

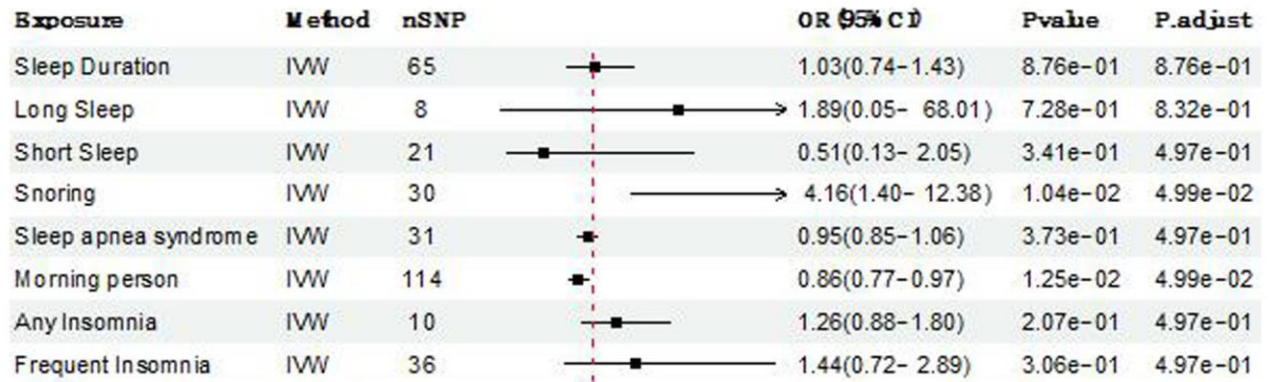
Supplementary Table SI. The sensitivity analysis of MR analysis using IVs screened based on genome-wide significance threshold ($p < 5e-8$)

Exposure	Cochran's	Q	MR-Egger intercept test		MR-PRESSO global test		MR-steiger	
	test (IVW)		Interpret	SE	P-value	RSSobs	P-value	test
	P-value							P-value
Sleep duration	0.339		-0.002	0.011	0.807	70.05	0.347	2.37E-118
Long sleep	0.990		0.026	0.034	0.482	1.54	0.994	1.56E-24
Short sleep	0.969		0.013	0.023	0.577	10.91	0.971	3.25E-42
Snoring	0.818		0.014	0.021	0.512	23.34	0.832	6.92E-62
Sleep apnea syndrome	0.723		-0.014	0.013	0.281	26.68	0.719	1.06E-30
