

**Appendix. Search Strategy**

**Figure S1.** Assessment of Risk of Bias Using Cochrane Collaboration Tool for HbA1c.

**Figure S2.** Bubble plot evaluating the association between HbA1c and baseline HbA1c.

**Figure S3.** Funnel plot for HbA1c.

**Figure S4.** Forrest plot for HbA1c after sensitivity analysis

**Figure S5.** Forrest plot for fasting blood glucose (FBG).

**Figure S6.** Forrest plot for fructosamine.

**Figure S7.** Forrest plot for homeostasis model of assessment for insulin resistance index (HOMA-IR).

**Figure S8.** Forrest plot for 24 hour plasma glucose.



"upper airway resistance" OR ondine) W/3 syndrome\*)) OR osa OR osahs OR hypoventilation\* OR "hypo-ventilation\*" OR SJilt ;;h:tr ovent i lat ion" OR "obesity-hypo-ventilation"))

- 3# TITLE-ABS-KEY ( insulin OR glucose OR glucolysis OR glycolysis OR glycaemi\* OR glyce\* OR glucaemi\* OR glucemi\* OR glycosaemi\* OR glycosemi\* OR glucosaemi\* OR glucosemi\* OR euglycaemi\* OR euglyce\* OR euglucaemi\* OR euglucemi\* OR euglycosaemi\* OR euglycosemi\* OR euglucosaemi\* OR euglucosemi\* OR normoglycaemi\* OR normoglyce\* OR normoglucaemi\* OR normogluce\* OR normoglycosaemi\* OR normoglycosemi\* OR normoglucosaemi\* OR normoglucosemi\* OR hyperglycaemi\* OR hyperglyce\* OR hyperglucaemi\* OR hyperglucosemi\* OR hyperglycosemi\* OR hyperglycosaemi OR hyperglucosaemi\* OR hyperglucosemi\* OR hypoglycaemi\* OR hypoglyce\* OR hypoglucaemi\* OR hypoglucosemi\* OR hypoglycosemi\* OR hypoglycosaemi\* OR hypoglycosemi\* OR dysglycaemi\* OR dysglyce\* OR dysglucaemi\* OR dysglucosemi\* OR dysglycosemi\* OR dysglycosaemi\* OR dysglycosemi\* OR dysglucosaemi\* OR dysglucosemi\* OR (( eu OR normo OR hyper OR hypo OR dys) PRE/1 ( glycaemi\* OR glyce\* OR glucaemi\* OR glucemi\* OR glycosaemi\* OR glycosemi\* OR glucosaemi\* OR glucosemi\*)) OR (( blood OR plasma OR serum) W/3 sugar) OR ( glyc\* W/3 ( hemoglobin OR haemoglobin) OR glycohemoglobin OR glycohaemoglobin OR ( hemoglobin OR haemoglobin) W/3 ( a OR "a l" OR al OR ai OR I OR alc OR "a lc" OR "a ic" OR aic OR "hb alc" OR "hba lc" OR hbalc) OR pbg OR fbg OR ( ( homeosta\* OR homoeosta\*) W/3 "model assessment") OR homa OR "homa ir" OR "homa index" OR "hyperinsulinemic-euglycemic clamp technique")
- 4# TITLE-ABS-KEY ( ( ( breathing OR respiration\* OR positive OR ventilation\* OR airway\* OR air) W/3 pressure\*) OR cpap OR ncpap OR cppb OR cppv OR aprv OR acpap OR apap OR autocpap OR bpap OR bipap OR ippb OR ippv)
- 5# TITLE-ABS-KEY ( apnea\* OR apnoea\* OR hypoapnea\* OR hypoapnoea\* OR "hypno-apnea\*" OR "hypno-apnoea\*" OR hypersomnia\* OR hyper-somnia\* OR hyper-somnia\* OR ( "sleepdisorder" W/3 breathing\*)) OR ( ( "obesity hypoventilation" OR pickwick OR pickwickian OR "upper airway resistance" OR ondine) W/3 syndrome\*)) OR osa OR osahs OR hypoventilation\* OR "hypoventilation\*" OR "obesity- hypoventilation" OR "obesity-hypo-ventilation")

