Protein powder supplementation in early pregnancy and the risk of gestational diabetes mellitus: a prospective cohort study

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Figure S1: Density of the estimated propensity score for participants who did and did not use the protein powder supplements in the unadjusted and adjusted sample.

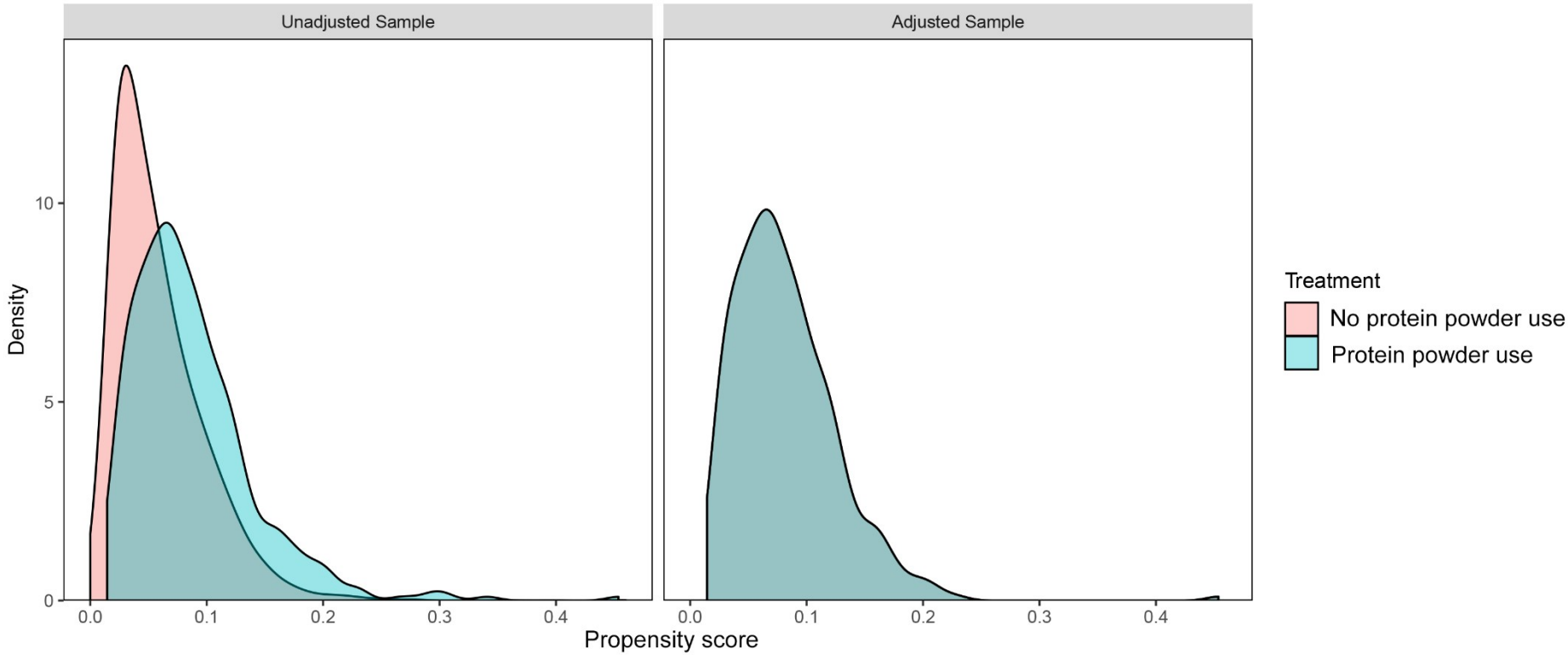

Figure S2. Distribution of propensity scores for participants who did and did not use the protein powder supplements in the unmatched and matched sample.