Morning person	0.546		0.002	0.007	0.792	112.50	0.556	2.19E-263
Any insomnia	0.678		0.027	0.019	0.199	8.08	0.697	2.47E-25
Frequent insomnia	0.630		-0.019	0.012	0.132	33.39	0.640	9.85E-73

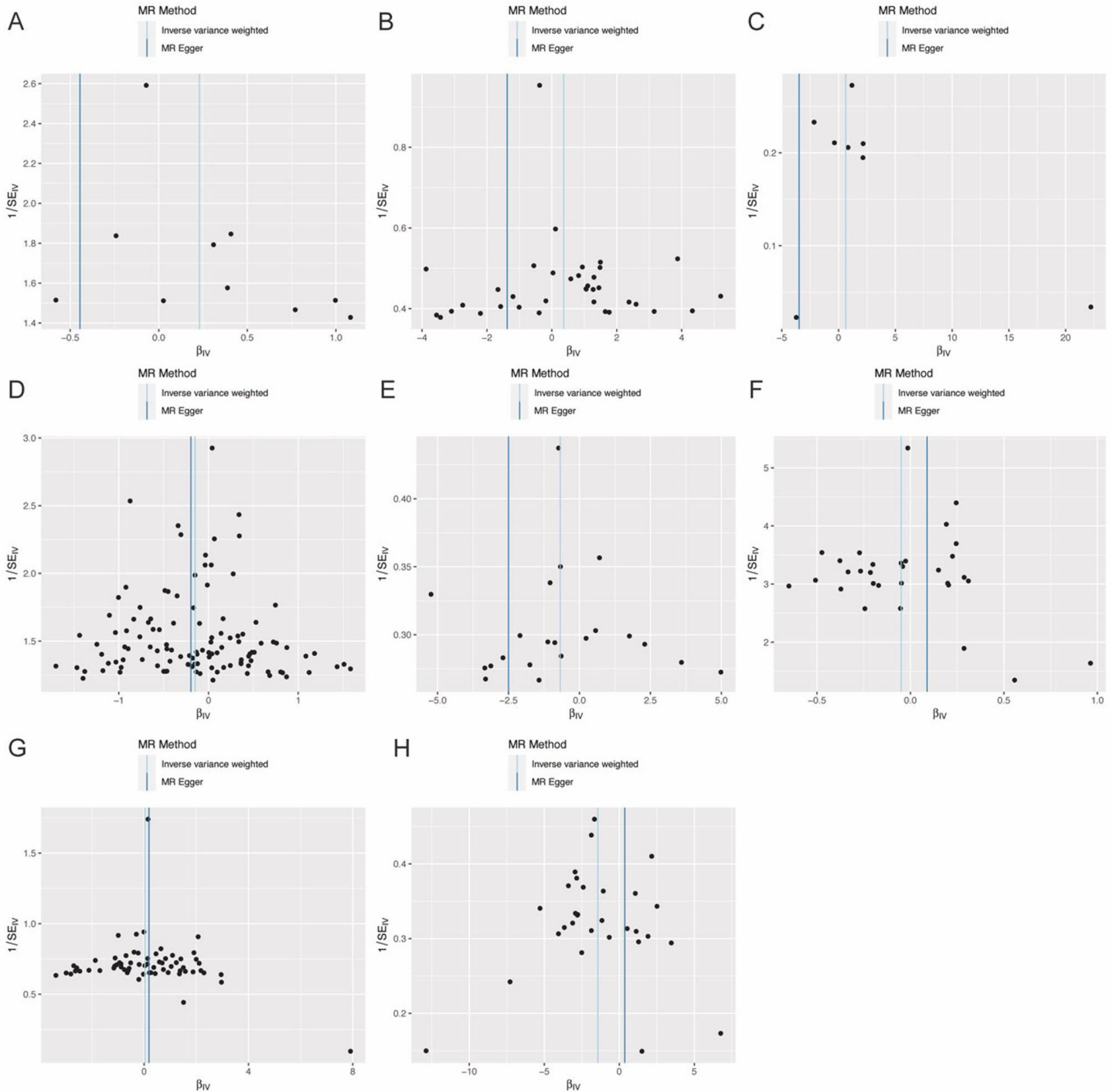
MR – mendelian randomization, IVW – inverse variance weighted.

Supplementary Figure S1. The causal effects of sleep traits on ED in univariable MR analysis using IVs screened based on the genome-wide significance.

MR – mendelian randomization, IVW – inverse variance weighted, CI – confidence interval, OR – odds ratio, SNP – single nucleotide polymorphism, ED – erectile dysfunction.