## MEDLINE

- 1# exp Sleep Apnea Syndromes/  
2# (apnea\* or apnoea\* or hypoapnea\* or hypoapnoea\* or 'hypno-apnea\*' or 'hypno-apnoea\*' or hypersomnia\* or hypersomnia\* or hyper-somnia\* or hyper- somnia\* or ('sleep disorder' adj3 breathing\*) or (('obesity hypoventilation' or pickwick or pickwickian or 'upper airway resistance' or ondine) adj3 syndrome\*) or osa or osahs or hypoventilation\* or 'hypo-ventilation\*' or 'obesity-hypoventilation' or 'obesity-hypo-ventilation').ti,ab.  
3# 1 or 2  
4# exp Positive-Pressure Respiration/  
5# (((breathing or respiration\* or positive or ventilation\* or airway\* or air) adj3 pressure\*) or CPAP or nCPAP or CPPB or CPPV or APRV or aCPAP or APAP or autoCPAP or BPAP or BiPAP or IPPB or IPPV).ti,ab.  
6# 4 or 5  
7# exp Glycolysis/ or exp Hyperglycemia/ or exp Hypoglycemia/ or exp Glycemic Control/ or exp Blood Glucose/ or Insulin Resistance/ or exp Glycated Hemoglobin A/ or exp Glucose Clamp Technique/  
8# (insulin or glucose or glucolysis or glycolysis or glycaemi\* or glyce\* or glucaemi\* or glucemi\* or glycosaemi\* or glycosemi\* or glucosaemi\* or glucosemi\* or euglycaemi\* or euglyce\* or euglucaemi\* or euglucemi\* or euglycosaemi\* or euglycosemi\* or euglucosaemi\* or euglucosemi\* or normoglycaemi\* or normoglyce\* or normoglucaemi\* or normogluce\* or normoglycosaemi\* or normoglycosemi\* or normoglucosaemi\* or normoglucosemi\* or hyperglycaemi\* or hyperglyce\* or hyperglucaemi\* or hyperglucosemi\* or hyperglycosemi\* or hyperglycosaemi or hyperglucosaemi\* or hyperglucosemi\* or hypoglycaemi\* or hypoglyce\* or hypoglucaemi\* or hypoglucosemi\* or hypoglycosemi\* or hypoglycosaemi\* or hypoglycosemi\* or dysglycaemi\* or dysglyce\* or dysglucaemi\* or dysglucosemi\* or dysglycosemi\* or dysglycosaemi\* or dysglycosemi\* or dysglucosaemi\* or dysglucosemi\* OR (( eu OR normo OR hyper OR hypo OR dys) PRE/1 ( glycaemi\* OR glyce\* OR glucaemi\* OR glucemi\* OR glycosaemi\* OR glycosemi\* OR glucosaemi\* OR glucosemi\*)) OR (( blood OR plasma OR serum) W/3 sugar) OR ( glyc\* W/3 ( hemoglobin OR haemoglobin) OR glycohemoglobin OR glycohaemoglobin OR ( hemoglobin OR haemoglobin) W/3 ( a OR "a l" OR al OR ai OR I OR alc OR "a lc" OR "a ic" OR aic OR "hb alc" OR "hba lc" OR hbalc) OR pbg OR fbg OR ( ( homeosta\* OR homoeosta\*) W/3 "model assessment") OR homa OR "homa ir" OR "homa index" OR "hyperinsulinemic-euglycemic clamp technique")

hypoglycosemi\* or hypoglucosaemi\* or hypoglucosemi\* or dysglycaemi\* or dysglycemi\* or  
dysglucaemi\* or dysglucemi\* or dysglycosaemi\* or 'dysglycosemi\* or dysglucosaemi\*  
dysglucosemi\* or ((eu or normo or hyper or hypo or dys) adj (glycaemi\* or glyce\* or glucaemi\* or  
glucemi\* or glycosaemi\* or glycosemi\* or glucosaemi\* or glucosemi\*)) or ((blood or plasma or serum  
adj3 sugar) or (glyc\* adj3 (hemoglobin or haemoglobin)) or glycohemoglobin or glycohaemoglobin or  
(hemoglobin or haemoglobin) adj3 (a or 'a 1' or a1 or ai or Sleep Apnea Syndromes or a1c or 'a 1c' or  
'a ic' or aic or 'hb a1c' or 'hba 1c' or hba1c) or pbg or fbg or ((homeosta\* or homeosta\*) adj3 'model  
assessment') or homa or 'homa ir' or 'homa index' or 'hyperinsulinemic-euglycemic clamp  
technique').ti,ab.

