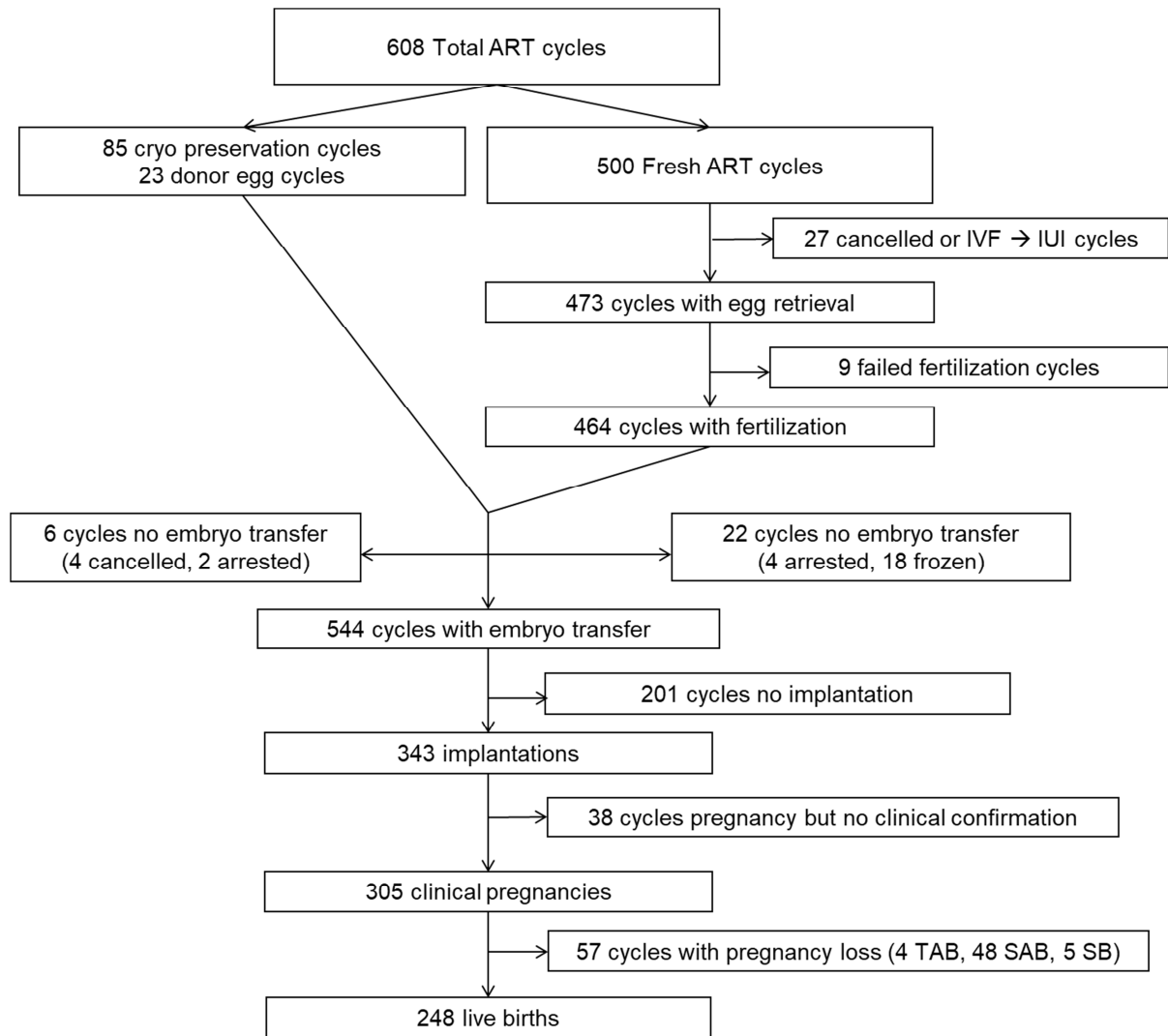
	Adjusted Proportion of Live Birth (95% CI)[1]				
	Main Analysis	Only first ART cycle	Only fresh cycles	Only cycles within 1 yr of FFQ	Only cycles with embryo transfer
	(n=608 cycles)	(n=357 cycles)	(n=473 cycles)	(n=437 cycles)	(n=544 cycles)
Pro-Fertility Diet					
Q1 (11-20)	0.33 (0.26, 0.40)	0.34 (0.25, 0.44)	0.34 (0.26, 0.42)	0.29 (0.21, 0.38)	0.38 (0.30, 0.46)
Q2 (21-23)	0.32 (0.25, 0.40)	0.37 (0.27, 0.47)	0.37 (0.28, 0.46)	0.32 (0.24, 0.42)	0.38 (0.30, 0.47)
Q3 (24-25)	0.48 (0.39, 0.57)*	0.51 (0.40, 0.62)*	0.49 (0.39, 0.60)*	0.49 (0.38, 0.60)	0.52 (0.42, 0.61)*
Q4 (26-32)	0.56 (0.47, 0.64)*	0.56 (0.45, 0.67)*	0.55 (0.45, 0.65)*	0.56 (0.45, 0.66)	0.60 (0.51, 0.69)*
P for trend	<0.001	<0.001	0.002	<0.001	<0.001
MedDiet					
Q1 (17-28)	0.31 (0.25, 0.39)	0.35 (0.25, 0.46)	0.35 (0.27, 0.44)	0.31 (0.22, 0.42)	0.35 (0.27, 0.43)
Q2 (29-31)	0.47 (0.39, 0.55)*	0.52 (0.42, 0.62)*	0.50 (0.41, 0.60)*	0.47 (0.37, 0.57)*	0.55 (0.46, 0.64)*
Q3 (32-33)	0.44 (0.36, 0.53)*	0.42 (0.31, 0.54)	0.41 (0.32, 0.52)	0.41 (0.31, 0.52)	0.48 (0.39, 0.57)*
