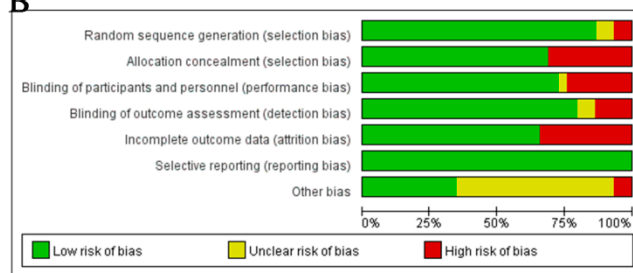


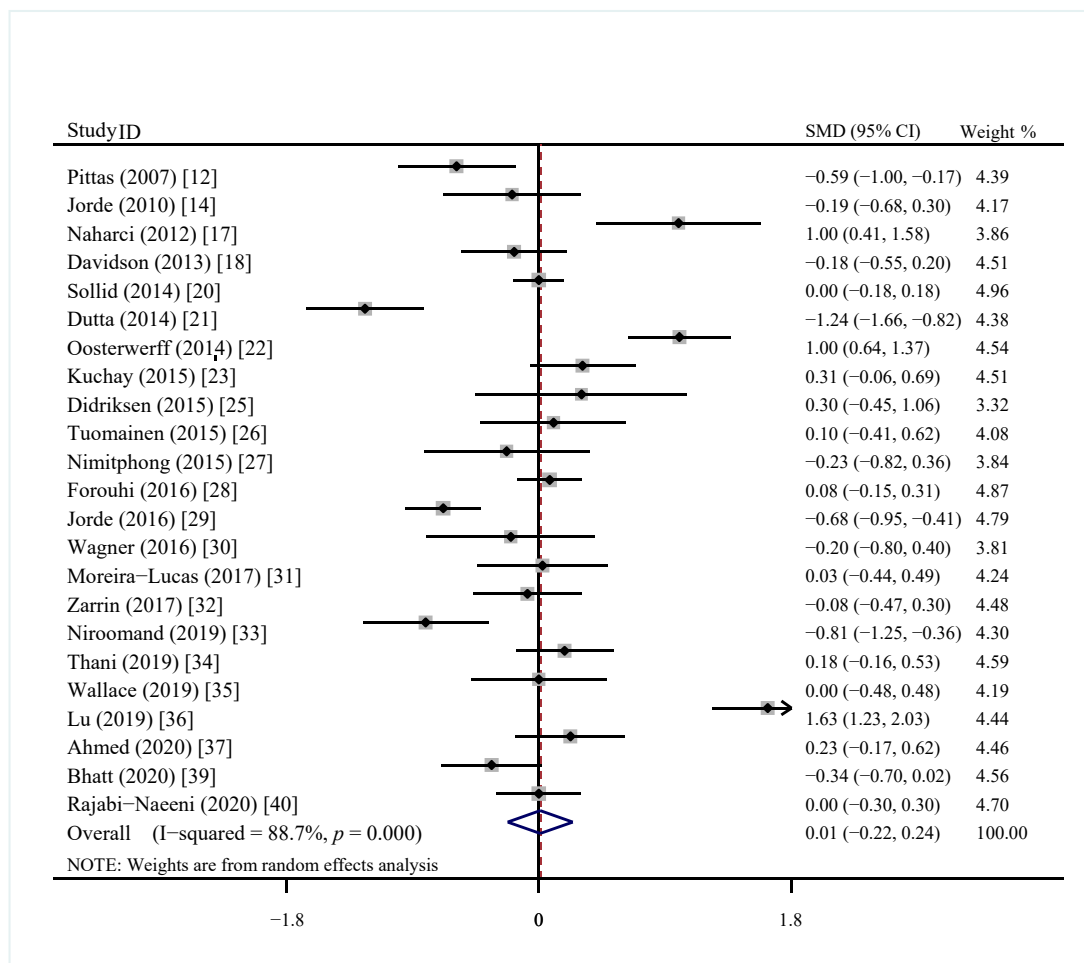
A

	Random sequence generation (selection bias)	Allocation concealment (selection bias)	Blinding of participants and personnel (performance bias)	Blinding of outcome assessment (detection bias)	Incomplete outcome data (attrition bias)	Selective reporting (reporting bias)	Other bias
Ahmed 2020	Low risk of bias	Low risk of bias	Low risk of bias	Low risk of bias	Low risk of bias	Low risk of bias	Low risk of bias
Ansari 2020	High risk of bias	High risk of bias	High risk of bias	High risk of bias	Low risk of bias	Low risk of bias	Unclear risk of bias
Barengolts 2015	Low risk of bias	Low risk of bias	Low risk of bias	Low risk of bias	Low risk of bias	Low risk of bias	Unclear risk of bias
Bhatt 2020	Low risk of bias	Low risk of bias	Low risk of bias	Low risk of bias	High risk of bias	Low risk of bias	Low risk of bias
Davidson 2013	Low risk of bias	Low risk of bias	Low risk of bias	Unclear risk of bias	Low risk of bias	Low risk of bias	Unclear risk of bias
de Boer 2008	Low risk of bias	Low risk of bias	Low risk of bias	Unclear risk of bias	Low risk of bias	Low risk of bias	Unclear risk of bias
Didriksen 2015	Low risk of bias	Low risk of bias	Low risk of bias	Low risk of bias	High risk of bias	Low risk of bias	Unclear risk of bias
Dutta 2014	Low risk of bias	High risk of bias	High risk of bias	High risk of bias	High risk of bias	Low risk of bias	Unclear risk of bias
Forouhi 2016	Low risk of bias	Low risk of bias	Low risk of bias	Low risk of bias	Low risk of bias	Low risk of bias	Low risk of bias
Harris 2012	Low risk of bias	Low risk of bias	Unclear risk of bias	Low risk of bias	Low risk of bias	Low risk of bias	Unclear risk of bias
Hoseini 2013	Low risk of bias	High risk of bias	High risk of bias	Low risk of bias	Low risk of bias	Low risk of bias	High risk of bias
Jorde 2010	Unclear risk of bias	High risk of bias	Low risk of bias	Low risk of bias	High risk of bias	Low risk of bias	Unclear risk of bias
Jorde 2016	Low risk of bias	Low risk of bias	Low risk of bias	Low risk of bias	High risk of bias	Low risk of bias	Unclear risk of bias