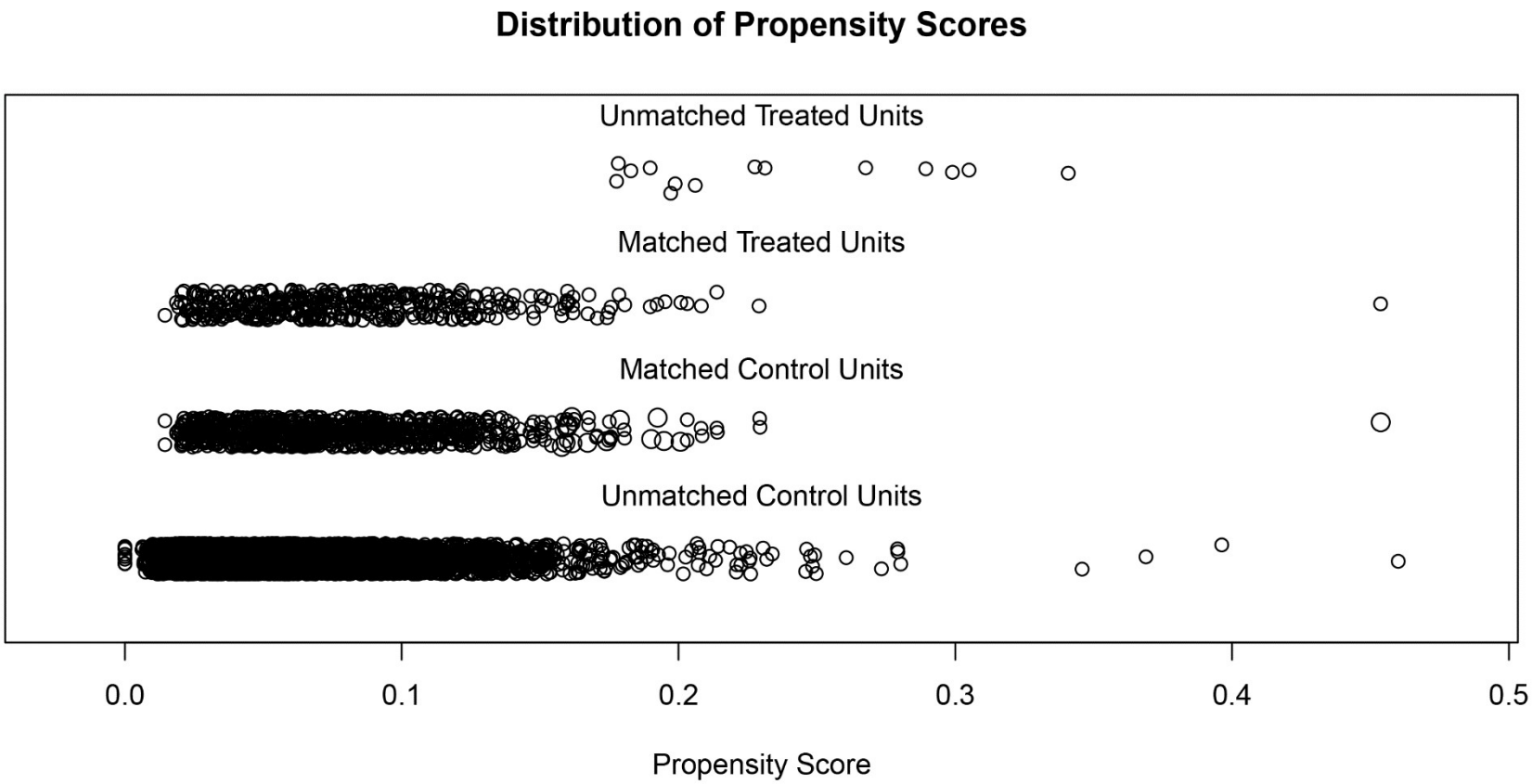

Figure S3. Standardized mean differences in the unmatched and matched sample.