Q4 (34-44)	0.41 (0.34, 0.49)	0.45 (0.35, 0.55)	0.44 (0.35, 0.53)	0.40 (0.31, 0.50)	0.47 (0.39, 0.56)*
P for trend	0.06	0.31	0.26	0.25	0.05
aHEI2010					
Q1 (32-60)	0.44 (0.36, 0.52)	0.51 (0.41, 0.61)	0.44 (0.36, 0.54)	0.49 (0.38, 0.60)	0.48 (0.40, 0.57)
Q2 (61-67)	0.42 (0.34, 0.50)	0.47 (0.37, 0.58)	0.47 (0.38, 0.57)	0.39 (0.29, 0.49)	0.47 (0.38, 0.55)
Q3 (68-74)	0.40 (0.33, 0.49)	0.35 (0.25, 0.46)*	0.39 (0.30, 0.49)	0.35 (0.26, 0.46)	0.47 (0.38, 0.56)
Q4 (75-99)	0.37 (0.29, 0.45)	0.41 (0.31, 0.51)	0.40 (0.31, 0.50)	0.38 (0.30, 0.48)	0.42 (0.34, 0.51)
P for trend	0.19	0.07	0.34	0.15	0.41
Fertility Diet					
Q1 (13-22)	0.37 (0.30, 0.45)	0.41 (0.32, 0.52)	0.39 (0.31, 0.48)	0.37 (0.28, 0.47)	0.42 (0.34, 0.51)
Q2 (23-25)	0.42 (0.35, 0.50)	0.45 (0.35, 0.56)	0.42 (0.33, 0.51)	0.39 (0.30, 0.49)	0.47 (0.38, 0.55)
Q3 (26-28)	0.42 (0.34, 0.50)	0.43 (0.33, 0.53)	0.44 (0.35, 0.54)	0.40 (0.30, 0.50)	0.48 (0.39, 0.57)
Q4 (29-35)	0.43 (0.34, 0.52)	0.46 (0.34, 0.57)	0.46 (0.36, 0.56)	0.46 (0.35, 0.57)	0.48 (0.38, 0.58)
P for trend	0.37	0.67	0.25	0.25	0.37