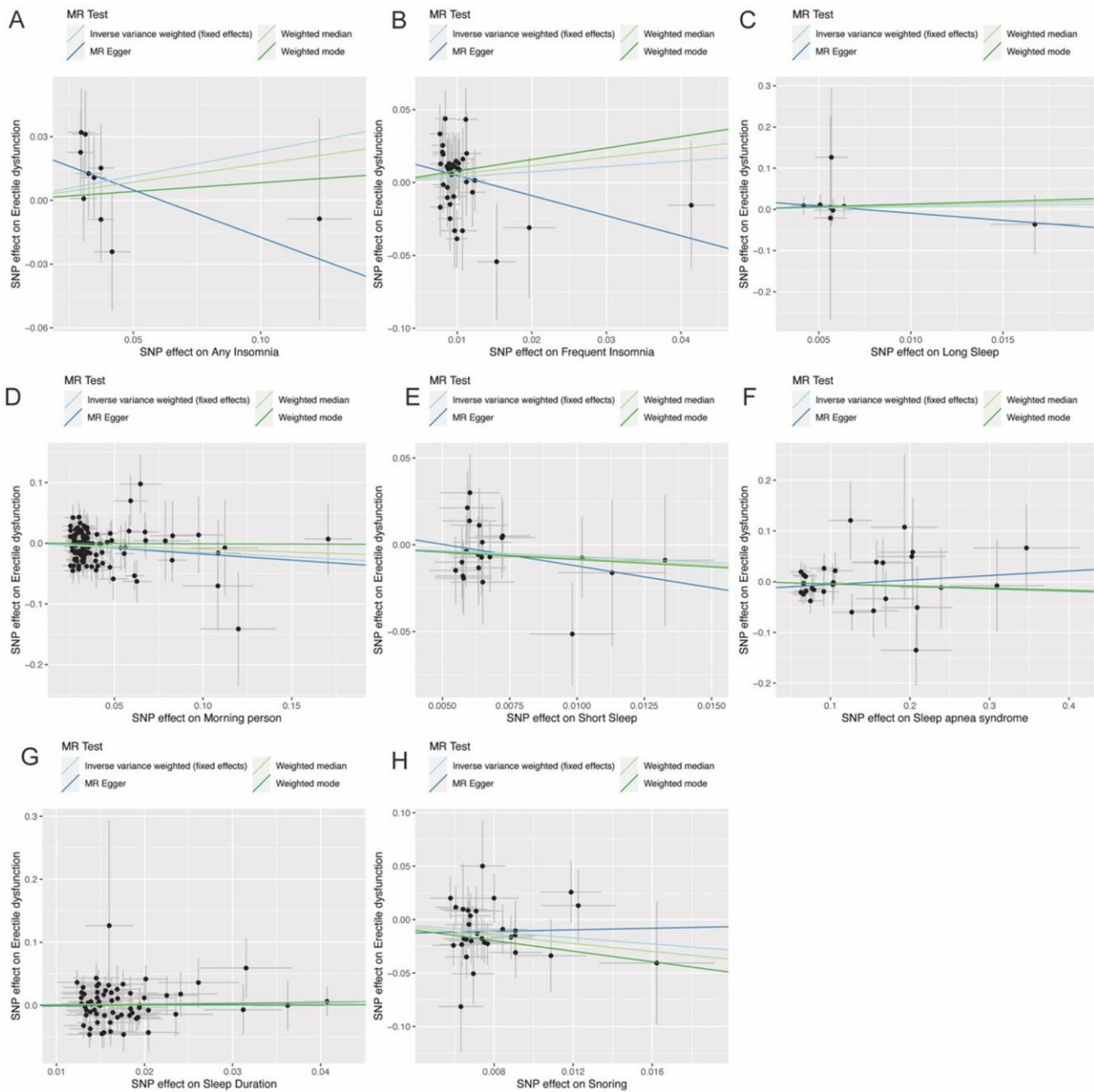


Supplementary Figure S2. Funnel plots in univariable MR analysis using IVs screened based on genome-wide significance. **A** – Funnel plot of the causal effects of any insomnia-associated SNPs on ED. **B** – Funnel plot of the causal effects of frequent insomnia-associated SNPs on ED. **C** – Funnel plot of the causal effects of long sleep-associated SNPs on ED. **D** – Funnel plot of the causal effects of morning person-associated SNPs on ED. **E** – Funnel plot of the causal effects of short sleep-associated SNPs on ED. **F** – Funnel plot of the causal effects of sleep apnea syndrome-associated SNPs on ED. **G** – Funnel plot of the causal effects of sleep duration-associated SNPs on ED. **H** – Funnel plot of the causal effects of snoring associated SNPs on ED

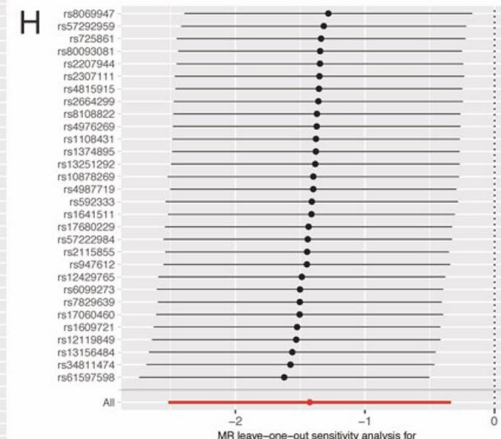
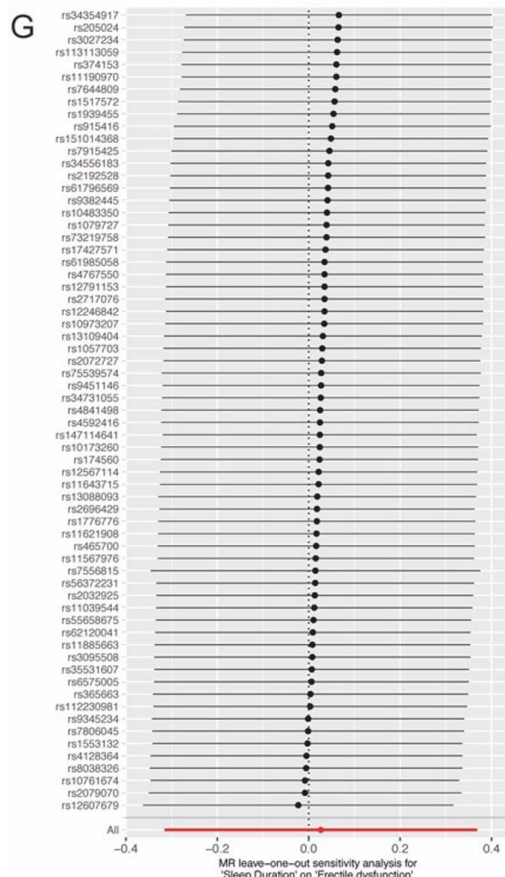
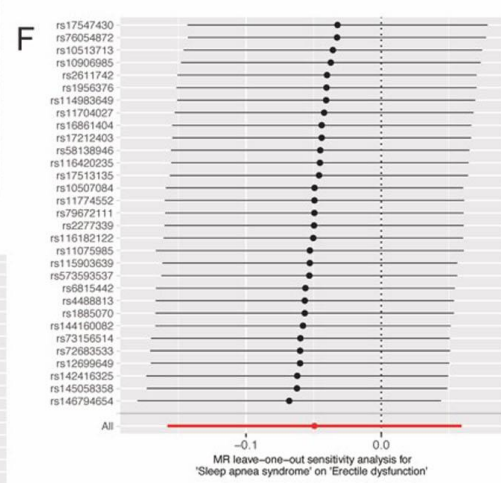