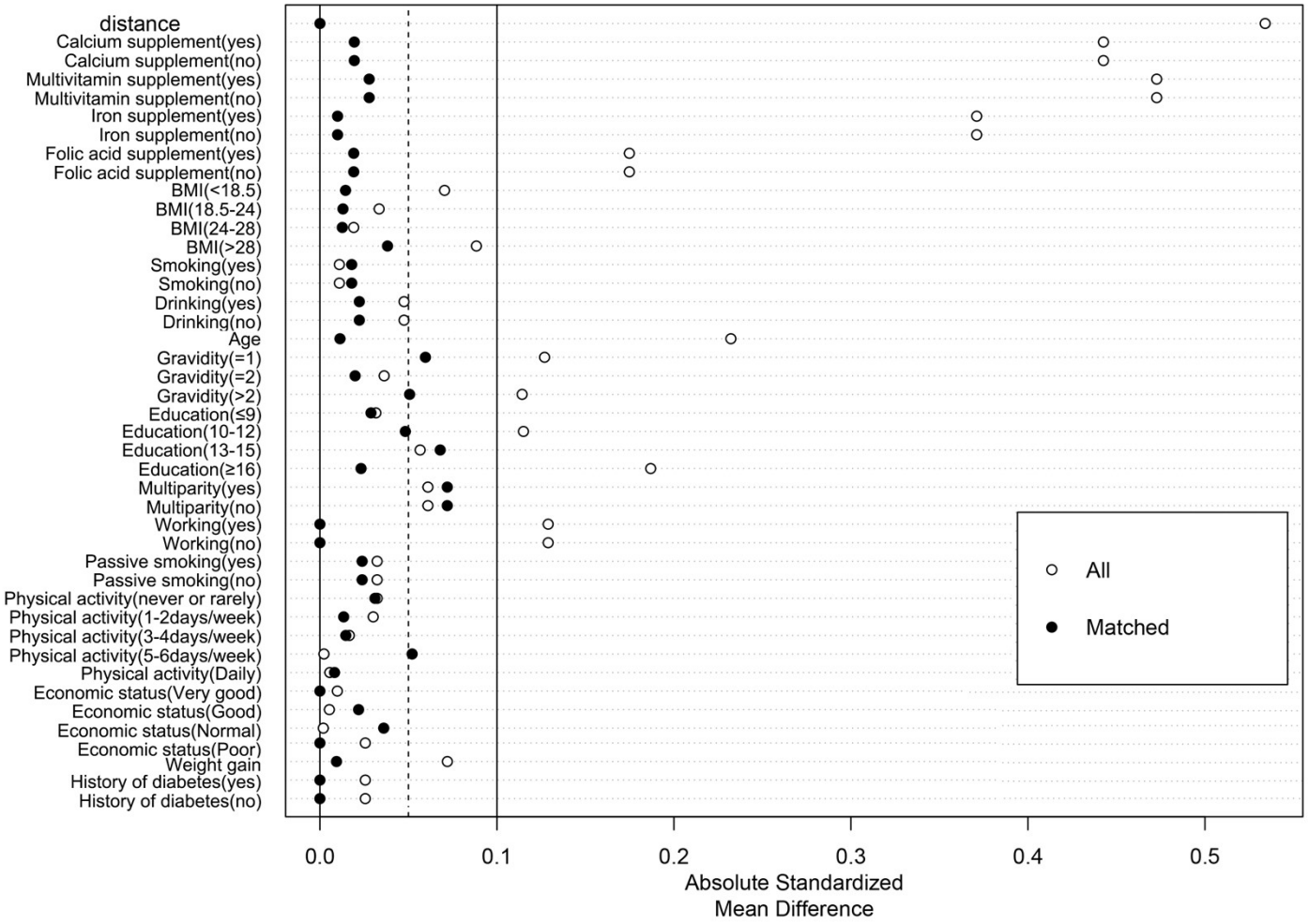

Table S1. Odds ratios (95%CI) for the association of protein powder supplementation and risk of GDM in subgroup analysis.