Abbreviations: aHEI2010, alternate Healthy Eating Index 2010; FFQ, food frequency questionnaire; MedDiet, Mediterranean Diet;

[1]Analyses used generalized linear mixed models with random intercepts, binomial distribution, and logit link. Data are presented as predicted marginal proportions (95% CI) adjusted for calorie intake, age, BMI, smoking status, and moderate to vigorous exercise.
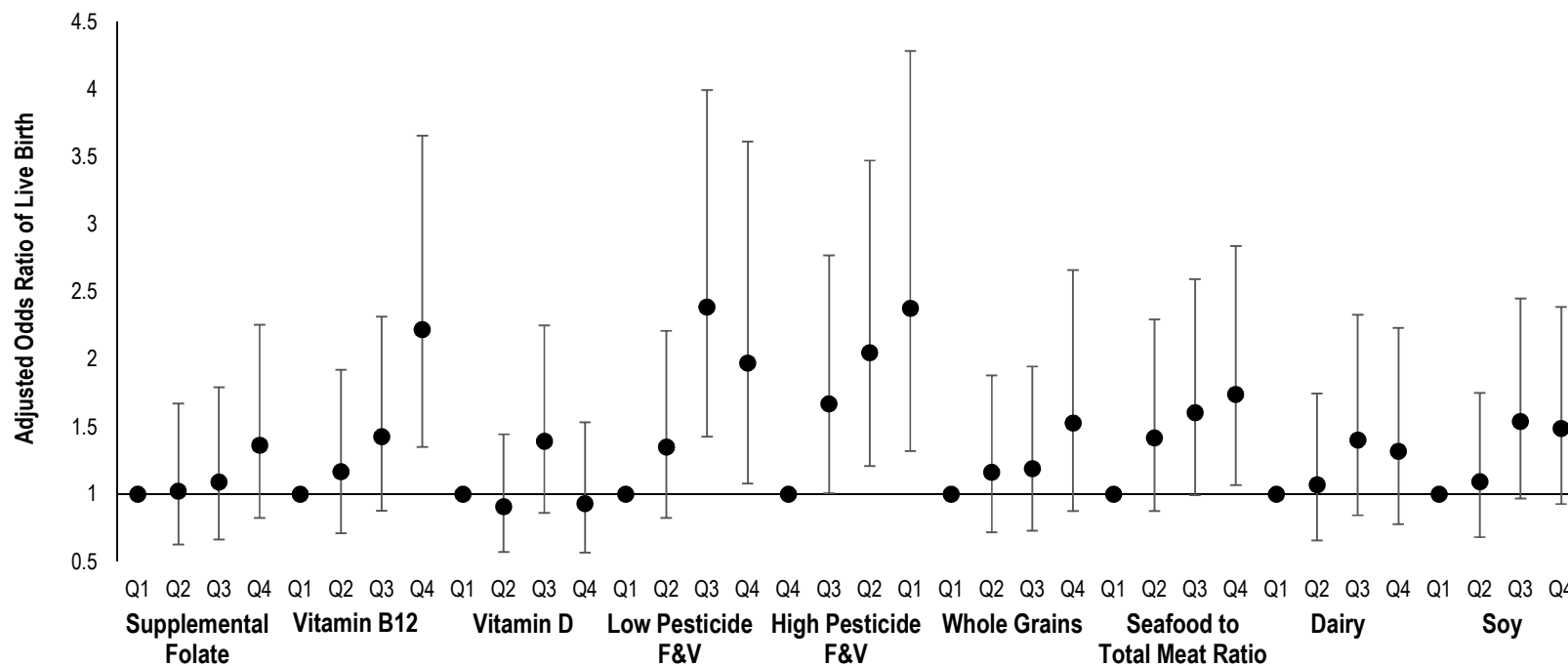
*P-value < 0.05 for comparison of specific quartile versus quartile 1 (reference).

Supplemental Figure 1. Overview of the 605 initiated ART cycles included in the analysis of pre-conception dietary patterns and ART outcomes in EARTH.

Abbreviations: ART, assisted reproductive technology; IUI, intrauterine insemination; SAB, spontaneous abortion; SB, stillbirth; TAB, therapeutic abortion.

Supplemental Figure 2. Association between pre-treatment adherence to components of the Pro-Fertility Diet and odds of live birth following ART in the EARTH Study.

Analyses were run using generalized linear mixed models with random intercepts, binomial distribution, and logit link function adjusted for calorie intake, age, BMI, smoking status, and moderate to vigorous exercise. Each component was analyzed separately, not adjusting for the other components, with the exception of high and low pesticide fruits and vegetables. Abbreviations: F&V, fruits and vegetables.