

Table S1. Analysis of covariance between PSQI scores and serum vitamin B12 status.

Vitamin B12 Status	Mean \pm SE	<i>p</i> -value *
Low (<221 pmol/l)	7.1 \pm 0.6	0.63
Normal (221–701 pmol/l)	7.6 \pm 0.2	
Excess (>701 pmol/l)	7.4 \pm 0.5	

Data presented as Mean \pm SE; * indicates *p*-values adjusted for WHR and stress. Pittsburgh Sleep Quality Index (PSQI).

Table S2. Analysis of covariance between PSQI scores and serum vitamin B12 tertiles.

Vitamin B12 Status	Mean \pm SE	<i>p</i> -value *
Tertile 1 (<333.05 pmol/l)	7.5 \pm 0.3	0.88
Tertile 2 (333.1–482 pmol/l)	7.7 \pm 0.3	
Tertile 3 (>482 pmol/l)	7.6 \pm 0.3	

Data presented as Mean \pm SE; * indicates *p*-values adjusted for WHR and stress. Pittsburgh Sleep Quality Index (PSQI).

Table S3. Association between serum vitamin B12 status and sleep status.

	Unadjusted		Adjusted	
	OR (95% CI)	<i>P</i> -value	OR (95% CI)	<i>p</i> -value
Normal (221–701 pmol/l)			Reference	
Low (<221 pmol/l)	0.9 (0.4–2.5)	0.880	0.9 (0.3–2.6)	0.897
Excess (>701 pmol/l)	0.9 (0.4–2.2)	0.863	1.0 (0.4–2.5)	0.977

ORs and 95% CIs for ORs were obtained using multivariate logistic regression analysis, taking poor sleep status as a dependent variable against serum vitamin B12 clinical cutoff groups as independent risk. *P* < 0.05 considered significant. The adjusted model adjusted for WHR and stress.

Table S4. Correlation between sleep and serum vitamin B12 by deficiency, normal and excess.

Vitamin B12 (pmol/L)		Low (N = 21)	Normal (N = 292)	Excess (N = 28)
		≤ 221	221–701	≥ 702
Sleep Quality	B \pm SE	–1.2 \pm 11.4	7.8 \pm 9.0	17.2 \pm 31.6
	<i>P</i> -value	0.91	0.39	0.59
Sleep Latency	B \pm SE	1.9 \pm 10.8	–8.1 \pm 7.8	–45.4 \pm 17.0
	<i>P</i> -value	0.86	0.30	0.013
Sleep Duration	B \pm SE	9.5 \pm 7.4	1.8 \pm 6.8	3.2 \pm 16.1
	<i>P</i> -value	0.20	0.80	0.85
Habitual Sleep Efficiency	B \pm SE	–0.3 \pm 9.5	–3.1 \pm 7.3	22.4 \pm 20.6
	<i>P</i> -value	0.98	0.67	0.29
Sleep Disturbance	B \pm SE	27.1 \pm 26.7	8.4 \pm 15.1	–88.1 \pm 55.5
	<i>P</i> -value	0.33	0.58	0.12
Sleep Medication	B \pm SE	37.3 \pm 35.6	–15.1 \pm 19.4	48.5 \pm 49.5
	<i>P</i> -value	0.31	0.44	0.34
Sleep Day Dysfunction	B \pm SE	11.1 \pm 11.1	0.4 \pm 7.8	2.0 \pm 22.6
	<i>P</i> -value	0.33	0.96	0.93
Total PSQI	B \pm SE	4.3 \pm 3.5	–0.3 \pm 2.6	–5.8 \pm 8.5
	<i>P</i> -value	0.23	0.90	0.50

Beta \pm SE and 95% CIs were obtained using linear regression analysis, taking sleep components as dependent variable against serum vitamin B12 cut off groups as independent risk. *P*-values are adjusted for WHR and stress. Pittsburgh Sleep Quality Index (PSQI).