Kuchay 2015	Low risk of bias	High risk of bias	High risk of bias	High risk of bias	High risk of bias	Low risk of bias	Unclear risk of bias
Lu 2019	Unclear risk of bias	High risk of bias	High risk of bias	High risk of bias	Low risk of bias	Low risk of bias	Unclear risk of bias
Mitri 2011	Low risk of bias	Low risk of bias	Low risk of bias	Low risk of bias	Low risk of bias	Low risk of bias	Low risk of bias
Moreira-Lucas 2017	Low risk of bias	Low risk of bias	Low risk of bias	Low risk of bias	High risk of bias	Low risk of bias	Low risk of bias
Naharci 2012	High risk of bias	High risk of bias	High risk of bias	Low risk of bias	Low risk of bias	Low risk of bias	High risk of bias
Nimitphong 2015	Low risk of bias	High risk of bias	High risk of bias	Low risk of bias	Low risk of bias	Low risk of bias	Unclear risk of bias
Niroomand 2019	Low risk of bias	Low risk of bias	Low risk of bias	Low risk of bias	High risk of bias	Low risk of bias	Unclear risk of bias
Oosterwerff 2014	Low risk of bias	Low risk of bias	Low risk of bias	Low risk of bias	High risk of bias	Low risk of bias	Low risk of bias
Pittas 2007	Low risk of bias	Low risk of bias	Low risk of bias	Low risk of bias	Low risk of bias	Low risk of bias	Low risk of bias
Rajabi-Naeeni 2020	Low risk of bias	Low risk of bias	Low risk of bias	Low risk of bias	Low risk of bias	Low risk of bias	Unclear risk of bias
Sollid 2014	Low risk of bias	Low risk of bias	Low risk of bias	Low risk of bias	Low risk of bias	Low risk of bias	Unclear risk of bias
Thani 2019	Low risk of bias	Low risk of bias	Low risk of bias	Low risk of bias	Low risk of bias	Low risk of bias	Low risk of bias
Tuomainen 2015	Low risk of bias	Low risk of bias	Low risk of bias	Low risk of bias	Low risk of bias	Low risk of bias	Low risk of bias
Wagner 2016	Low risk of bias	Low risk of bias	Low risk of bias	Low risk of bias	Low risk of bias	Low risk of bias	Low risk of bias
Wallace 2019	Low risk of bias	Low risk of bias	Low risk of bias	Low risk of bias	High risk of bias	Low risk of bias	Unclear risk of bias
Zarrin 2017	Low risk of bias	High risk of bias	Low risk of bias	Low risk of bias	Low risk of bias	Low risk of bias	Unclear risk of bias