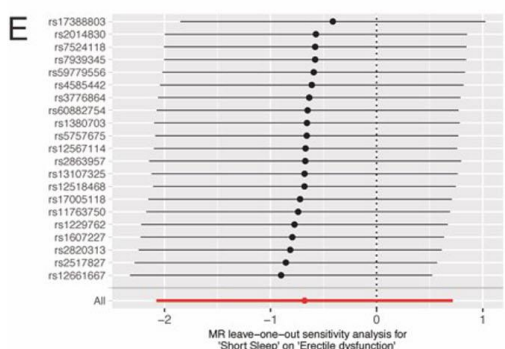
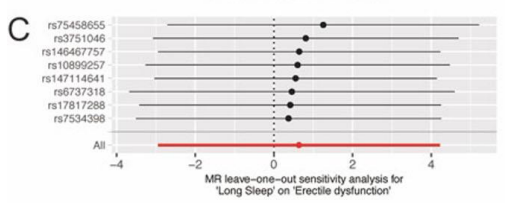
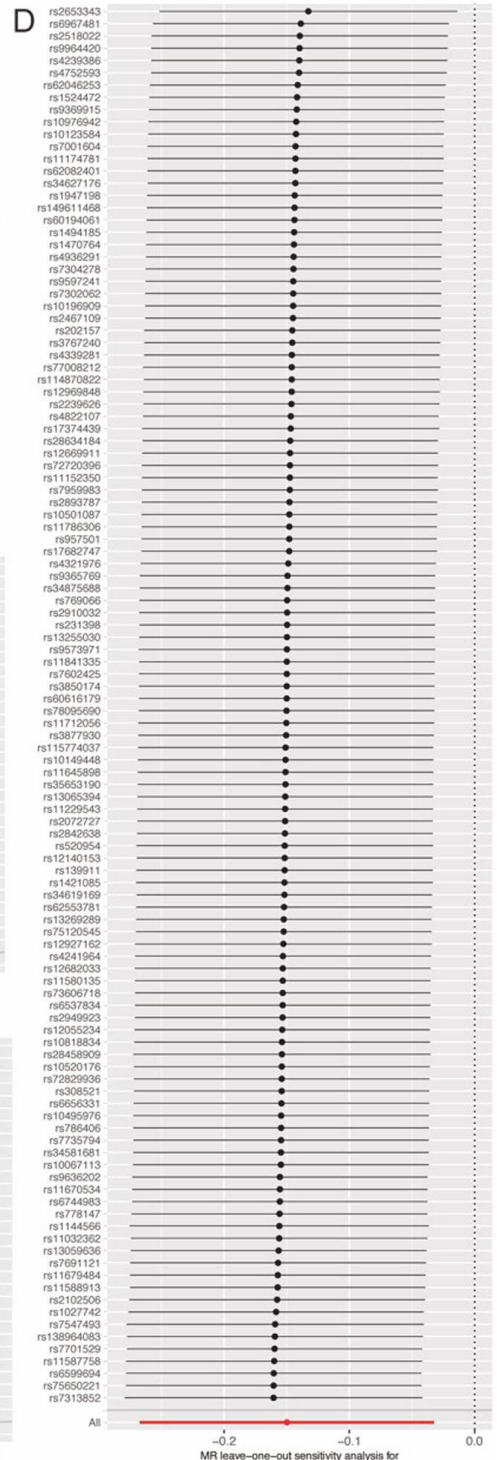
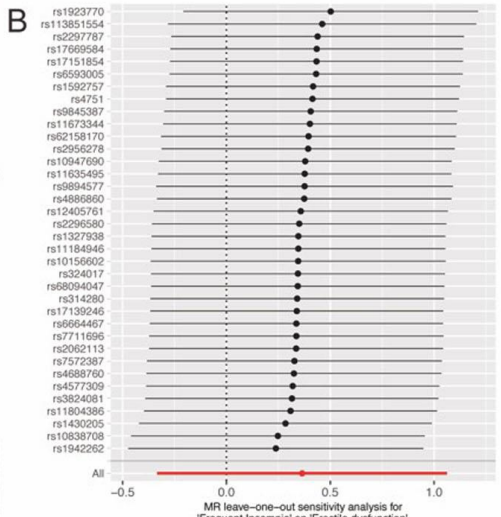
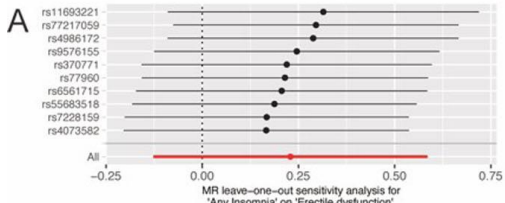


Supplementary Figure S3. Scatter plots in univariable MR analysis using IVs screened based on genome-wide significance. **A** – Scatter plot of the causal effects of

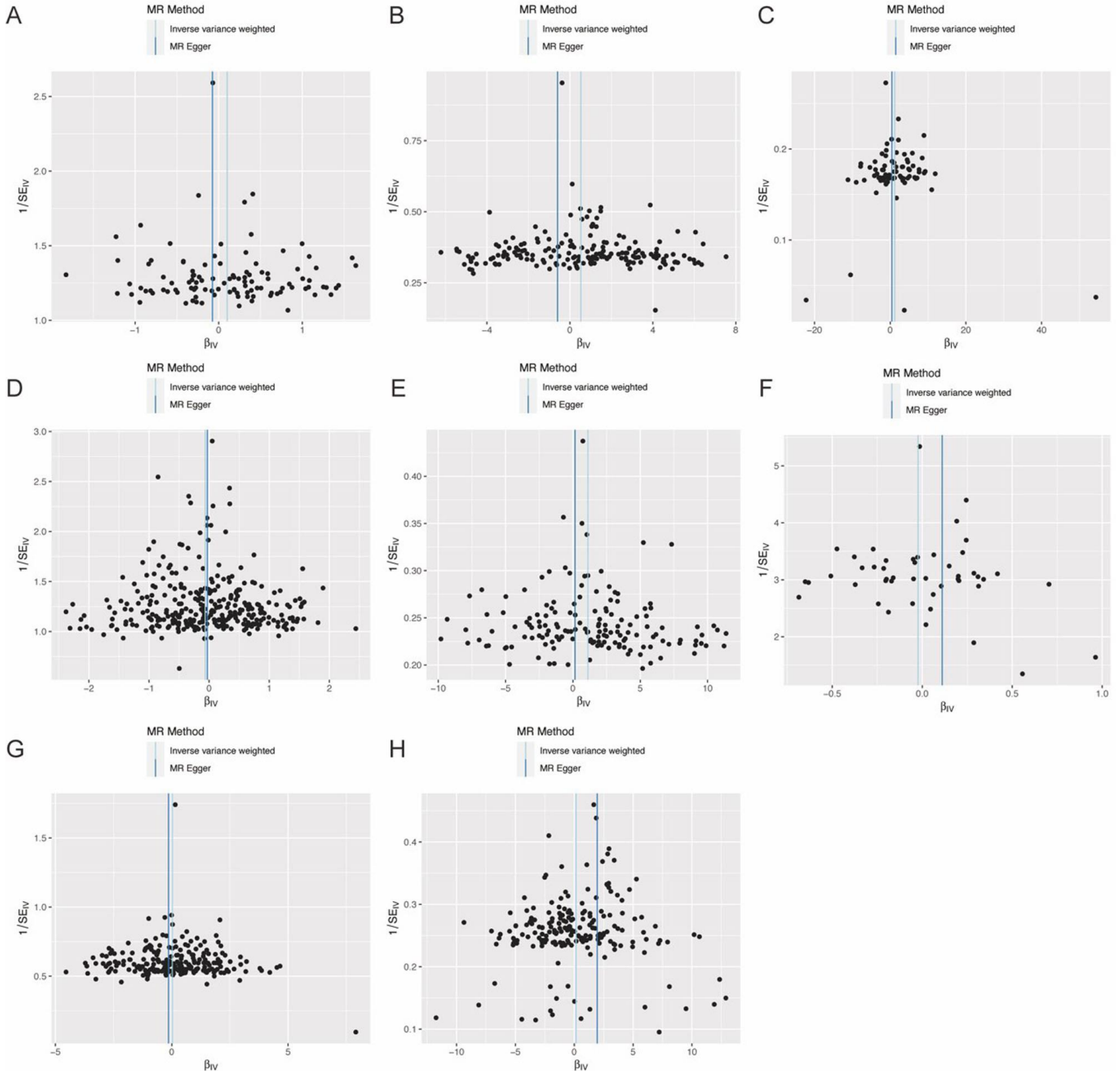
any insomnia-associated SNPs on ED. **B** – Scatter plot of the causal effects of frequent insomnia-associated SNPs on ED. **C** – Scatter plot of the causal effects of long sleep-associated SNPs on ED. **D** – Scatter plot of the causal effects of morning person-associated SNPs on ED. **E** – Scatter plot of the causal effects of short sleep-associated SNPs on ED. **F** – Scatter plot of the causal effects of sleep apnea syndrome-associated SNPs on ED. **G** – Scatter plot of the causal effects of sleep duration-associated SNPs on ED. **H** – Scatter plot of the causal effects of snoring associated SNPs on ED



