Supplementary materials: Table 1s: search strategy

PubMed

#1   Sleep [Mesh]
#2   Sleep disorders [Mesh]
#3   sleep*[Title/Abstract]
#4   insomnia*[Title/Abstract]
#5   wakeful*[Title/Abstract]
#6   dyssomn*[Title/Abstract]
#7   "Sleep Initiation and Maintenance Disorders" [Mesh]
#8   "disorders of excessive somnolence"[Mesh]
#9   hypersomnia[Title/Abstract]
#10 parasomnia[Title/Abstract]
#11 circadian*[Title/Abstract]
#12 "rest activity" [Title/Abstract]
#13 somnolence[Title/Abstract]
#14 sundowning[Title/Abstract]
#15 "Chronobiology Disorders"[Mesh]
#16 "Circadian Rhythm"[Mesh]
#17 vigilance[Title/Abstract]
#18 alertness[Title/Abstract]
#19 drowsiness[Title/Abstract]
#20 hypersomnolence*[Title/Abstract]
#21 eveningness[Title/Abstract]
#22 morningness[Title/Abstract]
#23 arousal[Title/Abstract]
#24 "Psychomotor Performance"[Mesh]
#25 fatigue[Title/Abstract]
#26 "neurocognitive performance"[Title/Abstract]
#27 "concentration difficulties"[Title/Abstract]
#28 OR/ #1-#27
#29 Metabolic syndrome[MeSH]
#30 Metabolic syndrome[Title/Abstract]
#31 syndrome x[Title/Abstract]
#32 metS[Title/Abstract]
#33 insulin resistance syndrome[Title/Abstract]
#34 "Metabolic X Syndrome"[Title/Abstract]
#35 "Metabolic Cardiovascular Syndrome"[Title/Abstract]
#36 cardio-metabolic syndrome[Title/Abstract]
#37 OR/ #29-#36
#38 #28 AND #37

Table 2s. Newcastle-Ottawa Quality Assessment Scale of the cohort studies.

| Study (First author/year) | Selection | | | | Compara-bility | Outcome | | | Total scores |
	Representative-ness of the exposed cohort	Selection of the non-exposed cohort	Ascertainment of exposure	Demonstration that outcome of interest was not present at start of study		Assessment of outcome	Was follow-up long enough for outcomes to occur	Adequacy of follow up of cohorts	
Arora,2011	★	★	★	★	★★	★	★	★	9
Chang,2015	★	★	★	★	★★	★	★	★	9
Chaput,2013	★	★	★	★	★★	★	★	★	9
Deng,2017	★	★	★	★	★★	★	★	★	9
Itani,2017	★	★	★	★	★★	★	★	★	9
Kim,2015	★	★	★	★	★★	★	★	★	9
Li,2015	★	★	★	★	★★	★	★	★	9
Song,2016	★	★	★	★	★★	★	★	★	9
Titova,2018	★	★	★	★	★★	★	★	★	9
Yang,2016	★	★	★	★	★★	★	★	★	9
Ye,2020	★	★	★	★	★★	★	★	★	9
choi,2011	★	★	★	★	★★	★	★	★	9

Fig. 1s. Meta-analysis of the association between sleep duration (6-7 hours) and risk of metabolic syndrome.

Study	OR with 95% CI	Weight (%)
Arora,2011	1.10 [1.03, 1.18]	50.87
Chang,2015	1.04 [0.67, 1.61]	2.43
Li,2015	1.09 [0.94, 1.26]	18.26
Song,2016	1.14 [0.98, 1.33]	17.05
Yang,2016	1.08 [0.83, 1.41]	6.39
Ye,2020	0.76 [0.56, 1.03]	4.99
Overall	1.08 [1.01, 1.16]	