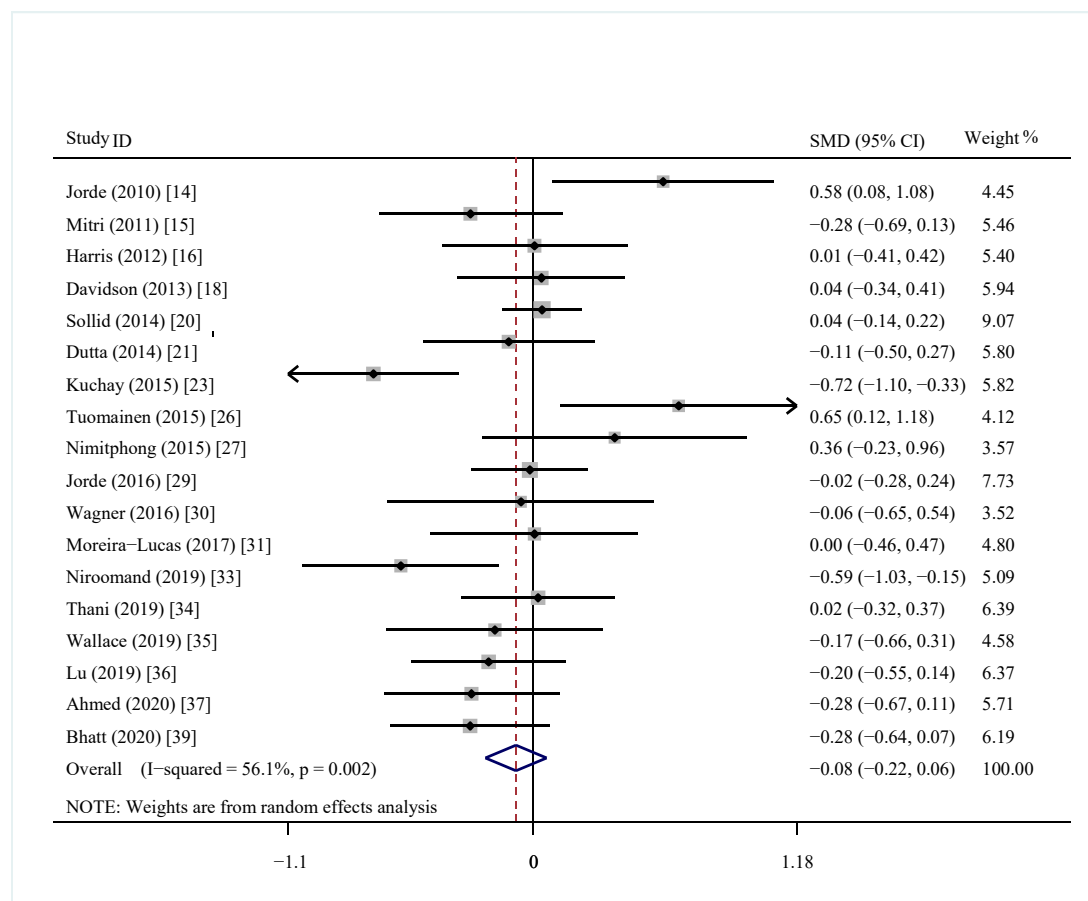
B



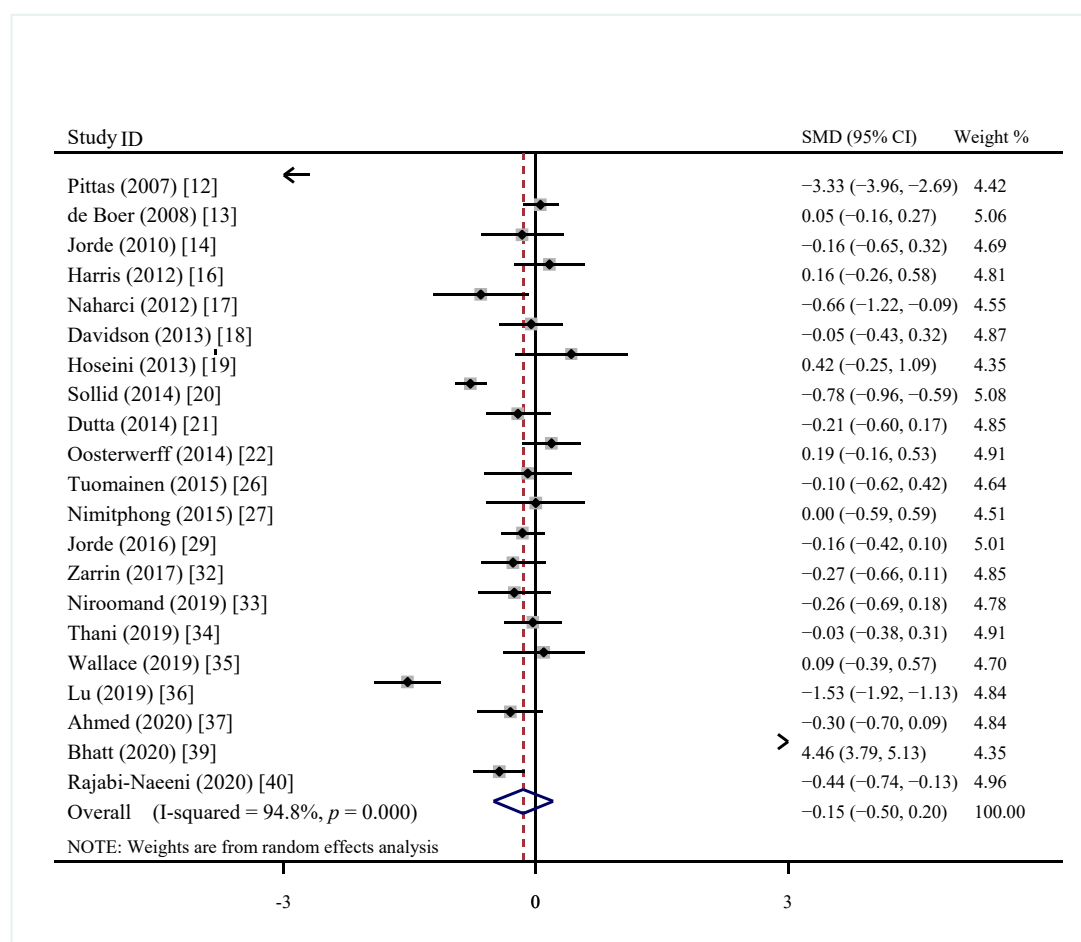
**Figure S1.** Risk of bias assessment of the included studies using the Cochrane Collaboration tool. (A) Risk of bias in included studies; (B) Risk of bias across each bias domain. Risk of bias levels: green (low), yellow (unclear), red (high).



