

## Supplementary material S2

**Supplementary Table S2A.** Association of 25-hydroxyvitamin D and relevant exposures in multivariable linear regression model as a sensitivity analysis including vitamin D supplementation use.

Multivariable linear regression Models	$\beta$ Coefficient	95 % CI of $\beta$	<i>p</i> value
Infertility fully adjusted Model <sup>a,b</sup>	-2.6	-4.6 to -0.6	0.009
Decreased fecundability fully adjusted Model <sup>b,c</sup>	-3.9	-7.2 to -0.7	0.019

<sup>a</sup> Model also included relationship status, vitamin D supplementation use, alcohol consumption, smoking, latitude, laboratory effect, BMI, and physical activity. For Model,  $R^2=0.45$ . <sup>b</sup> No fertility problems as reference category. <sup>c</sup> Model also included relationship status, vitamin D supplementation use, latitude, laboratory effect, BMI, and physical activity. For Model,  $R^2=0.44$ . CI: confidence interval.

**Supplementary Table S2B.** Association of 25-hydroxyvitamin D and relevant exposures in multivariable linear regression Models 5 and 6 as a sensitivity analysis excluding pregnant women.

Multivariable linear regression Models	$\beta$ Coefficient	95 % CI of $\beta$	<i>p</i> value
Infertility fully adjusted Model <sup>a,b</sup>	-2.4	-4.5 to -0.3	0.026
Decreased fecundability fully adjusted Model <sup>b,c</sup>	-4.6	-8.0 to -1.2	0.008

<sup>a</sup> Model also included relationship status, alcohol consumption, smoking, BMI, physical activity, latitude, and laboratory effect. For Model,  $R^2=0.47$ . <sup>b</sup> No fertility problems as reference category. <sup>c</sup> Model also included relationship status, BMI, latitude and laboratory effect without significant association with 25(OH)D concentrations. For Model,  $R^2=0.45$ . CI: confidence interval.