9# 7 or 8

10# 3 and 6 and 9

11# 10 not (animals not humans).sh.

12# 11 not ((exp infant/ or exp child/ or adolescent/) not exp adult/)

13# limit 12 to (english or german)

14# ("26910598" or "32291275" or "33855195" or "19608589" or "22547887" or "35131440" or  
"25897569" or "22773248" or "33146450").ui.15#13 and 14

## Embase

1# 'sleep disordered breathing'/exp OR 'ondine syndrome'/exp

2# apnea\*:ti,ab,kw OR apnoea\*:ti,ab,kw OR hypoapnea\*:ti,ab,kw OR hypoapnoea\*:ti,ab,kw OR 'hypo-  
apnea\*:ti,ab,kw OR 'hypo-apnoea\*:ti,ab,kw OR hypersomnia\*:ti,ab,kw OR 'hyper somnia\*:ti,ab,kw  
OR (('sleep disorder' NEAR/3 breathing\*):ti,ab,kw) OR (((obesity hypoventilation' OR pickwick OR  
pickwickian OR 'upper airway resistance' OR Ondine) NEAR/3 syndrome\*):ti,ab,kw) OR osa:ti,ab,kw  
OR osahs:ti,ab,kw OR hypoventilation\*:ti,ab,kw OR 'hypo- ventilation\*':ti,ab,kw OR 'obesity-  
hypoventilation':ti,ab,kw OR 'obesity-hypo-ventilation':ti,ab,kw

3# #1 OR #2

4# 'positive pressure ventilation'/exp

5# (((breathing OR respiration\* OR positive OR ventilation\* OR airway\* OR air) NEAR/3  
pressure\*):ti,ab,kw) OR cpap:ti,ab,kw OR ncpap:ti,ab,kw OR cpb:ti,ab,kw OR cppv:ti,ab,kw OR  
aprv:ti,ab,kw OR acpap:ti,ab,kw OR apap:ti,ab,kw OR autocpap:ti,ab,kw OR bpap:ti,ab,kw OR  
bipap:ti,ab,kw OR ippb:ti,ab,kw OR ippv:ti,ab,kw

6# #4 OR #5

7# 'glucose metabolism'/exp OR 'hyperglycemia'/exp OR 'hypoglycemia'/exp OR 'dysglycemia'/exp OR  
'glucose intolerance'/exp OR 'glycemic control'/exp OR 'glucose blood level'/exp OR 'insulin level'/exp  
OR 'insulin response'/exp OR 'glycosylated hemoglobin'/exp OR 'homeostasis model assessment'/exp  
OR 'homeostasis model assessment index of insulin resistance'/exp OR 'homa index'/exp OR 'fasting  
insulin'/exp OR 'postprandial blood glucose'/exp OR 'glucose clamp technique'/exp