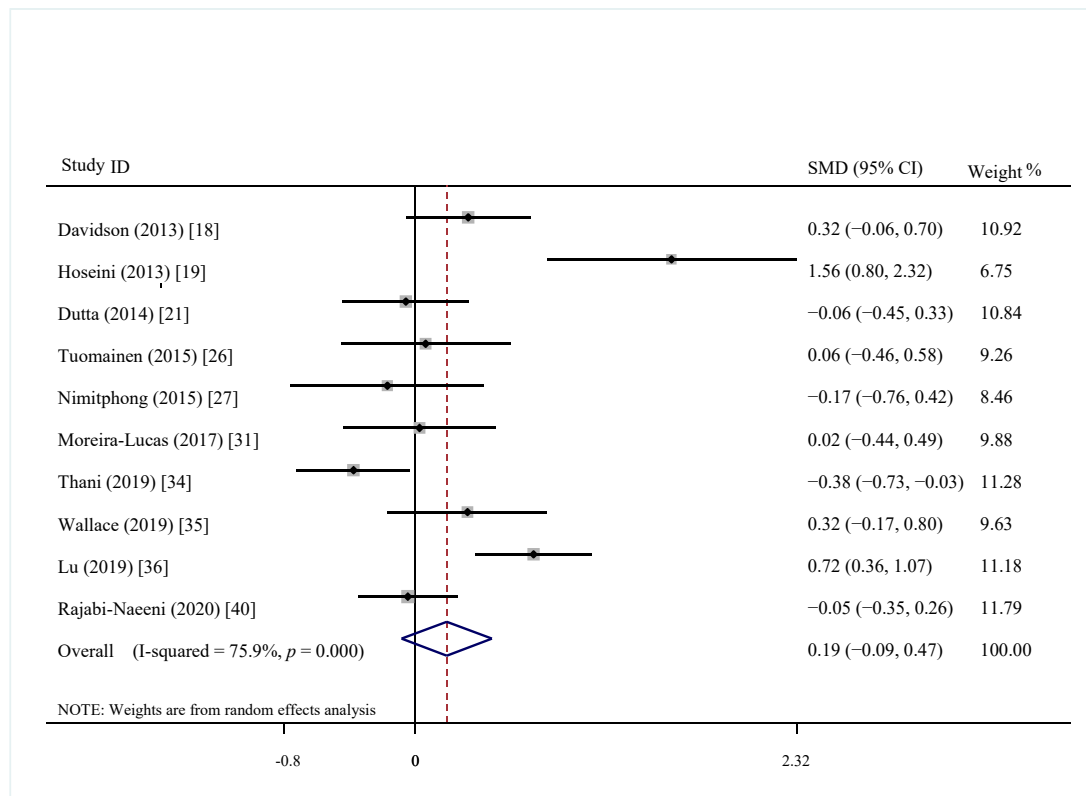
**Figure S2.** Effect of vitamin D supplementation on body mass index in prediabetes.



**Figure S3.** Effect of vitamin D supplementation on 2h oral glucose tolerance test plasma glucose in prediabetes.



**Figure S4.** Effect of vitamin D supplementation on insulin resistance by homeostasis model assessment in prediabetes.



**Figure S5.** Effect of vitamin D supplementation on homeostasis model assessment of  $\beta$ -cell function in prediabetes.