

**S3 Table: Studies used to calculate the RCT instrumental variable effect of 25(OH)D on birth weight**

<u>Studies</u>	<u>Number of participants in the study</u>	<u>Mean Difference in birth weight between supplementation and placebo group, in g</u>	<u>Mean Difference in 25(OH)D levels between supplementation and placebo group, in nmol/l</u>
Mutlu (L) 2014[1]	59	24 (-379.48 to 427.48)	2.75 (-8.93 to 14.42)
Yu (H) 2009[2]	120	22 (-240.1 to 284.1)	5.67 (1.28 to 10.06)
Khan (2016)[3]	85	-180 (-488.76 to 128.76)	9.98 (2.46 to 17.51)
Vaziri (2016)[4]	127	-58 (-203.82 to 87.82)	15.03 (8.1 to 21.95)
Mallet (L) (1986)[5]	56	-90 (-339.46 to 159.46)	15.9 (11.75 to 20.05)
Mallet (H) (1986)[5]	50	-250 (-512.22 to 12.22)	16.6 (13.11 to 20.09)
Dawodu (L) (2013)[6]	129	91 (-102.45 to 284.45)	16.67 (5.13 to 28.22)
Yu (L) (2009)[2]	120	53 (-214.38 to 320.38)	18.67 (9.64 to 27.69)
Mutlu (H) (2014)[1]	60	-60 (-459.98 to 339.38)	18.97 (9.73 to 28.21)
Hollis (L) (2011)[7]	333	138.3 (-67.38 to 343.98)	19.4 (8.04 to 30.76)
Sahoo (L) (2016)[8]	39	110 (-278.99 to 498.99)	22.8 (8.21 to 37.39)
Thiele (2016)[9]	13	-102 (-638.05 to 434.05)	23.14 (15.41 to 30.87)
Mojibian (2015)[10]	500	-36.85 (-128.29 to 54.59)	26.71 (17.11 to 36.3)
Yap (2014)[11]	179	70 (-135.3 to 275.3)	29.95 (22.12 to 37.79)
Zerofsky (2014)[12]	57	289 (10.78 to 567.22)	30.4 (19.91 to 40.89)
Litonjua (2016)[13]	440	-14.6 (-92.94 to 63.74)	31.2 (26.46 to 35.94)
Hollis (H) (2011)[7]	335	62.8 (-145.17 to 270.77)	32.1 (20.03 to 44.17)
Valizadeh (2016)[14]	96	217 (-14.9 to 448.9)	32.7 (19.63 to 45.76)
Sablok (2015)[15]	180	200 (88.39 to 311.61)	33.89 (12.31 to 55.47)
Sahoo (H) (2016)[8]	29	0 (-350.15 to 350.15)	35.3 (20.09 to 50.51)
Dawodu (H) (2013)[6]	127	2 (-217.22 to 221.22)	41.56 (29.15 to 53.97)
Asemi (b) (2013)[16]	54	120.5 (-153.57 to 394.57)	45 (18.35 to 71.65)

Grant (L) (2014)[17]	174	28.33 (-152.21 to 208.88)	45.76 (33.84 to 57.68)
Grant (H) (2014)[17]	173	88.33 (-87.01 to 263.68)	48.26 (34.49 to 62.02)
Abotorabi (2017)[18]	110	33.7 (-139.04 to 206.44)	48.6 (39.91 to 57.29)
Hashemipour (2013)[19]	160	170.2 (42.48 to 297.92)	79.62 (71.08 to 88.16)
Roth (2013)[20]	160	14 (-138.82 to 166.82)	96 (87.4 to 104.6)
Brooke (1980)[21]	126	123 (-50.29 to 296.29)	151.8 (126.74 to 176.86)
Karamali (2015)[22]	60	172.6 (-42.78 to 387.98)	43.78 (39.6 to 47.96)
Sabet (2012)[23]	50	45 (-136.32 to 226.32)	80 (46.73 to 113.26)
Cooper (2016)[24]	1134	-37 (-104.21 to 30.21)	24.5 (21.7to27.3)