8# insulin:ti,ab,kw OR glucose:ti,ab,kw OR glucolysis:ti,ab,kw OR glycolysis:ti,ab,kw OR  
glycaemi\*:ti,ab,kw OR glyce\*:ti,ab,kw OR glucaemi\*:ti,ab,kw OR glucemi\*:ti,ab,kw OR  
glycosaemi\*:ti,ab,kw OR glycosemi\*:ti,ab,kw OR glucosaemi\*:ti,ab,kw OR glucosemi\*:ti,ab,kw OR  
euglycaemi\*:ti,ab,kw OR euglyce\*:ti,ab,kw OR euglucaemi\*:ti,ab,kw OR euglucemi\*:ti,ab,kw OR  
euglycosaemi\*:ti,ab,kw OR euglycosemi\*:ti,ab,kw OR euglucosaemi\*:ti,ab,kw OR  
euglucosemi\*:ti,ab,kw OR normoglycaemi\*:ti,ab,kw OR normoglycemi\*:ti,ab,kw OR  
normoglucaemi\*:ti,ab,kw OR normoglucemi\*:ti,ab,kw OR normoglycosaemi\*:ti,ab,kw OR  
normoglycosemi\*:ti,ab,kw OR normoglucosaemi\*:ti,ab,kw OR normoglucosemi\*:ti,ab,kw OR  
hyperglycaemi\*:ti,ab,kw OR 'hyperglycemi\* or hyperglucaemi\*':ti,ab,kw OR hyperglucemi\*:ti,ab,kw  
OR hyperglycosemi\*:ti,ab,kw OR hyperglycosaemi\*:ti,ab,kw OR hyperglucosaemi\*:ti,ab,kw OR  
hyperglucosemi\*:ti,ab,kw OR hypoglycaemi\*:ti,ab,kw OR 'hypoglycemi\* or hypoglucami\*':ti,ab,kw  
OR hypoglucemi\*:ti,ab,kw OR hypoglycosemi\*:ti,ab,kw OR hypoglucosaemi\*:ti,ab,kw OR  
hypoglucosemi\*:ti,ab,kw OR dysglycaemi\*:ti,ab,kw OR dysglycemi\*:ti,ab,kw OR  
dysglucaemi\*:ti,ab,kw OR dysglucemi\*:ti,ab,kw OR dysglycosaemi\*:ti,ab,kw OR 'dysglycosemi\* or  
dysglucosaemi\*':ti,ab,kw OR dysglucosemi\*:ti,ab,kw OR (((eu OR normo OR hyper OR hypo OR dys)  
NEXT/1 (glycaemi\* OR glyce\* OR glucaemi\* OR glucemi\* OR glycosaemi\* OR glycosemi\* OR  
glucosaemi\* OR glucosemi\*)):ti,ab,kw) OR (((blood OR plasma OR serum) NEAR/3 sugar):ti,ab,kw)

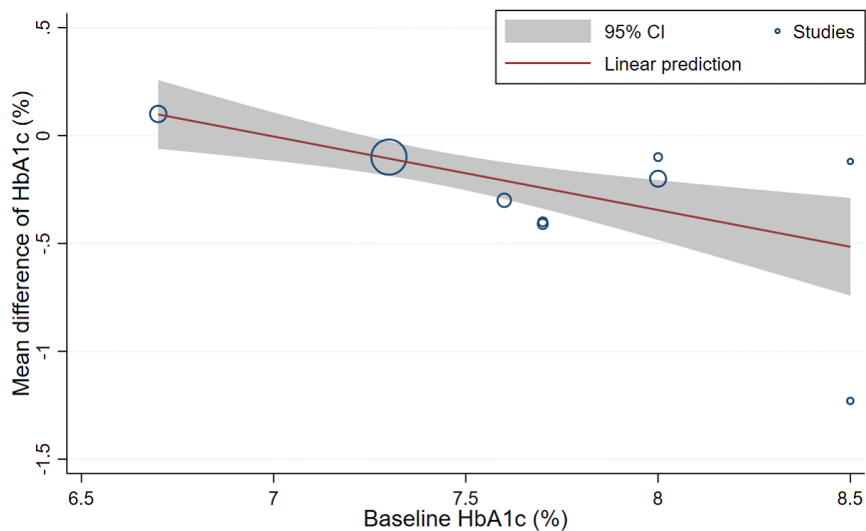


**Figure S1.** Assessment of Risk of Bias Using Cochrane Collaboration Tool for HbA1c.

Study	D1	D2	D3	D4	D5	Overall	
Banghøj et al.	+	+	-	+	+	!	+
Chasens et al.	+	+	+	+	!	+	!
Lam et al.	+	+	+	+	+	+	-
Martínez-Cerón et al.	+	+	+	+	!	+	
Mokhlesi et al.	-	-	+	!	!	-	D1 Randomisation process
Morariu et al.	!	!	+	!	!	!	D2 Deviations from the intended interventions
Shaw et al.	+	+	-	+	!	-	D3 Missing outcome data
West et al.	+	!	+	+	!	!	D4 Measurement of the outcome
Zamarron et al.	+	+	+	+	!	+	D5 Selection of the reported result
Zhao et al.	-	+	+	+	!	!	
Bakker et al.	+	+	+	+	+	+	