Subgroups[a]	n	OR（95%CI）	*P* for interaction
Age			0.282
≤29	4624	1.66(1.15,2.35)	
30-35	2006	1.08(0.67,1.69)	
>35	267	0.84(0.36,1.82)	
Pre-pregnancy BMI			0.192
<18.5	1475	0.87(0.39,1.72)	
18.5-24	4602	1.32(0.94,1.81)	
>24	820	2.20(1.12,4.24)	
Education level			0.185
≤9	633	1.21(0.53,2.55)	
10-12	1182	1.35(0.73,2.37)	
>13	5082	1.42(1.02,1.95)	
Physical activity during early pregnancy[b]			0.269
yes	6170	1.43(1.08,1.88)	
no	727	0.61(0.21,1.50)	
Economic status[c]			0.787
Good	1425	1.22(0.61,2.25)	
Normal	5472	1.38(1.02,1.83)	
Gravidity			0.778
1	4000	1.26(0.83,1.85)	
2	1667	1.16(1.02,1.95)	
≥3	1230	1.56(0.94,2.52)	
Parity			0.328
1	6183	1.26(0.93,1.68)	
≥2	714	1.68(0.85,3.22)	
Work during early pregnancy			0.284
yes	3475	1.56(1.04,2.29)	
no	3422	1.21(0.83,1.72)	

[a]Participants with smoking, drinking or family history of diabetes were too few to conduct subgroup analyses. [b]Answered never or rarely were defined as yes, and others were defined as no. [c]Answered good and very good were defined as good, and others were defined as normal.

Table S2. Association between protein powder supplementation and different time-point plasma glucose levels of OGTT.

Plasma glucose (mmol/L)	Crude model		Multivariable model[a]	
	Estimated change (95%CI)	*P*	Estimated change (95%CI)	*P*
FPG	**0.06(0.01,0.11)**	**0.018**	0.047(-0.0028,0.098)	0.064
PG1H	0.123(-0.04,0.285)	0.138	0.062(-0.096,0.221)	0.443
PG2H	0.067(-0.062,0.196)	0.310	0.029(-0.097,0.156)	0.648

[a]Adjusted for age, pre-pregnancy BMI, education level, economic status, smoking, passive smoking, alcohol drinking, gestational weight gain, work during early pregnancy, multiparity, gravidity, physical activity, family history of diabetes, and supplement with calcium, multivitamin, iron and folic acid.

Table S3. Odds ratios (95%CI) of protein powder supplementation for all variables included in the propensity score model.

	Odds ratios (95%CI) (N=6897)
Intercept	0.0029(0.0005-0.013)
Age at delivery (years)	1.08(1.05-1.11)
Pre-pregnancy BMI (ref=<18.5)	
18.5-24	0.82(0.65-1.05)
24-28	0.75(0.51-1.11)
>28	0.41(0.12-1.02)
Education level (ref=≤9)	
10-12	1.11(0.76-1.66)
13-15	0.76(0.53-1.12)
≥16	0.37(0.17-0.73)
Economic status (ref=Very good)	
Good	1.01(0.35-4.25)
Normal	0.91(0.32-3.80)
Poor	1.23(0.30-6.23)
Smoking	0.56(0.88-1.98)
Passive smoking	1.04(0.81-1.33)
Alcohol drinking	1.21(0.61-2.16)
Gestational weight gain at delivery (kg)	1.01(0.93-1.04)
Work during early pregnancy	0.56(0.72-1.10)
Multiparity	1.08(0.53-1.14)
Gravidity (ref=1)	
=2	1.08(0.84-1.38)
>2	1.12(0.82-1.53)
Physical activity during pregnancy(ref= Never or rarely)	
1-2 days/week	1.04(0.65-1.65)
3-4 days/week	0.96(0.59-1.55)
5-6 days/week	1.17(0.43-2.67)
Daily	0.86(0.62-1.20)
Family history of diabetes	7.24(1.90-23.1)
Calcium supplement use	1.44(1.10-1.89)
Multivitamin supplement use	1.98(1.51-2.62)
Iron supplement use	1.61(1.28-2.02)
Folic acid supplement use	1.51(1.12-2.09)

C-statistic=0.71