## **References**

1. Yesiltepe Mutlu G, Ozsu E, Kalaca S, Yuksel A, Pehlevan Y, Cizmecioglu F, et al. Evaluation of Vitamin D Supplementation Doses during Pregnancy in a Population at High Risk for Deficiency. *Hormone Research in Paediatrics*. 2014;81(6):402-8.
2. Yu CK, Sykes L, Sethi M, Teoh TG, Robinson S. Vitamin D deficiency and supplementation during pregnancy. *Clinical endocrinology*. 2009;70(5):685-90. Epub 2008/09/06. doi: 10.1111/j.1365-2265.2008.03403.x.
3. Khan F, Ahmad T, Hussain R, Bhutta Z. A Randomized Controlled Trial of Oral Vitamin D Supplementation in Pregnancy to Improve Maternal Periodontal Health and Birth Weight. *Journal of International Oral Health*. 2016;8(6):657-65. doi: 10.2047/jioh-08-06-03.
4. Vaziri F, Nasiri S, Tavana Z, Dabbaghmanesh MH, Sharif F, Jafari P. A randomized controlled trial of vitamin D supplementation on perinatal depression: in Iranian pregnant mothers. *BMC Pregnancy and Childbirth*. 2016;16:239. doi: 10.1186/s12884-016-1024-7.
5. Mallet E, Gugi B, Brunelle P, Henocq A, Basuyau JP, Lemeur H. Vitamin D supplementation in pregnancy: a controlled trial of two methods. *Obstet Gynecol*. 1986;68(3):300-4. Epub 1986/09/01.
6. Dawodu A, Saadi HF, Bekdache G, Javed Y, Altaye M, Hollis BW. Randomized controlled trial (RCT) of vitamin D supplementation in pregnancy in a population with endemic vitamin D deficiency. *The Journal of clinical endocrinology and metabolism*. 2013;98(6):2337-46. Epub 2013/04/06. doi: 10.1210/jc.2013-1154.
7. Hollis BW, Johnson D, Hulsey TC, Ebeling M, Wagner CL. Vitamin D supplementation during pregnancy: double-blind, randomized clinical trial of safety and effectiveness. *Journal of bone and mineral research : the official journal of the American Society for Bone and Mineral Research*. 2011;26(10):2341-57. Epub 2011/06/28. doi: 10.1002/jbmr.463.
8. Sahoo SK, Katam KK, Das V, Agarwal A, Bhatia V. Maternal vitamin D supplementation in pregnancy and offspring outcomes: a double-blind randomized placebo-controlled trial. *Journal of bone and mineral metabolism*. 2017;35(4):464-71. Epub 2016/09/16. doi: 10.1007/s00774-016-0777-4.