Heterogeneity: $\tau^2 = 0.00$, $I^2 = 15.03\%$, $H^2 = 1.18$

Test of $\theta_i = \theta_j$: Q(5) = 5.88, p = 0.32

Test of $\theta = 0$: z = 2.23, p = 0.03

0.56　　1　　1.61

Random-effects DerSimonian-Laird model
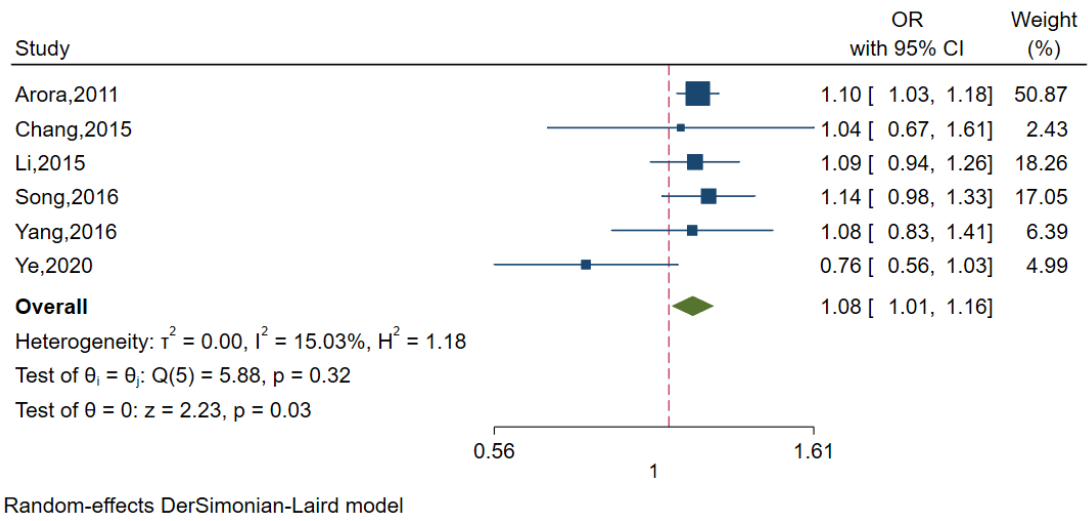
Fig. 2s. Meta-analysis of the association between sleep duration (8-9 hours) and risk of metabolic syndrome.

Study		OR with 95% CI	Weight (%)
Arora,2011		1.16 [1.08, 1.25]	39.64
Li,2015		1.25 [1.05, 1.49]	20.05
Yang,2016		1.10 [0.95, 1.28]	24.42
Ye,2020		0.90 [0.72, 1.11]	15.89
Overall		1.12 [1.01, 1.24]	