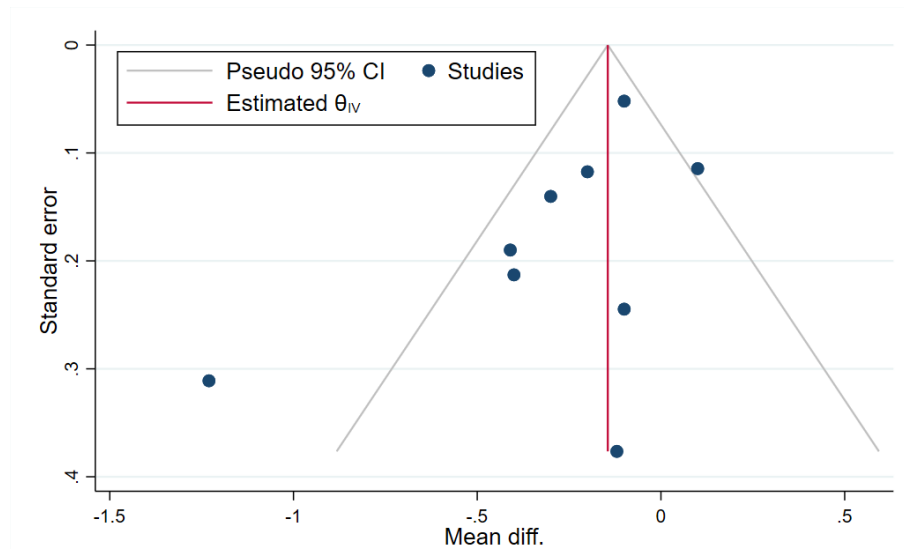
Agreement of two independent authors who judged the risk of bias dimensions for each study included in the meta-analysis is shown.

**Figure S2.** Bubble plot evaluating the association of HbA1c and baseline HbA1c.



A significant association between higher baseline HbA1c and reduction of HbA1c was observed.

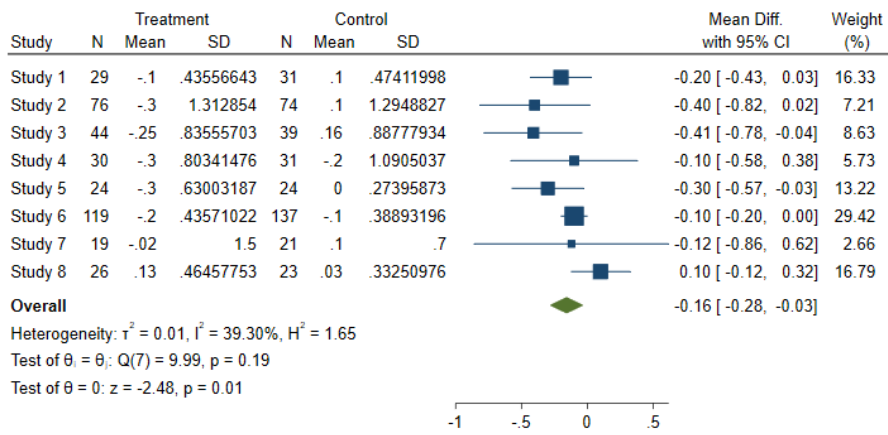
Figure S3. Funnel plot for HbA1c.



Funnel plot for publication bias.



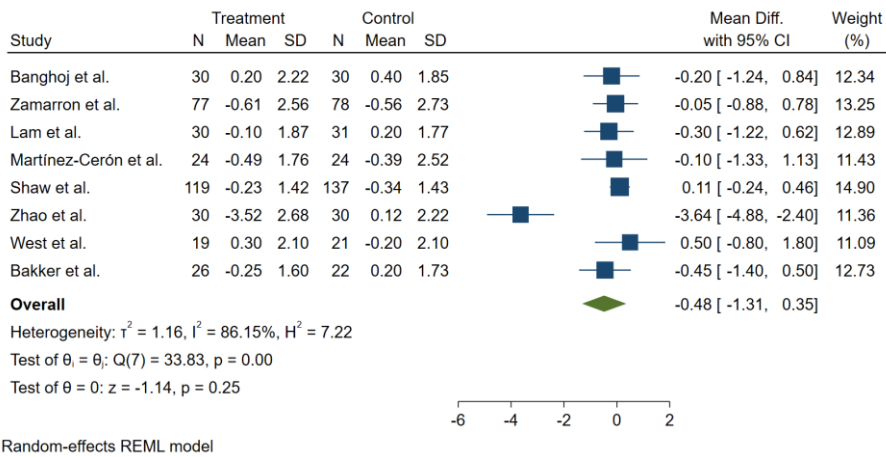
**Figure S4.** Forrest plot for HbA1c after sensitivity analysis