9. Thiele DK, Ralph J, El-Masri M, Anderson CM. Vitamin D3 Supplementation During Pregnancy and Lactation Improves Vitamin D Status of the Mother-Infant Dyad. *Journal of obstetric, gynecologic, and neonatal nursing : JOGNN*. 2017;46(1):135-47. Epub 2016/11/15. doi: 10.1016/j.jogn.2016.02.016.
10. Mojibian M, Soheilykhah S, Fallah Zadeh MA, Jannati Moghadam M. The effects of vitamin D supplementation on maternal and neonatal outcome: A randomized clinical trial. *Iranian Journal of Reproductive Medicine*. 2015;13(11):687-96.
11. Yap C, Cheung NW, Gunton JE, Athayde N, Munns CF, Duke A, et al. Vitamin D supplementation and the effects on glucose metabolism during pregnancy: a randomized controlled trial. *Diabetes care*. 2014;37(7):1837-44. Epub 2014/04/25. doi: 10.2337/dc14-0155.
12. Zerofsky M, Jacoby B, Stephensen C. A randomized controlled trial of vitamin D supplementation in pregnancy: effects on vitamin D status and clinical outcomes (1041.5). *The FASEB Journal*. 2014;28(1\_supplement):1041.5. doi: 10.1096/fasebj.28.1\_supplement.1041.5.
13. Litonjua AA, Carey VJ, Laranjo N, Harshfield BJ, McElrath TF, O'Connor GT, et al. Effect of Prenatal Supplementation With Vitamin D on Asthma or Recurrent Wheezing in Offspring by Age 3 Years: The VDAART Randomized Clinical Trial. *Jama*. 2016;315(4):362-70. Epub 2016/01/28. doi: 10.1001/jama.2015.18589.
14. Valizadeh M, Piri Z, Mohammadian F, Kamali K, Amir Moghadami HR. The Impact of Vitamin D Supplementation on Post-Partum Glucose Tolerance and Insulin Resistance in Gestational Diabetes: A Randomized Controlled Trial. *International Journal of Endocrinology and Metabolism*. 2016;14(2):e34312. doi: 10.5812/ijem.34312.
15. Sablok A, Batra A, Thariani K, Batra A, Bharti R, Aggarwal AR, et al. Supplementation of vitamin D in pregnancy and its correlation with fetomaternal outcome. *Clinical endocrinology*. 2015;83(4):536-41. Epub 2015/02/17. doi: 10.1111/cen.12751.
16. Asemi Z, Hashemi T, Karamali M, Samimi M, Esmailzadeh A. Effects of vitamin D supplementation on glucose metabolism, lipid concentrations, inflammation, and oxidative stress in gestational diabetes: a double-blind randomized controlled clinical trial. *The American Journal of Clinical Nutrition*. 2013;98(6):1425-32. doi: 10.3945/ajcn.113.072785.
17. Grant CC, Stewart AW, Scragg R, Milne T, Rowden J, Ekeroma A, et al. Vitamin D during pregnancy and infancy and infant serum 25-hydroxyvitamin D concentration. *Pediatrics*. 2014;133(1):e143-53. Epub 2013/12/18. doi: 10.1542/peds.2013-2602.
18. Abotorabi S, Hashemi Poor S, Esmailzadehha N, Ziaee A, Khoeiniha MH. Effect of Treatment with Vitamin D on Maternal and Neonatal Indices in Pregnant Women with Hypocalcemia: A Randomized Controlled Trial. *International Journal of Pediatrics*. 2017;5(9):5733-9. doi: 10.22038/ijp.2017.22146.1851.
19. Hashemipour S, Lalooha F, Zahir Mirdamadi S, Ziaee A, Dabaghi Ghaleh T. Effect of vitamin D administration in vitamin D-deficient pregnant women on maternal and neonatal serum calcium and vitamin D concentrations: a randomised clinical trial. *The British journal of nutrition*. 2013;110(9):1611-6. Epub 2013/05/01. doi: 10.1017/s0007114513001244.
20. Roth DE, Al Mahmud A, Raqib R, Akhtar E, Perumal N, Pezzack B, et al. Randomized placebo-controlled trial of high-dose prenatal third-trimester vitamin D3 supplementation in Bangladesh: the AViDD trial. *Nutrition Journal*. 2013;12:47-. doi: 10.1186/1475-2891-12-47.
21. Brooke OG, Brown IR, Bone CD, Carter ND, Cleeve HJ, Maxwell JD, et al. Vitamin D supplements in pregnant Asian women: effects on calcium status and fetal growth. *British Medical Journal*. 1980;280(6216):751-4.

22. Karamali M, Beihaghi E, Mohammadi AA, Asemi Z. Effects of High-Dose Vitamin D Supplementation on Metabolic Status and Pregnancy Outcomes in Pregnant Women at Risk for Pre-Eclampsia. *Hormone and metabolic research = Hormon- und Stoffwechselforschung = Hormones et metabolisme*. 2015;47(12):867-72. Epub 2015/05/06. doi: 10.1055/s-0035-1548835.
23. Sabet Z, Ghazi A, Tohidi M, Oladi B. VITAMIN D SUPPLEMENTATION IN PREGNANT IRANIAN WOMEN: EFFECTS ON MATERNAL AND NEONATAL VITAMIN D AND PARATHYROID HORMONE STATUS. *Acta Endocrinologica (1841-0987)*. 2012;8(1).
24. Cooper C, Harvey NC, Bishop NJ, Kennedy S, Papageorghiou AT, Schoenmakers I, et al. Maternal gestational vitamin D supplementation and offspring bone health (MAVIDOS): a multicentre, double-blind, randomised placebo-controlled trial. *The Lancet Diabetes & Endocrinology*. 2016;4(5):393-402. doi: 10.1016/S2213-8587(16)00044-9.