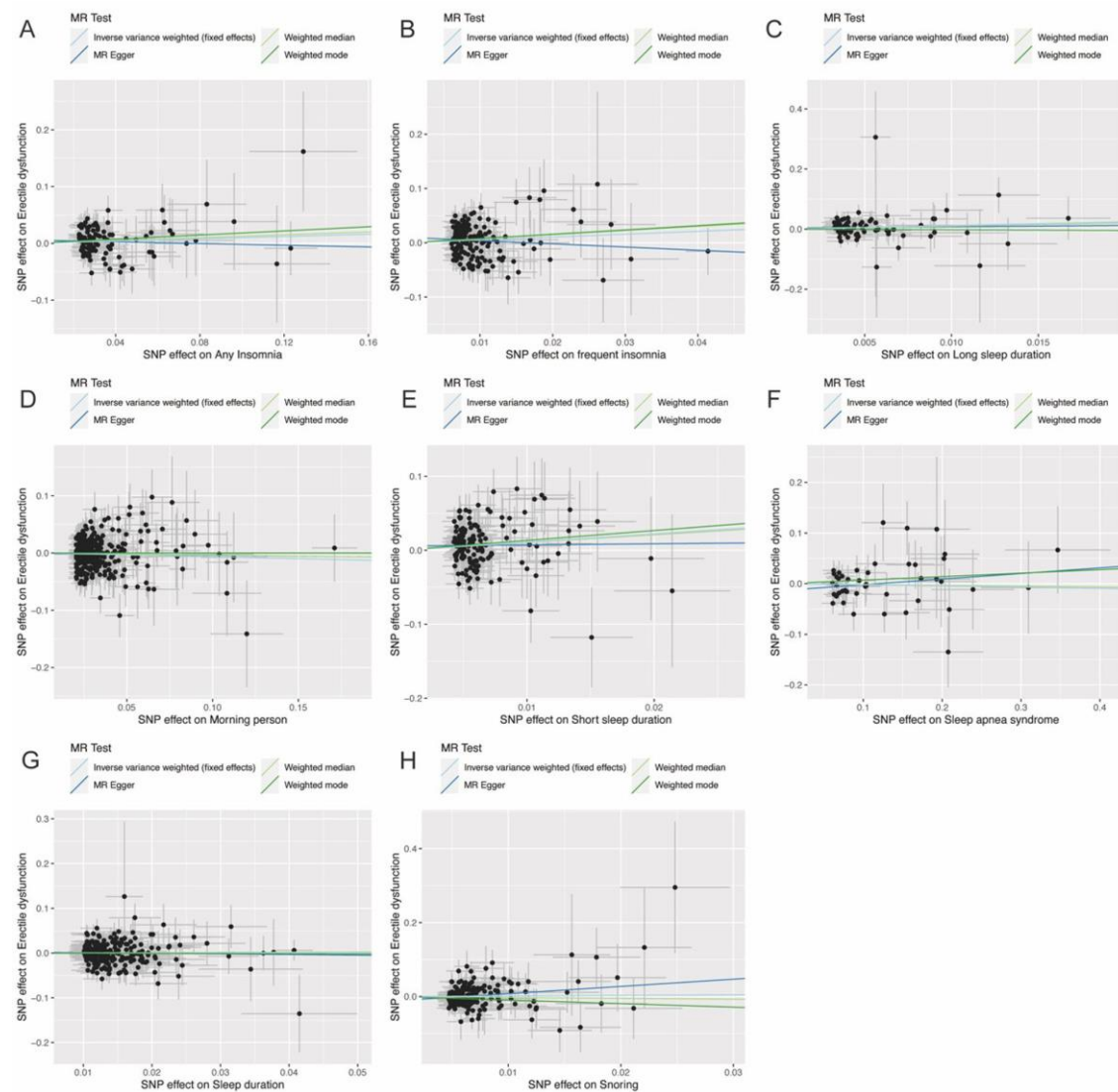
Supplementary Figure S4. Leave-one-out sensitivity analysis in univariable MR analysis using IVs screened based on genome-wide significance. **A** – Leave-one-out sensitivity analysis of the causal effects of any insomnia-associated SNPs on ED. **B** – Leave-one-out sensitivity analysis of the causal effects of frequent insomnia-associated SNPs on ED. **C** – Leave-one-out sensitivity analysis of the causal effects of long sleep-associated SNPs on ED. **D** – Leave-one-out sensitivity analysis of the causal effects of morning person-associated SNPs on ED. **E** – Leave-one-out sensitivity analysis of the causal effects of short sleep-associated SNPs on ED. **F** – Leave-one-out sensitivity analysis of the causal effects of sleep apnea