Random-effects REML model

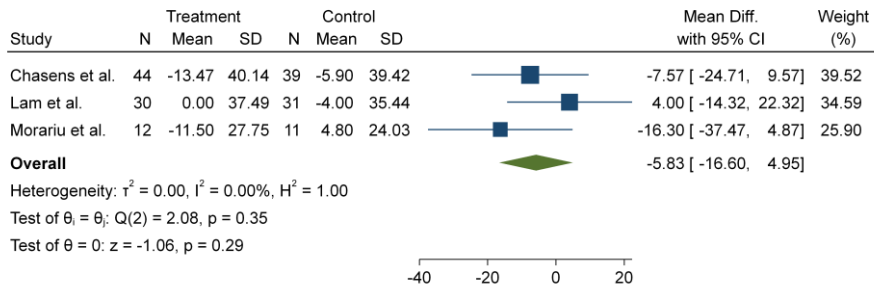
Forrest plot evaluating the effect of continuous positive airway pressure therapy on HbA1c in patients with obstructive sleep apnoea and type 2 diabetes after exclusion of the study from Zhao et al.

**Figure S5.** Forrest plot for fasting blood glucose (FBG).



Forrest plot evaluating the effect of continuous positive airway pressure therapy on FBG in patients with obstructive sleep apnoea and type 2 diabetes.

**Figure S6.** Forrest plot for fructosamine.

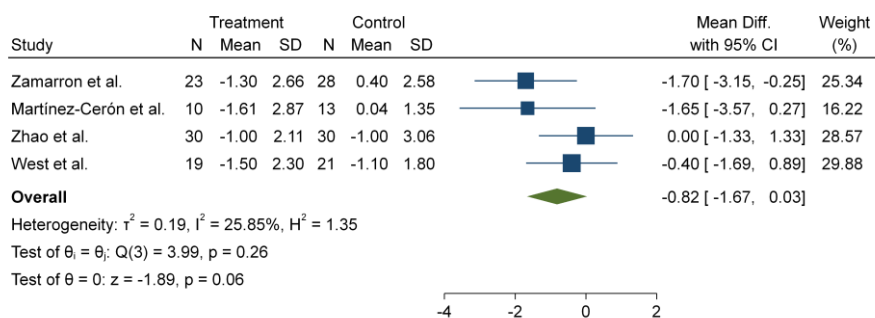


Random-effects REML model

Forrest plot evaluating the effect of continuous positive airway pressure therapy on fructosamine in patients with obstructive sleep apnoea and type 2 diabetes

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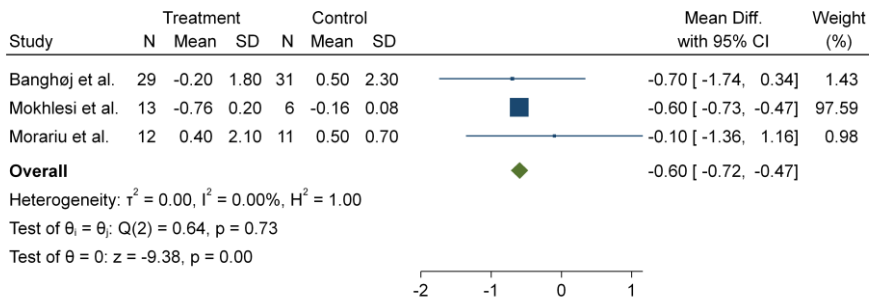
**Figure S7.** Forrest plot for homeostasis model of assessment for insulin resistance index (HOMA-IR).



Random-effects REML model

Forrest plot evaluating the effect of continuous positive airway pressure therapy on HOMA-IR in patients with obstructive sleep apnoea and type 2 diabetes

**Figure S8.** Forrest plot for 24 hour blood glucose.



Random-effects REML model

Forrest plot evaluating the effect of continuous positive airway pressure therapy on 24 hour blood glucose in patients with obstructive sleep apnoea and type 2 diabetes