Heterogeneity: $\tau^2 = 0.01$, $I^2 = 52.17\%$, $H^2 = 2.09$

Test of $\theta_i = \theta_j$: Q(3) = 6.27, p = 0.10

Test of $\theta = 0$: z = 2.07, p = 0.04

Random-effects DerSimonian-Laird model

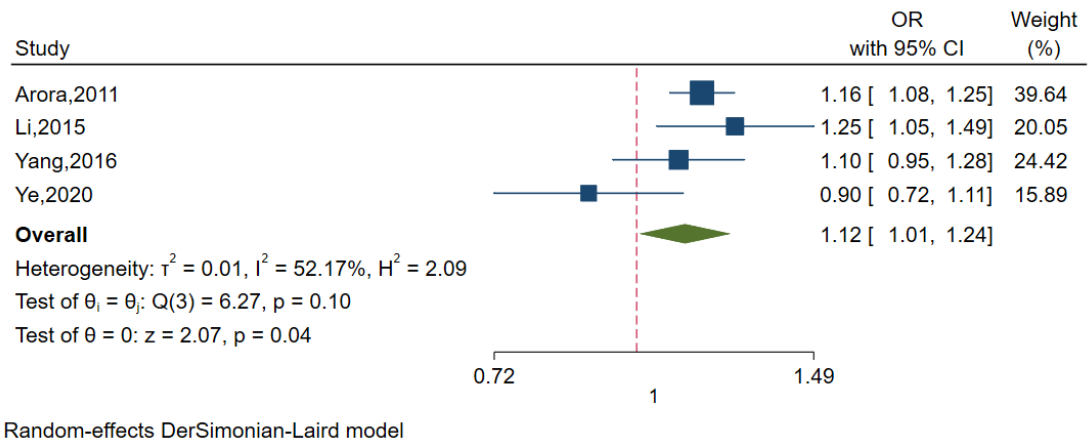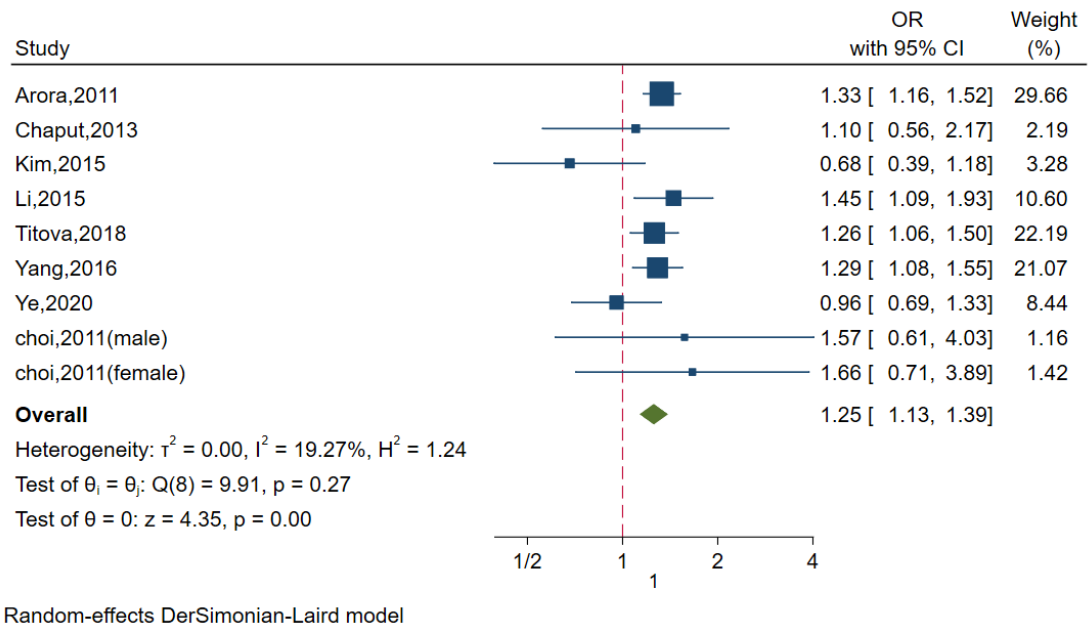Fig. 3s. Meta-analysis of the association between sleep duration (>9 hours) and risk of metabolic syndrome.

Study		OR with 95% CI	Weight (%)
Arora,2011		1.33 [1.16, 1.52]	29.66
Chaput,2013		1.10 [0.56, 2.17]	2.19
Kim,2015		0.68 [0.39, 1.18]	3.28
Li,2015		1.45 [1.09, 1.93]	10.60
Titova,2018		1.26 [1.06, 1.50]	22.19
Yang,2016		1.29 [1.08, 1.55]	21.07
Ye,2020		0.96 [0.69, 1.33]	8.44
choi,2011(male)		1.57 [0.61, 4.03]	1.16
choi,2011(female)		1.66 [0.71, 3.89]	1.42
Overall		1.25 [1.13, 1.39]	

Heterogeneity: $\tau^2 = 0.00$, $I^2 = 19.27\%$, $H^2 = 1.24$

Test of $\theta_i = \theta_j$: Q(8) = 9.91, p = 0.27

Test of $\theta = 0$: z = 4.35, p = 0.00

1/2   1   2   4
1

Random-effects DerSimonian-Laird model

Fig. 4s. Funnel plot