syndrome-associated SNPs on ED. **G** – Leave-one-out sensitivity analysis of the causal effects of sleep duration-associated SNPs on ED. **H** – Leave-one-out sensitivity analysis of the causal effects of snoring associated SNPs on ED



Supplementary Figure S5. Funnel plots in univariable MR analysis using IVs screened based on locus-wide significance. **A** – Funnel plot of the causal effects of any insomnia-associated SNPs on ED. **B** – Funnel plot of the causal effects of frequent insomnia-associated SNPs on ED. **C** – Funnel plot of the causal effects of long sleep-associated SNPs on ED. **D** – Funnel plot of the causal effects of morning person-associated SNPs on ED. **E** – Funnel plot of the causal effects of short sleep-associated SNPs on ED. **F** – Funnel plot of the causal effects of sleep apnea syndrome-associated SNPs on ED. **G** – Funnel plot of the causal effects of sleep duration-associated SNPs on ED. **H** – Funnel plot of the causal effects of snoring associated SNPs on ED



Supplementary Figure S6. Scatter plots in univariable MR analysis using IVs screened based on locus-wide significance. **A** – Scatter plot of the causal effects of any insomnia-associated SNPs on ED. **B** – Scatter plot of the causal effects of frequent insomnia-associated SNPs on ED. **C** – Scatter plot of the causal effects of long sleep-associated SNPs on ED. **D** – Scatter plot of the causal effects of morning person-associated SNPs on ED. **E** – Scatter plot of the causal effects of short sleep-associated SNPs on ED. **F** – Scatter plot of the causal effects of sleep apnea syndrome-associated SNPs on ED. **G** – Scatter plot of the causal effects of sleep duration-associated SNPs on ED. **H** – Scatter plot of the causal effects of snoring associated SNPs on ED



Supplementary Figure S7. Leave-one-out sensitivity analysis in univariable MR analysis using IVs screened based on locus-wide significance. **A** – Leave-one-out sensitivity analysis of the causal effects of any insomnia-associated SNPs on ED. **B** – Leave-one-out sensitivity analysis of the causal effects of frequent insomnia-associated SNPs on ED. **C** – Leave-one-out sensitivity analysis of the causal effects of long sleep-associated SNPs on ED. **D** – Leave-one-out sensitivity analysis of the causal effects of morning person-associated SNPs on ED. **E** – Leave-one-out sensitivity analysis of the causal effects of short sleep-associated SNPs on ED. **F** – Leave-one-out sensitivity analysis of the causal effects of sleep apnea syndrome-associated SNPs on ED. **G** – Leave-one-out sensitivity analysis of the causal effects of sleep duration-associated SNPs on ED. **H** – Leave-one-out sensitivity analysis of the causal effects of snoring associated SNPs on ED

